

LEVERAGE POINTS FOR MEANINGFUL PARTICIPATORY GOVERNANCE:

*Lessons from the Tsitsa River Catchment,
South Africa*

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By

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ABSTRACT

South Africa underwent the renowned transition into a representative multiracial democracy in 1994. While there has been notable progress in many developmental aspects of South African society, many inherited dilemmas persist, and myriad novel ones are emerging. In land and water governance, the nascent institutions do not reflect the visions laid out in the pioneering and substantive legislation, policies, and guidelines generated in the post-1994 period. Unaddressed dilemmas include widespread failures in local water governance, persistent inequality of access to land and water, poor or non-existent service delivery in rural areas, underdeveloped institutions for integrated and inclusive water resource management, and pernicious divisions between institutions. Overcoming these challenges, which are embedded in complex social-ecological systems across South Africa, will require the collaborative effort of diverse actors from different levels and sectors of society.

So how do we foster meaningful participation in ways that are not tyrannical, tokenistic, or manipulative? How do we build local institutions that make sense in the broader political system and in the lives of rural residents? How do we support institutions that meaningfully include diverse voices and enable tangible development outcomes? This thesis explores these questions as part of the Tsitsa Project, a transdisciplinary landscape management project working in the Tsitsa River Catchment (TsRC) in the rural parts of the Eastern Cape province of South Africa. Based on the valuable water resources, severe ecosystem degradation, overlapping traditional and democratic governance systems, and impoverished population, the TsRC is a worthwhile candidate for in-depth study paired with innovative efforts towards systemic development.

The single place-based case study approach drew on systems thinking within an evolving transdisciplinary methodology. Qualitative data were collected through extended fieldwork and analysed through an adaptive and iterative approach. Governance mapping elucidated the multiple levels of governance, and a systemic analysis explored meaningful participation at the local level

through causal diagramming and observation-based narratives. From the findings, a synthetic analysis identified high leverage points to enable participatory governance interventions to have more sustained impacts.

Governance manifestations in the TsRC generally align with existing descriptions of the fractures and associated dilemmas across South Africa, with the added complexities of being a rural landscape in which democratic and traditional governance systems overlap and interact. Local participatory institutions need to endure the broader instability and dysfunction. Interventions must, therefore, be oriented towards trust building and shared understanding while using more practical interventions that provide tangible outcomes, enable in-practice capacity development, and support platforms for all actors to experience and practice meaningful participation together. This thesis aims to unearth the lessons that one small rural catchment might hold for the governance of complex, contested land and for water governance contexts more broadly.

DECLARATION

This thesis is my original work, and has not been submitted in part, or in full, for any degree or examination at any other university. It contains no material previously published or written by other individuals, except where due reference is made and/or acknowledgements are provided in the text. This thesis is submitted for the degree of Doctor of Philosophy in the Institute for Water Research at Rhodes University, South Africa.

This research project was conducted in collaboration with the Tsitsa Project, a collaborative project funded by the Department of Fisheries Forestry and Environment, which ran from 2014 to 2021.

Signature:

A handwritten signature in black ink, appearing to be 'Aly' or similar, written in a cursive style.

Date: *9 February 2023*

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LIST OF ABBREVIATIONS

Abbreviation	Full phrase
CDW	Community development worker
CLD	Causal loop diagram
CLO	Community liaison officer
CMA	Catchment Management Agency
CMF	Catchment Management Forum
COGTA	Cooperative Governance and Traditional Affairs
CoP	Community of practice
COVID-19	Coronavirus disease of 2019
CSES	Complex social-ecological systems
DALRRD	Department of Agriculture, Land Reform, and Rural Development
DEDEAT	Department of Economic Development, Environmental Affairs, and Tourism
DFFE	Department of Forestry, Fisheries, and Environment
DRDAR	Department of Rural Development and Agrarian Reform
DWS	Department of Water and Sanitation
ELM	Elundini Local Municipality
GovCoP	Governance community of practice
IAP	Invasive alien plant
IDP	Integrated development plan
IPILRA of 1996	Interim Protection of Informal Land Rights Act of 1996
IWR	Institute for Water Research
JDGM	Joe Gqabi District Municipality
L&WGov system	Land and water governance system
MWP	Mzimvubu Water Project
NEMA of 1998	National Environmental Management Act of 1998
NRM	Natural resource management
NWA of 1998	National Water Act of 1998
NWRS	National water resource strategy
Five Tools	Five meaningful participatory governance tools
PMERL	Participatory monitoring, evaluation, reflection and learning
RSA	Republic of South Africa
SASSA	South African Social Security Agency
SWSA	Strategic water source area
TLGFA of 2003	Traditional Leadership and Governance Framework Act of 2003
TsRC	Tsitsa River Catchment
UCP	uMzimvubu Catchment Partnership
WMA	Water management area
WSA of 1997	Water Services Act of 1997

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CHAPTER ONE | Introduction

Child: But we have electricity. Why are we protesting?

Woman: Because they don't, and we need them.

– Conversation overheard at a service delivery protest.

In this chapter I introduce the theory and context in which this thesis is embedded (Sections 1.1 & 1.2). I then outline my positionality and motivations to conduct this study (Section 1.3), leading to my Central Aim and supporting objectives (Section 1.4). I conclude by outlining my research approach (Section 1.5) and the structure of my thesis (Section 1.6).

1.1. Theoretical introduction

1.1.1. *Participatory governance in complex social-ecological systems*

River catchments and other natural resource management (NRM) contexts are increasingly considered to be complex social-ecological systems (CSEs) in which people and nature are studied as a dynamic system of interacting elements (Folke & Berkes, 1998; Armitage et al., 2009; Biggs et al., 2015; Folke et al., 2016; Colding & Barthel, 2019). Complex social-ecological systems are adaptive and are characterised by mutual dependence (Shackleton et al., 2008; Balbi et al., 2019). Ecosystems rely on appropriate governance structures that are generated and maintained by people (or actors) so as not to be depleted or degraded (Newig & Fritsch, 2009; Evans et al., 2012; Armitage et al., 2012). The term 'governance' refers to the formal and informal processes and institutions through which societies organise themselves, from individuals in households to global systems; governance includes 'management', which refers more directly to specific operational decisions and outcomes (Saglie, 2006; Rist et al., 2007; Mngoma et al., 2011; Evans, 2012; Armitage et al., 2012).

Land and water governance is a 'complex process to manage and improve due to the large numbers of competing scales and levels inherent within it' (Daniell & Barreteau, 2014, p.1). Scales are the dimensions used to measure and study any phenomenon, while levels are the designated units of analysis at different positions on the scale (Gibson et al., 2000; Cash et al., 2006). There are scales in social systems (e.g., administrative, institutional, or knowledge scales) and in ecological systems (e.g., small river catchments nested within bigger ones). It is necessary to design governance systems that fit the multiple interacting levels and scales in order to achieve desirable outcomes – such as

ecosystem maintenance and restoration (Bodin et al., 2014; Guerrero et al., 2015; Sayles & Baggio, 2017).

Ecological systems hold different kinds of value for actors (Elmqvist et al., 2013; Hartel et al., 2014). One actor might value a specific service provided by an ecosystem, such as the water purification service provided by a wetland, while another might value an ecosystem for its cultural and spiritual significance (Cocks et al., 2012; Williams et al., 2020). Increasingly, CSESs are considered contested spaces as CSES governance requires relationships between diverse actors, often leading to contestation (Saglie, 2006; Defries & Nagendra, 2017; Cockburn et al., 2018b). Terms such as ‘collaborative governance’ (Ansell & Gash, 2008; Emerson et al., 2012), ‘stewardship’ (Folke et al., 2016; Cockburn et al., 2018a), and ‘participatory governance’ (Wolff et al., 2019; Palmer et al., 2022) have been used to explore various aspects of the social-ecological interactions in CSESs.

Within the CSES literature, I focus specifically on the participation of actors living in rural areas in land and water governance processes. It is widely recognised, both in the CSES literature (Stringer et al., 2006; Biggs et al., 2012; Fox & Cundill, 2018) and in the broader rural development literature (Chambers, 1983; Mubangizi, 2007; Fischer, 2012) that rural actors need to participate in the governance institutions that influence their lives. Indeed, the United Nations Declaration on the Right to Development recognises active, free and meaningful participation in governance as a human right (UN, 1986; Piovesan, 2013). Participation is seen as a way to balance the macro-level issues that are visible to high-level governance institutions and the micro-level issues (Theron & Ceasar, 2008). It is considered a potentially transformative approach to development (Hickey & Mohan, 2004). My focus on participation is based on its necessity, but does not suggest that it is the most important aspect of governance and it is certainly not considered a panacea to solve all problems, nor is it considered sufficient on its own for ensuring successful governance outcomes (Collins & Ison, 2006; Cornwall, 2008; Chilvers & Kearnes, 2016).

Meaningful participation is particularly challenging in communities that have been systemically excluded, given that power imbalances (Brown, 2011; Cleaver, 2012; Denby et al., 2016) and epistemic injustices (Fricker, 2007; Ralekhetla, 2019) tend to persist even after the most obvious obstacles have been removed. A question that arises from the literature on participatory governance in CSESs is: *How can diverse human actors from multiple heterogeneous levels in a CSES governance system meaningfully participate in achieving desirable linked social and ecological outcomes (such as thriving communities living on healthy landscapes)?*

1.1.2. *Unearthing leverage points in a complex system*

Social-ecological systems are complex adaptive systems that consist of interactions between diverse actors and elements (Folke & Berkes, 1998; Preiser et al., 2018). The governance of complex adaptive systems often raises intractable ‘wicked’ problems that can only be ‘loosened’ rather than ‘solved’ as progress is made incrementally through iteration (Weber & Khademian, 2008). The outcome of engaging constructively with wicked problems is learning that can inform action, which leads to change, often creating new problems and new learning (Checkland, 1993).

Complex adaptive systems are characterised by non-linearity and emergence and, therefore, cannot be managed through conventional command-and-control management strategies that overlook complexity (Holling & Meffe, 1996; Weber & Khademian, 2008). Linear thinking, which prioritises efficiency, may be helpful for many routine tasks, but is less valuable when navigating wicked problems that are embedded in complex systems. Policy and implementation often focus on short-term solutions, ignoring unintended consequences and non-linearity (Meadows, 1999). One reason for this short-sighted approach has been called the ‘fatal attraction of simple solutions to wicked problems’, in which solutions that uphold the status quo are regularly chosen over novel approaches (Roux et al., 2017, p.723). Change resistance (or the tendency to enforce the status quo) creates important stability while simultaneously stifling potentially positive transformations (Harich, 2010).

A central insight of systems thinking is the relationship between structure, behaviour, and function; understanding system structure can give insight into system behaviour (Meadows, 2009). A key impetus behind systems thinking in sustainable development and CSES governance is the need to understand system structure and recurring systemic patterns to enable systemic transformations (Nguyen & Bosch, 2013; Abson et al., 2017). One approach taken by systems thinkers is to search for high leverage points where a small amount of effort could create a significant impact (Meadows, 1999; Ives et al., 2018; Chan et al., 2020). Furthermore, it is worth avoiding low leverage points where a large amount of effort could result in little to no impact. The leverage point approach suggests that the simplest interventions to conceptualise, are often grappling only with symptomatic problems (Abson et al., 2017). For example, leverage could be gained by moving beyond the practical and the political to engage with the personal (O’Brien, 2018) or by reprioritising emotions, beliefs, and identities above external phenomena and social structures (Ives et al., 2019). Unfortunately, as alluded to in the previous paragraph, policymakers generally spend most of their time and energy attempting to change a system by pushing the least effective levers and thus perpetuating persistent problems (Meadows, 1999; Dorninger et al., 2020).

Sustainable transitions are potentially accessible through higher leverage points, and relationships between diverse actors in CSES governance are necessary. The emerging question is: *How can*

participatory governance in CSEs be implemented to access high leverage points and enable desirable systemic transformations?

To contribute to these global academic debates, I have studied a specific CSES – the Tsitsa River Catchment (TsRC) in the Eastern Cape of South Africa. Before introducing the TsRC, it is necessary to give a brief overview of the broader changes and transitions that characterise the South African context in which my research is situated.

1.2. Introduction to the context and challenges

1.2.1. Treading new development pathways in South Africa

South Africa is a constitutional democracy with just less than 60 million people (The World Bank, 2020). South Africa formally achieved independence from British rule in 1920; however, it was the landmark 1994 elections in which people of all races were recognised as citizens with the right to vote that signalled the formal end of apartheid, an extension of the colonial era that preceded it (Thompson, 2000). An underpinning paradigm of the apartheid government was the superiority of white people, which led to the legalisation and institutionalisation of racial discrimination (Khunou, 2009) and a range of grievous human rights violations perpetrated against people who were considered ‘non-white’ (Thompson, 2000). While the 1994 election was hailed as the end of the apartheid era, the incoming government inherited a range of developmental dilemmas that had been entrenched throughout the periods of colonisation and apartheid (Madumo, 2015), such as poverty, corruption, inequality, and inadequate access to essential services (Sewell et al., 2019). Given the continued influence of old governance systems on new ones, I refer to ‘post-1994 South Africa’ (Ntsebeza, 2004; Westaway, 2012) rather than ‘post-apartheid South Africa’, which suggests the achievement of an entirely ‘new South Africa’. Some have even suggested that the efforts to tackle the developmental dilemmas have only succeeded in creating a ‘new apartheid’ in which South Africa is still essentially characterised by legal, economic, and spatial segregation (Mpofu-Walsh, 2021).

In 1996, the Constitution of the Republic of South Africa laid the foundations for new development pathways for the country’s people and environment (Mngoma et al., 2011; Madumo, 2015). The Constitution fundamentally reshaped governance in South Africa. For a start, it asserted that all South Africans are citizens of a single unified country (i.e., it abolished the apartheid homelands, which I will introduce in the next section). Furthermore, the Constitution formalised a comprehensive set of human rights, such as the rights to life and freedom of movement, and some that are more advanced, such as the rights to water and a healthy environment. The Constitution is clear about the need to reduce inequality and the spatial injustices entrenched by the apartheid government; indeed, the

South African government defines itself as a ‘developmental state’ that is committed to development that transforms the economy (National Planning Commission, 2011). However, the transformation process is guided by the principle of the progressive realisation of rights for all South Africans in a way that has kept private property ‘private’ while recognising the requirement for redistribution and historical redress. Additionally, the Constitution created a more decentralised government system by promoting public participation in government processes (Houston, 2001; Maphazi et al., 2013) and by allocating provincial and local governments more autonomy than the centralised government pre-1994 did (Madumo, 2015).

Despite the progressive legal provisions, the realisation of the espoused ideals has faced challenges. Relevant to this study are the processes of decentralising land and water governance and redistributing resources, which have raised a range of novel dilemmas (Koelble et al., 2014). One example has been the largely unsuccessful establishment of water resource management and governance structures (Lotz-Sisitka & Burt, 2006; Rogers & Luton, 2011; Mehta et al., 2014; Munnik, 2020) (Textbox 1).

Textbox 1 | Unequal access to water resources

Across South Africa, and especially in the Eastern Cape, many towns face increasing water stresses associated with failures by formal governance actors and compounded by climate change (Weaver, 2018; Rodina, 2019). While conducting my research, all of the towns I stayed in (Makhanda, Nqanqarhu, and Zithulele) faced severe water shortages and extended periods entirely without water. From experience, wealthier individuals have been able to privatise water supply through boreholes and rainwater tanks, leaving the majority to struggle with the intermittent services provided by the formal institutions. This is one example of how the principle of equity has not yet been realised.

The challenges outlined here should be cause for research and action that acknowledges the limitations of today’s solutions while enabling learning and improved future action. The challenges of managing South Africa’s land and water raise the question: *How can participatory governance contribute to systemic changes that support the objectives of the decentralisation of power and equitable access to resources?*

1.2.2. The Tsitsa River Catchment and the Tsitsa Project

The Tsitsa River flows out of the southern Drakensberg Mountain range, through villages and small agricultural towns, around fields of maize, pine plantations and rangelands, under crumbling bridges and over majestic waterfalls, and ultimately joining the greater Mzimvubu River, which meets the Indian Ocean at Port St Johns on the Wild Coast, Eastern Cape, South Africa.

The Tsitsa River holds valuable water resources for the sustainable development of the Eastern Cape (Nel et al., 2013; Mkhonza, 2019), and is one of the last free-flowing rivers with several potential but undeveloped large dam sites (Le Roux, 2018). Unfortunately, extensive land degradation in the TsRC is detrimental to the quality of the water in the river, and threatens the lifespan of any future dam development (DWS, 2014; Van Tol et al., 2016). The mixed social and ecological drivers of degradation in the TsRC led to the Tsitsa Project's initiation with support from the Department of Water and Sanitation (DWS) and the Department of Forestry, Fisheries and the Environment (DFFE). The Tsitsa Project paired ecological restoration goals with social interventions in order to have a more sustained impact in the area (Fabricius et al., 2016; Sigwela et al., 2017; Bester et al., 2019). The Tsitsa Project, therefore, seeks to 'support sustainable livelihoods for local people through integrated landscape management that strives for resilient social-ecological systems and which fosters equity in access to ecosystem services' (Powell et al., 2018, p.84).

The TsRC falls within the former Transkei homeland (Powell et al., 2018). Homelands were identified as separate from South Africa by the South Africa Act of 1909, and were then assigned to the various cultural groups of black Africans under the Native Land Act of 1913. Despite substantial investment, the efforts to develop the former homelands post-1994 have not significantly improved living standards (Jacobs & Hart, 2014). They remain the worst-performing areas regarding socio-economic indicators (SALGA et al., 2015). The ongoing rural poverty can no longer be blamed solely on apartheid, as current practices have not successfully reduced the inequality between the former homelands and the rest of South Africa (Westaway, 2012; Kwenda et al., 2020).

Given the valuable water resources, extensive land degradation, and severe poverty, the TsRC should be developed in line with the progressive legislation introduced in the previous section. In the next section, I reflexively explore my positionality within the context and my motivations. (See Appendix A4 for a set of reflexive essays.)

Textbox 2 | Recognising the Truth and Reconciliation Commission

I have chosen the abbreviation TsRC, as opposed to TRC, in order to avoid allusions to the Truth and Reconciliation Commission, which took place in South Africa after 1994. The commission was designed to deal with gross human rights violations that were committed between 1960 and 1994 through a process of restorative justice. The TRC aimed to heal some of the wounds created during apartheid and to 'grant amnesties to individuals, on condition that they revealed the truth and could prove that their actions were politically motivated' (Thompson, 2000, p.275). The TRC played a key role in the negotiated settlement that helped South Africa to avoid all-out civil war in the transition to a multiracial democracy (Battle, 2000).

1.3. Researcher positionality and motivations

I am a young, white, English-speaking male South African – an identity that has enabled me to experience substantial freedoms that have been denied to many of my compatriots. My privilege is founded on the exploits of my colonial ancestors, many of which are rightly considered atrocious; so I preface my positionality with the acknowledgment of wrong done. However, my capability to live the life I want to live in post-1994 South Africa has been made possible by the generosity and vision of the great South African leaders who rose above pain and rage to proclaim that ‘South Africa belongs to all who live in it’ (RSA, 1996, p.1). I am grateful to those leaders and to the millions of South Africans who continue to live alongside one another despite persistent inequality. Accepting the invitation to ‘belong’ in South Africa comes with a burden of responsibility.

I was born in a small farming town in the Eastern Cape of South Africa, and spent the first four years of my life in this rural environment. I took my connection to nature for granted until I later lived in cities, where I met people who did not feel calm in the presence of a smooth-flowing river. When the time arrived for me to decide on a career, I thought that civil engineering would adequately meet my only selection criterion at the time: to work mainly outside. I was wrong, and after four years of studying, I decided not to apply for work at one of the prominent engineering consulting firms that most of my classmates were destined to join. I was fortunate not to be weighed down by student debt, as many of my classmates were.

I graduated with a second career selection criterion: to work with people. A well-timed nudge from a respected friend, along with my dual desires (1) to learn to teach and (2) to improve my isiXhosa language skills, led me to an education non-profit organisation called Axiom Education in a village called Zithulele in the former Transkei homeland. Conducting meaningful work in a skilled team of educators led by inspiring leaders, I had the good fortune to experience a level of fulfilment in daily work that I believe to be relatively rare.

My time in Zithulele raised fundamentally disruptive questions about what constitutes a ‘good’ life and what constitutes development. Despite the poverty and its nefarious companions (e.g., violence, boredom, and addiction), I believe that there are many characteristics of the lifestyle in and around Zithulele that make it desirable and resilient: an unhurried existence lived in close connection with nature, a stabilising social fabric, and an intense sense of place and belonging, to name a few. None of these characteristics is purely positive; one might describe the same features as slow, vulnerable, stifling, and tedious. However, to experience a lifestyle so fundamentally different from the one I had experienced in ‘developed’ cities and countries suggested that the development process might disregard essential ingredients of a meaningful life. I owe the opportunity to live and work in Zithulele to the communities in and around the village.

The former Transkei homeland is becoming more connected to the outside world, and is changing as a result. These interactions seem to bring about many negative impacts, while the positive effects seem to accumulate slowly. Examples of negative impacts are the degradation of people's diets as they have become reliant on cheap carbohydrates, the increasing pollution and degradation of local resources, the proliferation of drug abuse among adolescents, and the corrosion of traditional ways of life and the values that underpin them. Positive development benefits, such as improved access to improved health care, water and electricity, and quality education, are slow or unreliable and, in some places, non-existent. It is not the purpose of this thesis to defend my claims about the corrosion of rural landscapes and livelihoods under pressure from external actors – although I will address the issue concerning land and water governance. My experience of living in the former Transkei drove me to explore actively how, as an outsider, I could contribute to the alleviation of poverty without contributing to the emergence of the negative aspects of 'development' that seem to dominate.

What right do I have to intervene in the context my ancestors contributed to fracturing and destabilising? I have two primary responses to this appropriate question. First, development projects in the former homelands are often overtly led or covertly framed by people who have not experienced the desirable and resilient characteristics of the rural lifestyle. Second, while I hope that skilled professionals who grew up in the former homelands will return to support development, this potential feedback loop from the 'educating and professionalising' process seems relatively weak. I would argue that my qualifications, multilevel social and professional network, and appreciation for the former Transkei place me in a good position to contribute to the challenges at hand.

Following an acceptance of my positionality, I ask, *how could I promote a desirable form of development without imposing systems that would result in adverse outcomes?* The answer, for me, lies in participation. Given the powerful historical patterns of disempowerment, *how could the people living in the former Transkei have more ownership over the development processes that influence their lives? How do internal and external actors interact in ways that bring knowledge together across boundaries?* These questions led me to the Tsitsa Project, and are those that I explore in this thesis, revealing the complexities of meaningful participatory governance in the former homelands and, I trust, revealing lessons that might inform broader trends in South Africa and comparative rural landscapes.

1.4. Thesis aim and objectives

The Central Aim of my research is *to identify leverage points to support the emergence of meaningful participatory land and water governance in the TsRC, Eastern Cape, South Africa*. I achieved this

Central Aim through two research objectives, each consisting of a set of research questions (Table 1.1).

Table 1.1. Central Aim, research objectives, and research questions.

TsRC – Tsitsa River Catchment, and L&WGov system – land and water governance system.

Central Aim	Research objectives	Research questions
Identify leverage points to support the emergence of meaningful participatory governance in the TsRC L&WGov system.	RO1: Map the complex social-ecological system of interest, namely the social and ecological elements and their interactions that constitute the TsRC L&WGov system.	RQ1a. What institutions, at multiple levels, influence the TsRC L&WGov system?
		RQ1b. Which social and ecological elements are important in participatory governance within the TsRC L&WGov system?
		RQ1c. How do the social and ecological governance elements connect?
		RQ1d. At what governance level should the systemic analysis focus on identifying leverage points to enable local-level participatory land and water governance?
	RO2: Conduct a systemic analysis of participatory governance within the TsRC L&WGov system.	RQ2a. What variables influence meaningful participatory governance in the TsRC L&WGov system?
		RQ2b. What patterns emerge from the interactions between participatory governance variables in the TsRC L&WGov system?
		RQ2c. Why do the dominant patterns of interaction between participatory governance variables in the TsRC L&WGov system recur?

By achieving the Central Aim and the objectives, I seek to make practical, empirical, theoretical, and methodological contributions at multiple levels. I seek to make the most substantial practical and theoretical contributions to local efforts to improve land and water governance in the TsRC – the focus of my research. Localised efforts to improve land and water governance in the TsRC form part of the broader drive to improve land and water governance in the former Transkei homeland, in the rest of the former homelands, and in South Africa more broadly. Land and water governance in South Africa is influenced by the international CSES governance literature. My research particularly seeks to contribute to the literature about the meaningful participation of marginalised rural communities in land and water governance (Section 3.3 & 6.5.4), and the complex interactions between traditional and democratic governance systems (Section 2.1.2 & 3.2.2). My research contributions are detailed in Chapter Eight (Table 8.1).

It must be noted that, despite the CSES framing, the focus of this thesis is on participation in governance and, therefore, on the social elements within the system of interest. There is some consideration of ecological elements when mapping the village level governance institutions, but, in general, they are considered peripheral.

1.5. Research approach

I embedded my methods within an action research approach (Checkland & Holwell, 1998; Holwell, 2004; Reason & Bradbury, 2008), which I applied in the context of a single place-based case study (Cockburn et al., 2018a; Paddock et al., 2021). My research approach was informed by a methodology that was guided by transdisciplinarity (Roux et al., 2017; Lang et al., 2017; Liehr et al., 2017; Wolff et al., 2019) and systems thinking (Ison, 2008; Meadows, 2009), which was, in turn, informed by an ontology founded on the critical complexity perspective (Cilliers, 2000; Audouin et al., 2013).

I derived four guiding principles from my methodology, and used them to inform my research design: (1) personally engage with the problem context, (2) work collaboratively with societal actors, (3) maintain a critical and reflexive orientation, and (4) adapt to changing circumstances. My methodology and principles bring to the fore an emerging form of research that attempts to overcome many of the shortcomings of conventional scientific approaches (Van Kerkhoff, 2014; Cockburn et al., 2018b; Tsitsa Project et al., 2021f). However, I do not wholly reject the conventional approach; instead, I seek to address the limitations of one methodology while engaging with another through generative tensions (Cockburn et al., 2018b).

I spent extended time living and working in the TsRC as part of the Tsitsa Project (Section 1.2.2). Extensive fieldwork allowed for the emergence of a grounded data set that I analysed through an iterative and adaptive analytical process that combined inductive and deductive modes of reasoning (Layder, 1998; Blaikie & Priest, 2017; Blaikie, 2018).

My research approach required that I become an active participant in the TsRC L&WGov system; therefore, I chose to write in the first person with an active voice to highlight my influence on the findings and conclusions.

1.6. Thesis structure

This thesis consists of eight chapters (Figure 1.1). After this general introduction, I describe the research context (Chapter Two) and elucidate the conceptual realms (Chapter Three) that framed my research's design and implementation. Thereafter, I outline the methodological framing and approach

(Chapter Four) used to achieve the aim and objectives. I then present my findings in two parts: first, mapping interactions between governance elements in the TsRC L&WGov system per Objective One (Chapter Five); and second, systemically analysing participation in the mapped system in line with Objective Two (Chapter Six). I then synthesise the findings using the leverage point framework (Chapter Seven). The general discussion and conclusion (Chapter Eight) includes reflections, contributions, and recommendations for future work and research in the TsRC and similar CSEs.

Chapters Five, Six, and Seven are embedded within the thesis and draw on the preceding chapters. Each has an introduction, methods, findings, discussion, and conclusion. I have applied the concept of minimal necessary repetition in the introductions and methods in these three chapters.

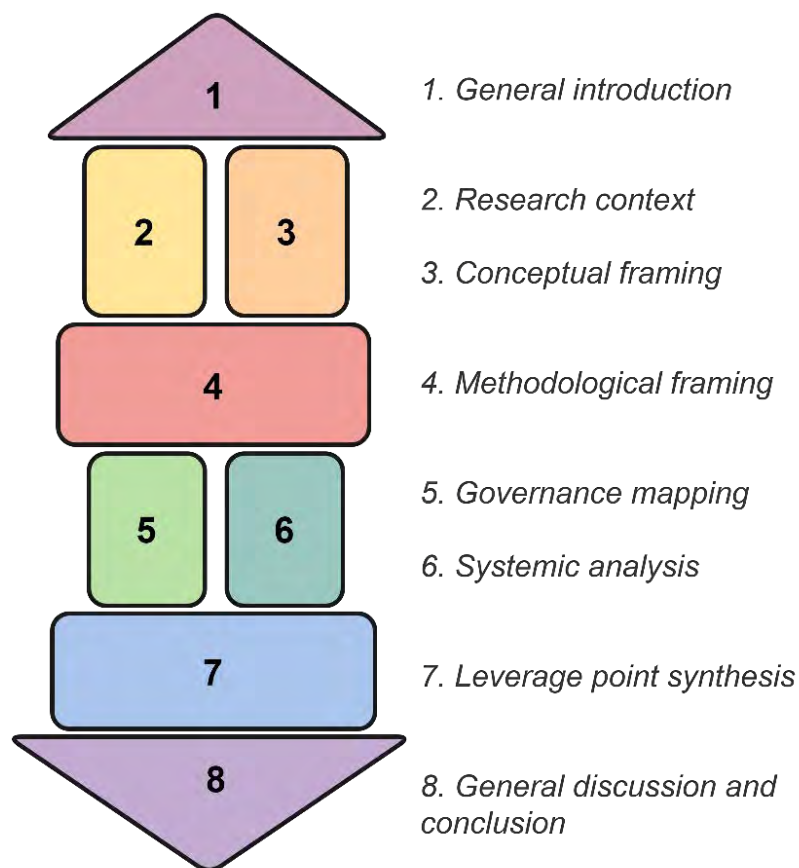


Figure 1.1. Thesis structure. Representation inspired by Massy (2013) as cited in Clifford-Holmes (2015).

CHAPTER TWO | Research context

In this chapter I give an overview of the fundamental biophysical and social characteristics of the Tsitsa River Catchment (TsRC) – a catchment with significant social-ecological challenges (Section 2.1). I then outline the Tsitsa Project (Section 2.2).

2.1. The Tsitsa River Catchment

The TsRC covers about 2000 km², and forms part of the upper Mzimvubu River Catchment in the Eastern Cape Province of South Africa. The Mzimvubu River flows into the Indian Ocean (Figure 2.1). The TsRC is a rural area that includes one agricultural town, Nqanqarhu (formerly Maclear), with a population in 2015 of 10 521 (Statistics South Africa, 2015). Nqanqarhu is 100km from the nearest city, Mthatha, and 350km from the provincial capital, Bisho.

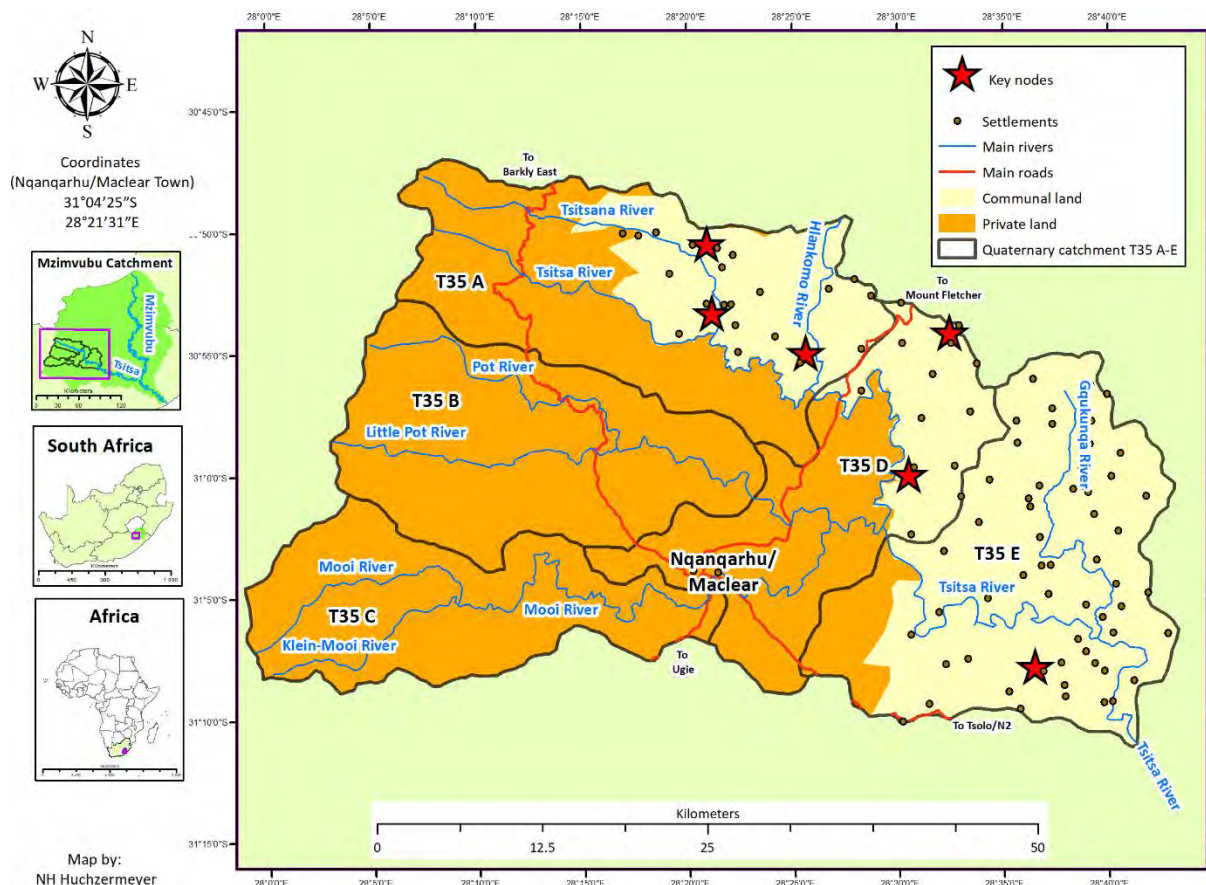


Figure 2.1. Map of the Tsitsa River Catchment.

The map differentiates between 'private land' and land 'under customary law', which traditional leaders administer. 'Key nodes' refers to the Tsitsa Project's research nodes.

2.1.1. *Biophysical characteristics*

The Tsitsa River, which contains valuable water resources, joins the Mzimvubu River – the largest free-flowing river in South Africa, because there are currently no large dams capturing the river water (Department of Water and Sanitation (DWS), 2014). The TsRC is part of a strategic water source area (SWSA), which are ‘areas that supply a disproportionately large amount of the country’s mean annual runoff relative to their surface area while contributing substantially to groundwater recharge’ (Selebalo et al., 2021, p.2). The area receives a mean annual rainfall of 824mm (Rowntree et al., 2019), which is well above South Africa’s average of 450mm (King & Pienaar, 2011). Protecting SWSAs has been identified as an essential way to ensure the long-term water security of South Africa (Nel et al., 2013). The potential for harnessing water resources to support development in the area is substantial.

The TsRC contains substantial land-based resources that currently face multiple threats. The TsRC is mostly hilly grasslands, with riparian and other areas increasingly threatened by invasive alien plants (IAPs) (Figure 2.2) (Huchzermeyer et al., 2018). Furthermore, the soils in the TsRC include layers of highly erodible mudstones, generating large volumes of sediment and creating extensive erosion gullies (Huchzermeyer et al., 2019; Van Tol et al., 2016). These factors have contributed to the TsRC being recognised as a stressed catchment (WRC, 2012).

The cause of the decline in rangeland quality and ecosystem health is linked to a range of ecological, social, and economic problems, and a lack of sufficient rangeland management institutions is a key driver of degradation (Itzkin et al., 2021). Management of livestock (primarily cattle, sheep, and goats) has been vigorously debated in South Africa since at least the beginning of the twentieth century (Beinart, 1984; Rowntree, 2014). The history of external interventions in cattle management in the communal tenure areas has left deep-rooted physical, social, and economic effects that are still evident today (Ainslie et al., 2002; De Wet, 1989). As Ngcukaitobi (2021, p.43) notes, ‘the story of land dispossession will never be complete without an understanding of the loss of indigenous people’s cattle. Cattle, more than land, were a visible sign of wealth’. One example of a past policy that has contributed to land degradation, unstable governance, and disempowerment is the ‘betterment planning’ that forced people to live in villages rather than spread across the landscape (De Wet, 1989). In addition to the dependence on government service provision that the betterment planning produced, the clustering of houses means that, when the sun goes down, all livestock are herded towards the village, creating trampled paths and areas of overgrazed grassland surrounding the villages (Gusha, 2019).

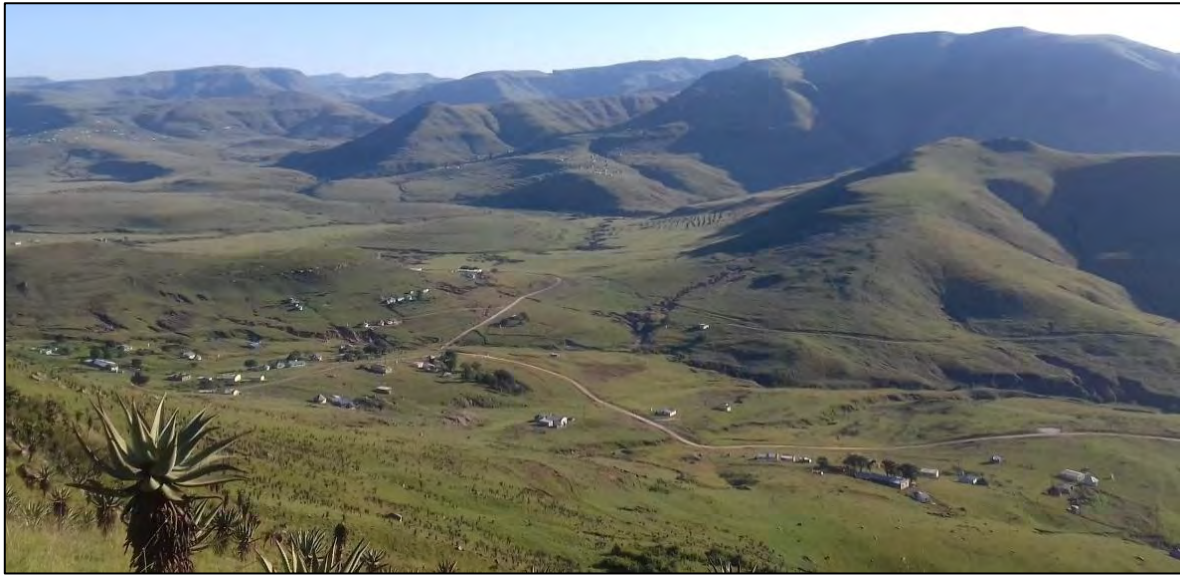


Figure 2.2. A photograph of the terrain in the Tsitsa River Catchment. Grasslands dominate the landscape. Large erosion gullies are in the riparian zone. (Source: Anthony Fry).

2.1.2. Social characteristics of the study area

My research focuses on an area in the easternmost part of the TsRC (Figure 2.1), which was part of the former Transkei homeland during apartheid (Bäse et al., 2007; Westaway, 2012). The Transkei was an area allocated for the containment of amaXhosa, descendants of Nguni language speakers who moved from East Africa into Southern African around 1000 CE (Huffman, 2004). The amaXhosa are a broad cultural group with many sub-groups and cultures that speak different dialects of the common language, isiXhosa, and have differing customary laws and cultural practices. The population density in the study area is approximately 78 people per square kilometre (Sigwela et al., 2017) and consists predominantly of amaXhosa. However, given its proximity to the national border with Lesotho and to the provincial border with KwaZulu-Natal, Basotho and AmaZulu people also live in the area. The AmaZulu also form part of the Nguni-speaking people, while the Basotho fall within the broader Bantu categorisation (Butt, 2006).

The homelands were separate from the Republic of South Africa under the South Africa Act of 1909, and were then allocated to black people under the Native Land Act of 1913. Despite black people making up the vast majority of South Africa's population then, these homelands made up just 13% of the South African landmass (Thompson, 2000), with land in the rest of the Republic reserved exclusively for ownership by white people. The western part of the TsRC falls within this area, and is characterised by private land ownership or freehold tenure. Since 1994, black people have been able to own land anywhere in TsRC (and in South Africa more broadly); however, in the TsRC, most black people still live either in former homelands or in townships and informal settlements attached to

urban centres. In the TsRC, most white people live in the suburbs of Nqanqarhu or on private commercial farms (Hodgson, 2017).

A crucial characteristic of the TsRC in post-1994 South Africa is the existence of both democratic and traditional governance systems, which overlap and interact – a legacy of apartheid and the former homelands. The former Transkei has been incorporated into South Africa, and the land is now state-owned but administered by traditional leaders – senior traditional leaders, headmen, and sub-headmen (Antonio & Griffith-Charles, 2019). The governance outcomes of the overlapping systems vary substantially; in some cases, there seem to be positive outcomes, while others result in conflicts and corruption (Ainslie, 1999; Ntsebeza, 2004; Bennett et al., 2013; Jacobs & Hart, 2014). My research will explore these tensions in land and water governance.

Since 1994, South Africa has been considered a one-party dominant state in which the African National Congress (ANC) has held an outright majority. This dynamic has shifted in some parts of the country, particularly in the 2021 municipal elections in which the ANC only received 45.59% of the votes. However, the Eastern Cape and the municipalities relevant to this research are still overwhelming governed by the ANC. For this reason the analysis of power struggles between political parties is considered beyond the scope of this analysis.

During apartheid, the Transkei homeland was given false autonomy under the guise of ‘separate development’ for racial groups (Thompson, 2000; Kwenda et al., 2020). This false autonomy left the leaders of the former Transkei with few resources and, therefore, wholly dependent on the apartheid government. This strategy resulted in economic stagnation, and poor services such as water infrastructure, roads, and electricity, and poor social provisions such as education and health care. The area was simultaneously being mined of its able-bodied individuals for cheap labour in South Africa. Despite substantial pro-poor investment since the end of apartheid in 1994, the most vulnerable areas of South Africa still substantially overlap with the abolished apartheid homelands (COGTA, 2009; Jacobs & Hart, 2014; Kwenda et al., 2020). Furthermore, the TsRC is in the Eastern Cape – the poorest of South Africa’s nine provinces in respect of the number of people living in poverty and its percentage of the total population (Ruiters, 2011; HSRC, 2004), as well as according to the South African multidimensional poverty index, which considers a range of issues related to health, education, economic activity, and living standards (Statistics South Africa, 2014).

The area’s unemployment problem is well-accepted in the literature about the TsRC (Hodgson & Fox, 2017; Van Tol et al., 2018; Itzkin et al., 2021), although the specific unemployment figures are difficult to calculate because so much work and trade happens informally. The official statistics state that 11% of the population is formally employed (ELM, 2019).

Communities in the TsRC rely on several livelihoods, such as home gardens, livestock production, harvesting of natural products, and remittances and social grants (Sigwela et al., 2017; Cockburn et al., 2018b). Residents in the TsRC still rely directly on their surrounding ecosystems for part of their livelihoods, such as rivers and springs for water and fuel wood for daily heating and cooking requirements (Mtati, 2014; Sigwela et al., 2017; Van Tol et al., 2018). This reliance is not necessarily negative; but these resources will likely become less reliable because of social stresses and environmental degradation in the TsRC (Sigwela et al., 2017). The low employment numbers and the massive reliance on the social welfare system are exacerbated by the high percentage of working-age people who have migrated to urban areas. Beyond the social grant system, the region relies on government interventions, which make up 41% of the local economic activity (Mtati, 2014; Sigwela et al., 2017; Van Tol et al., 2018).

While many challenges face the communities living in the TsRC, the former Transkei and the former homelands more generally 'are often seen as safe places, with lower costs, and a different and more caring social system' (Van Donk et al., 2022, p.132). The existence of a 'caring social system' is connected to the prominence of the concept of *ubuntu* in isiXhosa culture (and the Nguni-speaking people more broadly) sometimes translated as 'humanness' (Le Grange, 2012). The concept of *ubuntu* originated from the expression *umuntu ngumuntu ngabantu* (Battle, 2000), which is commonly (although roughly) translated as 'a person is a person through other people' (Metz, 2011). Metz (2011, p.540) argues that a more nuanced translation is 'one becomes a moral person insofar as one honours communal relationships'. Either way, the value placed on *ubuntu* is distinct from Western morality, which is founded on the sanctity of the individual (Metz, 2011; Nhlapo, 2017). In Section 1.3, I reflect on some of these positive aspects in relation to my own positionality and motivations.

2.2. The Tsitsa Project

2.2.1. *Tsitsa Project lifecycle and collaborators*

The Tsitsa Project was a sustainable landscape management project that ran for roughly seven years. It was initiated in 2014 as a network of actors from academia and government (Figure 2.3). It was primarily supported and funded by the South African government's Department of Forestry, Fisheries and Environment (DFFE), particularly the Natural Resource Management (NRM) chief directorate. Rhodes University was the core research hub, and provided a coordinating role for research that drew on academic expertise from several South African universities. The original abbreviation, 'NLEIP', stood for Ntabelanga-Laleni Ecological Infrastructure Project in reference to the two proposed dams that were part of the impetus behind the Tsitsa Project's inception. The proposed dams formed part of the Mzimvubu Water Project (MWP), a dam construction development proposed by the

Department of Water and Sanitation (DWS) to alleviate poverty in the area through job creation, large-scale irrigation, water supply, and hydroelectric power (DWS, 2014). There were (and still are) various concerns about the MWP, including its financial feasibility (Van Tol et al., 2016; Powell et al., 2018; Huchzermeyer et al., 2019a) and the extensive land degradation that would make farming with large-scale irrigation unfeasible and generate large volumes of sediment that would potentially fill the dam in 30 to 40 years (Wolff, 2018). Another problem with the dam construction is that it would be unlikely to improve the water security of the TsRC residents, as the water harnessed in the dams would supply communities downstream. There would be some job creation in the area, but much of it would be for skilled workers from outside the area. Furthermore, the proposed dams would submerge large swathes of land currently used by communities for crops and grazing (Wolff, 2018). The Tsitsa Project was initiated as an attempt to address these challenges.

2014	Project initiated as Ntabelanga-Laleni Ecological Infrastructure Project (NLIEP).
2015	Early work mapping the catchment, engaging stakeholders and conducting research, CoPs working in silos.
2016	On-going research (including co-developed catchment vision) accompanied by increasingly collaborative and integrated planning between researchers and managers.
2017	
2018	Name change to Tsitsa Project, some CoPs working together.
2019	Increased implementation (e.g., Vetiver nurseries, livestock associations, and capacity development) with LIMA coming on board, hiring Catchment Coordinator and Community Liaison Officers, all CoPs working together.
2020	Developing integrated nodal plans, policy briefs and the Tsitsa Approach document for DFFE.
2021	Main Tsitsa Project funding comes to an end with on-going, but dissociated, implementation and research continuing in catchment.
2022	

Figure 2.3. Summarised Tsitsa Project timeline.

Initiated in 2014, the Tsitsa Project began with a focus on research, which progressively moved into implementation. CoP: Research communities of practice; DFFE: Department of Forestry, Fisheries and the Environment. LIMA refers to the LIMA Rural Development Foundation.

To achieve its ambitious goals, the Tsitsa Project brought together local political leaders, government departments and decision-makers, landscape restoration implementing agents, catchment residents, and academic researchers from the environmental, water, and earth sciences, agriculture, and education. The necessary involvement of the various actors created a ‘bumpy terrain of multiple

dialectic tensions’ that the project had to navigate carefully (Cockburn et al., 2018b). Unfortunately, attempts to bring DWS and DFFE together in the TsRC substantively failed. When I joined the project in 2018, there was a concerted effort to distance the restoration and livelihoods work conducted by DFFE from the MWP, DWS, and associated institutions (Section 5.5.2 & 5.7.1). The Tsitsa Project researchers did build working relationships with DFFE national and provincial representatives, and there was some success in crossing the research–practice barrier (Cockburn et al., 2018b; Weaver et al., 2021). A principal factor for the buy-in of local and regional DFFE officials was the endorsement of the Tsitsa Project by DFFE at the national level. The Tsitsa Project was the national test case for restoration work conducted using the integrated CSES framing. The positioning of the Tsitsa Project as a pilot project took it out of the realm of ‘day-to-day’ activities and supported the emergence of new ways of working together (Cockburn et al., 2018b; Weaver et al., 2021).

The research partners recognised the need to divide the research initiatives among six communities of practice (CoPs) (Wenger, 2000). The CoPs had the following research foci: sediment and restoration; fire and grazing; green livelihoods and climate change; governance; knowledge and learning; and systems praxis. (More detail of each CoP is provided in Appendix A3.) My research was housed in the Governance CoP (GovCoP), which aimed to promote more participatory forms of governance in the TsRC in order to increase the long-term benefits of the Tsitsa Project by embedding active and informed participatory governance agents in the TsRC. Although embedded in the GovCoP, I had extensive interactions with all of the project’s CoPs, particularly the Systems Praxis CoP, which supported systems praxis across the broad spectrum of work conducted by the Tsitsa Project.

The Tsitsa Project also employed catchment-based residents to assist with research and implementation work in the field (Appendix A3). During the research phase, citizen technicians collected river samples for sediment and erosion research as part of the longest measured flood-focused sediment sampling programme on the African continent, run by the Sediment and Restoration CoP (Bannatyne et al., 2017). More people were employed during the implementation phase, which began in earnest in 2018: citizen monitors who monitored the progress of local plant nurseries, supported by the Green Livelihoods CoP; community liaison officers (CLOs), supported by the GovCoP, who assisted with local governance mobilisation and communication; and eco-rangers, supported by the Fire and Grazing CoP, who worked with livestock owners to protect and promote grassland rehabilitation. The Tsitsa Project’s catchment-based employees were managed in collaboration with the LIMA Rural Development Foundation (www.lima.org.za), an established organisation involved in rural development implementation, which came on board during the implementation phase. LIMA worked alongside the Tsitsa Project helping with the facilitation of processes and the maintenance of relationships in the TsRC. My research was supported by the senior social facilitator, an isiXhosa

speaking male who grew up nearby in the former Transkei and was able to provide linguistic and cultural translation for me during my fieldwork.

Several difficulties arose, ultimately leading to the Tsitsa Project's disintegration earlier than had been anticipated. The first was the onset of the coronavirus disease of 2019 (COVID-19), which impacted on-the-ground participatory group activities and put pressure on the already strained government budgets. Funding reductions started properly in mid-2020, as all non-health-related government-funded projects were required to cut budgets to fund COVID-19 pandemic response measures. Second, high-level political changes in DFFE came with a shift in procurement procedures, which led to backlogs (explored in Section 6.4.7) and the removal of crucial supporting actors who were driving the investment in the Tsitsa Project. In the final period of the Tsitsa Project, the team put together a range of findings and recommendations, including a comprehensive 'Tsitsa Approach' document and a set of policy and practice briefs (Huchzermeyer et al., 2019b). By the end of 2020, the primary project funding had ended, and the core project management team at Rhodes University had been dissolved. However, some associated projects with diverse funding streams are ongoing in the TsRC.

2.2.2. Tsitsa Project principles

The Tsitsa Project's guiding principles were distilled through an analysis of the Tsitsa Project's work and a series of collaborative reflection sessions with project participants (Cockburn et al., 2018b) (Table 2.1).

Table 2.1. The Tsitsa Project's guiding principles as presented by Cockburn et al. (2018b). The principles are sorted into three layers: 'framing', 'what', and 'how'.

Tsitsa Project's guiding principles	Layers
Principle 1: Embed complex social-ecological systems and resilience thinking in praxis.	This principle creates a guiding framing that includes ontological and epistemological implications for my research.
Principle 2: Encourage polycentric and participatory governance approaches.	These two principles describe what the Tsitsa Project is doing, and include theoretical and methodological implications for my research.
Principle 3: Generate transdisciplinary, action-oriented, and engaged research.	
Principle 4: Work in collaborative, reflexive, adaptive, and learning-oriented ways.	These two principles describe how the Tsitsa Project is doing this work, and focus on methodological and ethical considerations for my research.
Principle 5: Create enabling conditions for equitable participation.	

2.2.3. Tsitsa Project footprint and key research nodes

The bio-physical monitoring was conducted across the eastern and western parts of the TsRC. However, the socially oriented work and research (including livelihoods and governance) focused on the eastern and north-eastern edges of the catchment, which form part of the former Transkei homeland (Figure 2.4). Most land degradation occurs in this portion of the catchment (Huchzermeyer et al., 2019b). My research focuses on the catchment's north-eastern side.

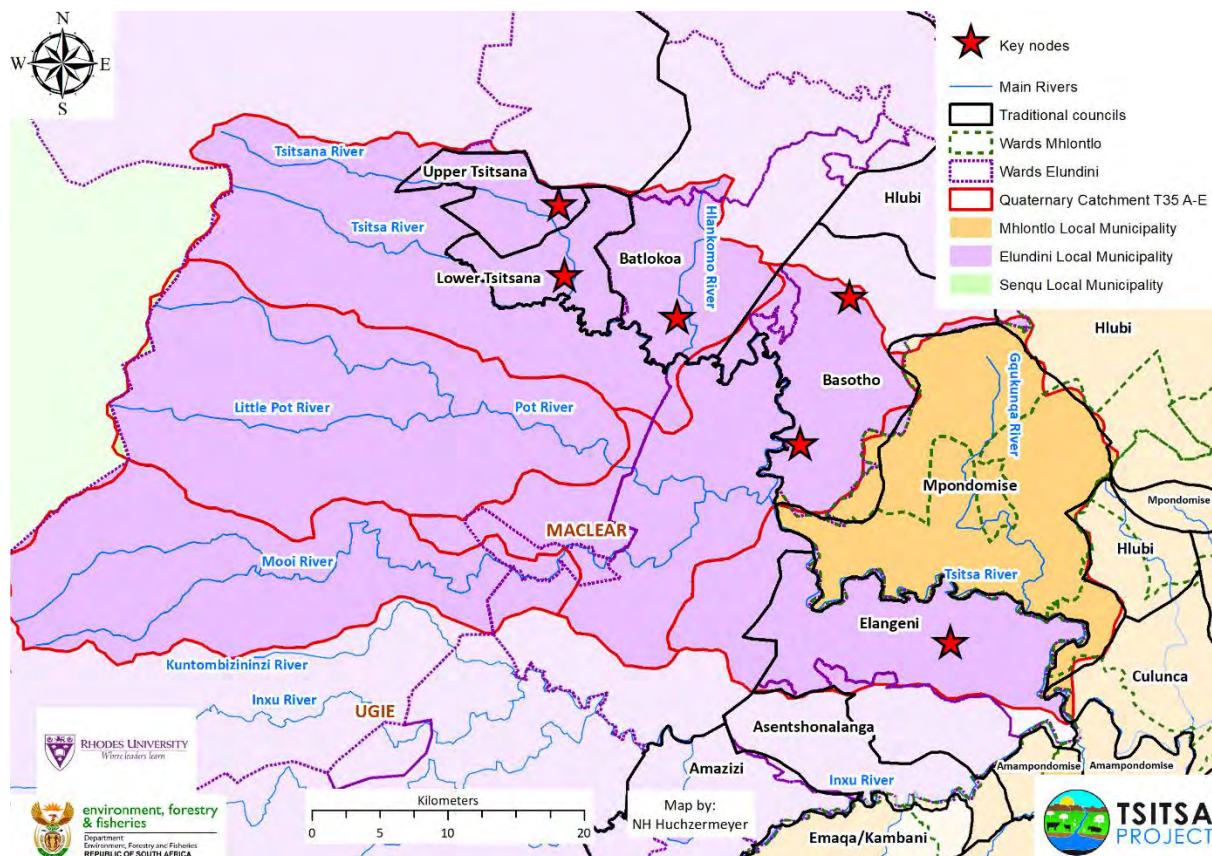


Figure 2.4. Detailed map of the Tsitsa River Catchment showing natural and institutional boundaries. 'Key nodes' refers to the Tsitsa Project's research nodes. The purple background and lines indicate Elundini Local Municipality, while the orange and green lines indicate Mhlontlo Local Municipality. The red lines show the quaternary catchments T35A-E that fall within the TsRC; this area is brighter than the rest of the map. The black lines on the eastern side delineate traditional councils in the regions under customary law. Map created with assistance from N.H. Huchzermeyer.

The Tsitsa Project's interventions have focused on six research nodes, as shown by the red stars in Figure 2.4, all of which fall within Elundini Local Municipality, part of Joe Gqabi District Municipality (in purple). High levels of degradation guided the Tsitsa Project's initial node selection, followed by strategic expansion to cover the catchment area adequately. The research nodes fall within four traditional councils: Tsitsana (upper and lower), Batlokoa, Basotho, and Elangeni. The north-easterly corner of the TsRC falls within the Mhlontlo Municipality (in orange), which overlaps with the Mpondomise traditional council area.

2.3. Conclusion

The governance of river catchments raises myriad challenges (Palmer et al., 2017; Cockburn et al., 2018b; Wolff et al., 2019). Extensive ecological degradation in the TsRC (Section 2.1.1) is a ‘wicked problem’ (Weber & Khademian, 2008; Defries & Nagendra, 2017) which involves intertwined social, economic, and historical factors (Cockburn et al., 2018b; Itzkin et al., 2021) (Section 2.1.2). In response to these challenges, the normative and interventionist orientation of the Tsitsa Project was in line with my motivations (Section 1.3). Furthermore, the Tsitsa Project’s well-articulated principles and methodology informed my conceptual foundations (Chapter Three) and methodology (Chapter Four).

CHAPTER THREE | Conceptual overview

In this chapter I introduce the conceptual components of the entire thesis (Figure 3.1). In this thesis, I seek:

- To enable more *just social-ecological outcomes* (Section 3.6)
 - by contributing towards *systemic transformations* (Section 3.5) and
 - by identifying *leverage points* (Section 3.4)
- To support *meaningful participatory governance* (Section 3.3)
 - within an *adaptive governance system* (Section 3.2)
 - embedded in a *complex social-ecological system* (Section 3.1).

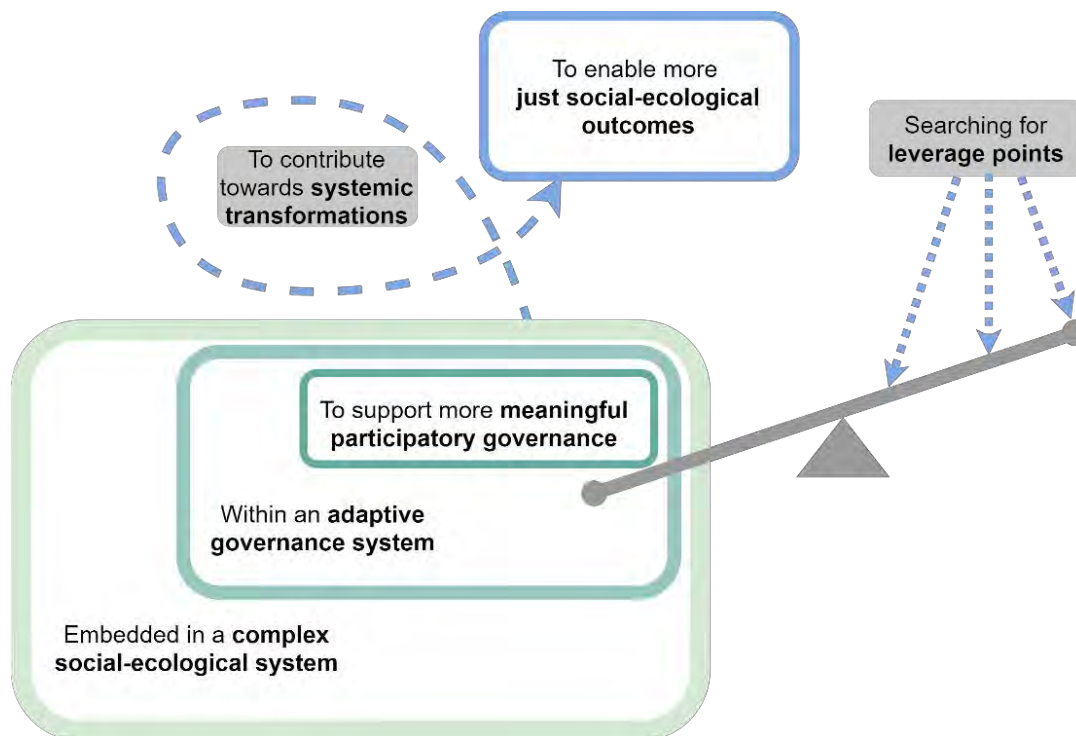


Figure 3.1. Conceptual overview as outlined in Chapter Three.

3.1. Complex social-ecological systems

Complex social-ecological systems comprise interlinked social and ecological subsystems that display complex adaptive systems' characteristics (Folke, 2006). I now introduce the CSES framing and the emergence of the emphasis on social-ecological justice in CSESs.

3.1.1. Social-ecological systems

The CSES framing emphasises an integrated understanding of social and ecological systems, acknowledging that boundaries conventionally drawn between natural and human systems are often

arbitrary and false (Folke & Berkes, 1998). The emphasis on ‘social-ecological’ (rather than ‘socio-ecological’) highlights the equal importance of social and ecological aspects. The interactions between the social and ecological systems in the TsRC exemplify the conceptualisation of a CSES where nature is not merely the setting for social interactions, and human actions are not external drivers generating change in ecological systems (Levin et al., 2013; Folke et al., 2016). Therefore, social and ecological systems are ‘linked by mutual feedbacks, and are interdependent and co-evolutionary’ (Berkes, 2017, p.1). The social-ecological systems theory emerged in the mid-1990s through the work of interdisciplinary scholars working in ecological economics and common-pool resource systems (Ostrom, 1990; Folke & Berkes, 1998)

3.1.2. *Complex system characteristics*

The general theory of complexity highlights the uncertainty about and limitations of human understanding, which I detail as part of the methodology (Section 4.1.1). The study of complexity has revealed several common characteristics of complex systems (Cilliers, 2000; Preiser, 2019). For example, complex systems are constituted through relationships between system elements, are radically open to external influence, and are thus context-dependent. Furthermore, complex systems have *adaptive capacities that allow for self-organisation* and for the development of intricate and functional structures without external intervention or centralised control. Additionally, complex systems consist of heterogeneous components, connected through diverse relationships, that manifest emergent properties across multiple scales (the dimensions used to study any phenomenon) and levels (the designated units of analysis at different positions on a scale) (Gibson et al., 2000; Cash et al., 2006). Considering these characteristics does not provide solutions and blueprints, but is vital for analysing and managing CSEs in pursuing social-ecological justice (Section 3.6).

3.2. Governance in complex social-ecological systems

3.2.1. *Introducing governance*

‘Governance’ refers to ‘the whole of public and private interactions to solve societal problems and create societal opportunities. It includes formulating and applying principles guiding those interactions and caring for institutions that enable them’ (Bavinck et al., 2005, p.29). Governance, therefore, goes beyond formal government and management (Saglie, 2006). ‘Environmental governance’ refers to the broader processes and institutions through which societies make decisions that affect the environment (Armitage et al., 2012).

There are many definitions and descriptions of institutions. Institutions can be understood as ‘integrated systems of rules that structure social interactions’ (Hodgson, 2015, p.501). Another understanding of institutions is as prescriptions that are used to organise all structured interactions,

including those in families, sports teams, private businesses, and government at all scales (North, 1990; Ostrom, 2005). Institutional theory differentiates between physical institutions such as organisations, non-physical institutions such as rules and customs (North, 1990; Clifford-Holmes et al., 2016), and formal and informal institutions (Textbox 3).

Textbox 3 | Formal and informal institutions

Institutions can be instituted through formal documentation, but are often informal or unwritten agreements about what is permitted (Heikkila & Andersson, 2018). Formal rules can be generated by an organisation with legitimate power (such as the laws created by a democratic government), or they can be informally 'formed from and reproduced through interactions of daily life' (Cleaver, 2012, p.75). Thus we have two sets of rules: the 'rules-in-form' indicate how a system is supposed to function, while the 'rules-in-use' actually shape activities and interactions in a system (Mehta et al., 1999; Cleaver, 2012; Clifford-Holmes et al., 2018). These 'rules-in-use' are created by local actors who accept, adapt, resist, or reject the rules-in-form. Neither set of rules is the more important. Understanding why a system functions in a certain way and identifying where to intervene requires acknowledging both sets of rules. Ultimately, any action needs to navigate the 'messy middle' where actors operate between what the formal rules dictate and what the informal rules allow in a specific context (Cleaver, 2012; Clifford-Holmes et al., 2017b; Mehta et al., 1999).

Institutional analysis is used to understand institutional arrangements and to clarify governance roles and functions (Imperial, 1999). Ostrom (2005) describes three generic and nested institutional levels: operational, collective, and constitutional. Constitutional choices at a *high level* dictate the options at the collective level. In turn, the collective decisions made through deliberation frame the options available at the operational level. Decisions made at the operational level have a direct impact on a system. On the institutional scale (Daniell & Barreteau, 2014), Clifford-Holmes et al. (2016) identified five levels of water governance in South Africa. These are listed below, starting from 'high-level' visionary documents to 'low-level' operational manifestations.

- Vision: rendered through high-level documents.
- Organisational architecture: formal rules that describe the processes and institutions that *should* guide governance.
- Regulatory and operational mechanisms: assist with implementation through norms and standards as well as implementation guides.
- Established institutions: the level at which operations and projects are implemented on the ground.
- Operational manifestations: the informal rules that affect everyday decisions in established institutions.

Governance systems consist of connected elements with a purpose (Aligica, 2006). In line with the CSES framing, my research considers social elements (actors and institutions) and ecological elements (land and water).

Ecological elements related to land and water include physical and biophysical system elements, which can be stocks (such as grass or water) or processes (such as precipitation or rehabilitation) (Fanini et al., 2021). Ecological elements with a direct monetary value attached to them, such as crops and livestock, are considered biological assets (Saputra et al., 2022). I focus on the social elements of the TsRC; therefore, consideration of ecological elements is limited to the governance mapping of village-level institutions in Chapter Five (Section 5.6), and is considered peripheral in the systemic analysis in Chapter Six.

An actor is a person or organisation that can exert influence in formal and informal governance institutions (Enserink et al., 2010). Individual human actors undertake specific roles in a governance system, and are the smallest ‘acting unit’ (Ostrom, 2005). In this study, individual actors include, for instance, water collectors, livestock owners, traditional leaders, municipal officials, researchers, and consultants. How individual actors participate in governance is influenced by external formal and informal institutions (North, 1990; Ostrom, 2005) and by internal values, capabilities, and emotions (Tversky & Kahneman, 1974; Boschetti et al., 2012). Individual actors can operate in an organised body of actors with a specific purpose (i.e., an organisation). Organisations include, for example, farming cooperatives, municipal departments, or restoration implementing agents.

Community members are actors. ‘Community’ is a commonly used term in the rural development literature (Kepe, 1999), but it can be difficult to define. Communities can be held together or bounded by various characteristics, such as physical location or social ties. There is a common misconception that communities living in similar geographic locations have a common and coherent worldview; but the reality is that fracturing and diverse understandings are to be expected (Hickey & Mohan, 2004; Cornwall, 2008). While I refer to the ‘community’ or ‘residents’ in quite a generic way, it is not to ascribe a point of view to an entire catchment of diverse communities. In cases where I am representing the views of an individual or community group, I aim to be as specific as possible without compromising any individual’s anonymity.

Governance actors interact with one another through governance processes, such as planning, budgeting, decision-making, and dispute resolution, in order to ensure that governance outcomes are achieved (Bingham et al., 2005). Designing governance processes in CSEs raises a number of difficulties; I introduce the challenge of overlapping and contested governance system in the next section before introducing complexity-sensitive governance approaches.

3.2.2. *Contested contexts with multiple overlapping governance systems*

Multifunctional landscapes are often complex and contested social-ecological systems in which multiple groups of actors have overlapping and competing goals (Mackay et al., 2014; Cockburn et al., 2018a; Hill et al., 2020).

One key characteristic of the TsRC is the overlap between traditional and democratic governance systems (Section 2.1.2). Different manifestations of these complex overlapping arrangements exist in all of the former homelands of South Africa (Ntsebeza, 2004; Findlay & Twine, 2018). The dominance of government-driven land and water management, which disregards local and customary practices, might be undermining attempts to create a more participatory governance system as envisioned by high-level legislation (Kapfudzaruwa & Sowman, 2009).

Efforts to understand these complex dynamics in South Africa's former homelands are influenced by a growing international recognition of indigenous peoples' rights to land and water, and the potential value of pluralistic collaborations that involve actors from multiple governance systems. For example, there are increasing instances of First Nations in North America becoming more actively involved in land and water governance (McLeod et al., 2015), which has led to the emergence of a wide variety of arrangements between indigenous people, companies, and the Canadian government (Wyatt et al., 2018). Similarly, in Australia there are emerging interactions between traditional and democratic structures that attempt to overcome some of the past injustices by incorporating aboriginal people and their conceptions of land and water into management strategies (Poelina et al., 2019). Emerging water governance cases in Australia reveal that co-created agreements that grapple seriously with local-level perspectives are one vehicle for bringing people together towards the convergence of goals (Jackson, 2019b).

Rural landscapes impacted by mining are another common site where rural communities are having to fight to have their voice heard in governance spaces (Whiteman & Mamen, 2002; Leonard, 2019). One of the better-known examples in South Africa is in Xolobeni, where the Amadiba community is resisting the development of a mine being promoted by an Australian mining firm in collaboration with the local traditional leaders and various members of the national Department of Mineral Resources (Zamchiya, 2019; Mustasilta, 2021). Fuleni in KwaZulu-Natal is another example of traditional leaders speaking on behalf of their communities, thereby legitimising decisions without meaningfully involving community members in planning processes (Leonard, 2019). As in land and water management, there are mining cases from around the globe that have sought to include indigenous people and traditional leaders in more collaborative ways (Whiteman & Mamen, 2002; Ruwhiu & Carter, 2016; Tenkorang, 2021). Indeed, these dynamics need to be understood in the context in which all governance systems are susceptible to corruption, as Ison & Straw, (2020, p.6)

suggest: ‘Democratic systems are based on competing political parties locked into antiquated and linear decision and action processes – often dominated by the preferential lobbying of large companies... and others leading to state capture. These systems don’t work more often than they do.’

3.2.3. *Complexity-sensitive approaches applicable to governance*

My introduction to governance has already introduced important tensions (e.g., the formal/informal distinction) that have emerged in the generation of theories and approaches related to governance in complex systems. Cleaver and Whaley (2018) identify two main strands of institutional theory that grapple with complexity in governance, broadly referred to as ‘adaptive governance’ and ‘critical institutionalism’.

Adaptive governance approaches arose in response to the failure of strategies based on centralised power, rigid hierarchies, and linear thinking in CSES (Holling & Meffe, 1996; Weber & Khademian, 2008). Adaptive governance approaches emerged out of the recognition of complexity and uncertainty (Holling & Meffe, 1996; Weber & Khademian, 2008; Chaffin & Gunderson, 2016), the need to learn by doing, and the interconnected nature of CSEs, in which multiple levels and scales of governance interact (Olsson et al., 2004a; Armitage et al., 2007; Armitage, 2008). Adaptive governance recognises that processes embedded in CSEs often face wicked problems that are unstructured and fluid, and therefore need to be ‘opened’ or ‘loosened’ rather than ‘solved’ as progress is made incrementally and iteratively (Weber & Khademian, 2008; Defries & Nagendra, 2017). Adaptive governance highlights the adaptive nature of complex systems, where social-ecological resilience (the ability of a system to remain relatively stable in response to shocks) is considered crucial (Gunderson, 2000; Plummer & Armitage, 2007). Governance theories and approaches have been developed within or alongside the broad categorisation ‘adaptive governance’. I outline a relevant selection below.

- Strategic adaptive management is a systemic and actor-centred approach developed in South Africa to build consensus and cooperation between diverse actors (Rogers & Luton, 2011). It was designed to inform the implementation of integrated water resource management associated with the progressive National Water Act (legislation developed by the first democratic South African government post-1994). Strategic adaptive management promotes fair and equitable participation by creating a rich understanding of the specific context (Palmer & Munnik, 2018).
- Polycentric governance systems are characterised by multiple independent authorities at different scales who cooperate to achieve a common governance goal (Morrison et al., 2019), in which authorities have considerable independence to adapt rules and norms to fit the context (Ostrom, 2010).
- Network governance focuses on relationships and network structures rather than on individual behaviours and attributes (Long et al., 2013), and is therefore interested in social capital – the

difficult-to-quantify value of norms and trust generated through social networks (Brondizio et al., 2010; Woolcock, 1998).

- Boundary spanners support integration across boundaries (such as social science/natural science or theory/practice), and have particular social skills in facilitation and networking (Williams, 2002; Roux et al., 2017; Goodrich et al., 2020). The key role of boundary spanning has been recognised as necessary for enabling integrated land and water governance (Williams, 2002; Long et al., 2013; Coleman & Stern, 2018a). I use the term 'boundary spanner'; however, there are range of comparable concepts – such as boundary organisations (Vogel & O'Brien, 2006), bridging organisations (Sjah & Baldwin, 2014), and intermediaries (Moss et al., 2009).
- Social learning is the process whereby a group of people develops meaning through interactions with one another and the environment (Reed et al., 2010), and can be understood as an tool to enable a group to move towards concerted action (Collins & Ison, 2009). Social learning has been identified as an essential process in resource governance in complex systems (Armitage, 2005; Pahl-Wostl, 2007; Rist et al., 2007). It can also be seen as an outcome in and of itself (Berkes, 2009).

Critical institutionalism, which explicitly draws on social science theories and methods, has emerged as a counterpoint to adaptive governance (Cleaver, 2012; Hall et al., 2014; Cleaver & Whaley, 2018). Critical institutionalism acknowledges the utility of adaptive governance. However, proponents suggest that critical institutionalism can support adaptive governance by providing an enriched account of the processes by which governance systems emerge and are enacted, the power dynamics that shape benefits, and the meaning of processes that support legitimacy and endurance (Cleaver & Whaley, 2018). Critical institutionalism highlights the embedded nature of complex systems: governance systems are embedded within dynamic social relations and are infused with the meaning of past events and experiences (Boelens, 2015; Cleaver & Whaley, 2018). From the embedded understanding of governance comes the concept of institutional bricolage, which acknowledges that 'institutions produced through bricolage are inevitably uneven in functioning and impact, and are often fuzzy assemblages of meaningful practices, which overlap and serve multiple purposes' (Cleaver, 2012, p.45).

While adaptive governance highlights the constraints of a centralised control system, decentralised and adaptive systems will not naturally lead to good governance – especially in places where local inequalities create significant resource, knowledge, and power imbalances (Cleaver, 2012). Neither decentralisation nor centralisation can be a panacea (Ostrom, 2010a); therefore, middle-ground approaches that draw on existing theories are required.

3.3. Meaningful participatory governance

I now introduce my use of ‘meaningful participatory governance’ as a theoretical framing for analysing governance, starting with a general introduction. I then outline the rationale for my focus on meaning, and introduce how ‘meaningful participation’ is invoked in the literature, followed by a step back to introduce two uses of the word ‘meaning’ to help scaffold my framing of ‘meaningful participatory governance’.

3.3.1. Introducing participatory governance

Participation and participatory governance are commonly characterised by the increased inclusion of people in governance processes (Hickey & Mohan, 2004; Fischer, 2012; Hassenforder et al., 2020).

Participation is considered a way to improve governance outcomes through:

- increased consideration of *perspectives* and, therefore, information availability, thereby
- increasing *accountability* of governance actors by reducing the gap between governance processes and civil society (Schneider, 1999; Heinelt et al., 2002),
- increasing the *power* of societal actors to influence decisions that impact their lives (Gaventa, 2019; Lukes, 2005), and
- developing societal actors’ governance *capabilities* (Textbox 4) (Pham, 2018; Palmer et al., 2022).

Textbox 4 | Participatory governance capability pathway

With a focus on the capabilities required for participatory governance, the work of the Tsitsa Project’s GovCoP (Section 2.2.1) was guided by a participatory governance capability pathway. The pathway consists of several interconnected and interdependent phases (Palmer et al., 2022) that can be summarised as:

- *Co-knowing*: a common understanding of key terminology and concepts related to land and water governance.
- *Co-listening and co-speaking*: the key skills and understanding that allow people to speak and listen to one another. This includes the building of relationships as different actors speak to one another.
- *Co-planning*: requires the engagement of diverse actors in the planning process.
- *Co-influencing and co-deciding*: influencing decision-making through active participatory engagements, ownership of initiatives, and agency, thus promoting equity and social justice in such processes.
- *Co-acting and co-adapting*: all of the above leads to evidence of capability achievement in changes to landscape management, sustainable livelihoods, and local peoples’ contributions to decision-making. Co-acting and co-adapting occur in the process of engaging in the capability pathway stages.

Types of participation are often represented on a spectrum, from non-participation to collaborative and empowered participation (Arnstein, 1969; Du Toit & Pollard, 2009) (Table 3.1). While empowered participation, which is fully inclusive, is often stated as desirable (Castell, 2012), I would argue for the use of a range of approaches that seek to balance the breadth (number of people involved) with the depth (level of involvement) (Cornwall, 2008). Indeed, it is necessary to consider the ‘amounts and kinds of participation in governance’ that might enable desirable outcomes in different contexts (Fung, 2006, p.66). If additional participants are involved, then the level of engagement of each person is likely to reduce. The difficulty with aiming for ‘full’ participation is that it is not always possible or desirable, and participatory processes can become tyrannical if forced on people in ways that reinforce existing inequalities and are used to justify decision-making (Cooke & Kothari, 2001).

Table 3.1: The ladder of participation overlaid with four common participation aims.

From left to right, there is a trend towards increasing levels of shared decision-making authority, increased consideration of diverse perspectives, increased accountability, and increased power to societal actors. Adapted from Arnstein (1969) and Du Toit and Pollard (2009).

Ladder of participation (with engagement examples)	Inform (e.g., fact sheets or outreaches)	Consult (e.g., focus groups or surveys)	Involve (e.g., workshops or meetings)	Collaborate (e.g., citizen advisory committees)	Empower (e.g., deliberative democracy)
Perspectives	Only formal actor perspectives are considered.	Engagement occurs with informal organisations and societal perspectives.		Societal perspectives are considered central to decision-making.	
Accountability	Accountability is not enabled by isolated, superficial interactions.	Accountability is increased through in-depth interactions between governance actors and civil society.		Increased accountability as responsibility is shared and more actors are included as decision-makers.	
Power	All visible pragmatic power and invisible framing power is held by formal actors.	Formal actors maintain framing power but give societal actors limited decision-making power.		Framing and decision-making power are shared between societal and formal actors.	
Capability development	Societal actors can know what is occurring.	Societal actors can listen and speak and thus contribute to planning in governance processes.		Societal actors are involved in decision-making and actions taken.	

While the ladder of participation is a useful framework for clarifying how participation can be ineffective in creating change, it does not go far enough to articulate the short-comings of the participatory approach in dealing with complex problems. Collins & Ison (2009) suggest the need to jump off the ladder and move towards social learning processes. The move towards participation as

social learning is particularly important in the context of complex problems, where there is unlikely to be agreement on what the problem is, never mind the solution. Finding pathways forward requires all involved actors to learn about the problem in order to move towards action.

Framings to support the design and evaluation of participation

The spectrum-type representations of participation are useful for articulating the variety of types of participation and supporting efforts to strive for increased decision-making authority. There are also complementary framings of participation that are designed to support the design and evaluation of participatory processes (Innes & Booher, 1999; Cundill, 2010; Bryson et al., 2012; Vente et al., 2016). These framings are found across the range of the literature that is relevant to this study, from more general public participation in governance to framings that focus on land and water in rural areas as CSEs. Key examples designed to support evaluation include Innes & Booher's (1999) *criteria for evaluating collaborative planning and consensus building in complex adaptive systems*, and Cundill's (2010) *indicators for monitoring collaboration and social learning processes as part of adaptive co-management*. Key examples that could support the design of participatory processes include Bryson et al.'s (2012) design guidelines for public participation (a cross-disciplinary synthesis) and Vente et al.'s (2016) recommendations for the design of participation in environmental management. In Section 6.5.4, I compare these four frameworks with my emergent framing to support meaningful participatory governance in the TsRC (Table 6.5).

Power and participation

Understanding power is key to analyses of participation (Gaventa, 2019; Turnhout et al., 2020). Lukes (2005) provides a well-recognised three-dimensional conceptualisation of power that consists of *decision-making power*, *non-decision-making power*, and *ideological power* (Table 3.2).

Table 3.2. Power typologies are arranged according to the leverage for systemic change.

Leverage for systemic change	Low	Medium	High
Gaventa's (2006) forms of power	Visible	Hidden	Invisible
Lukes's (2005) three-dimensions of power	Decision-making power	Non-decision-making power	Ideological power
Morrison et al.'s (2019) polycentric power typology	Pragmatic power	Power by design	Framing power
Boonstra's (2016) conception of power in social-ecological system interactions	Conduct (power to do something)		Context (power over something)
VeneKlasen and Miller's (2002) forms of power	Power to	Power over	Power with Power within

Decision-making power refers to the most easily recognisable, conventional conceptions of power: the power to decide what happens in a situation. *Non-decision-making power* is less visible, and refers to the setting of agendas within which decisions are made. *Ideological power* is rooted in hegemonic influence over people's thoughts and desires (Lukes, 2005). Pragmatic decision-making power is often just the visible manifestation of a more profound paradigm that frames the decision-making (Morrison et al., 2019); for example, interactions can masquerade as empowerment when, in reality, the context of the decisions made is so tightly constrained or directed as to make the participation in decision-making meaningless (Cooke & Kothari, 2001). Lukes's (2005) nested conception of power suggests that leverage to create systemic changes is rooted in ideological framing power rather than in pragmatic decision-making power.

Despite widespread recognition of the necessity of participation, there is still considerable disagreement about exactly what is meant by it and how it can be achieved meaningfully in the real world. There are many obstacles when implementing participatory processes, such as the need for proactive planning, for substantial and consistent funding, and for the actors to be willing to sustain their engagement. Even well-conceived laws and policies go through multiple stages of translation and interpretation throughout the levels of governance, from where they are envisioned to where they are implemented in practice (Frantzeskaki et al., 2010; Mehta et al., 2016).

There has been criticism of participatory approaches since they entered mainstream governance and development discourse in the 1980s (Cooke & Kothari, 2001; Cornwall, 2008). Ongoing difficulties have prompted critics of participatory approaches to suggest that participation has been widely adopted without providing sufficient evidence of its efficacy in empowering marginalised members of society, and that participation has become a technical approach to legitimising decision-making in a way that further reinforces existing inequalities (Cooke & Kothari, 2001; Williams, 2004; Cornwall, 2008; Zakhour, 2020). Similarly, critiques in the environmental management and sustainability literature suggest that the inclusion of more and diverse stakeholders has not led to improved environmental outcomes, and that participatory approaches legitimise decision-making without addressing the inability and unwillingness of societies to make the required social and ecological transformations for more just outcomes (Blühdorn & Deflorian, 2019). Others warn of the ongoing use of participation rhetoric and techniques in pursuing populist agendas while claiming to enact 'the will of the people' (Batory & Svensson, 2019).

There is a widespread acceptance of the need for governance systems to become participatory and people-centred (Hickey & Mohan, 2004; Theron & Ceasar, 2008; Alexander et al., 2018; Palmer et al., 2022). Therefore, while I acknowledge the critiques of participatory approaches, I operate with the

assumption that some optimal or meaningful level of participation is desirable. In this thesis, I explore the role of meaning within participation.

3.3.2. Framing meaningful participatory governance

Two considerations prompted my focus on ‘meaning’. First, my emphasis on meaning reflects the critical institutional critiques, which suggest a neglect of social system elements (such as power, values, and meaning) in the adaptive governance literature (Cleaver & Whaley, 2018). While I grapple with a wide range of ‘soft’ variables, my focus is on that which makes governance meaningful in a particular context. The substantial research into power within participation (Table 3.2) has provided rich nuance to support our understanding of the ‘social’ in the CSEs. My view is that meaning provides an equally rich theoretical landscape. Second, my transdisciplinary research process seeks to uncover leverage points to support long-term sustainable transitions in governance. My aim was informed by the GovCoP’s role in the Tsitsa Project: to extend the impact of the Tsitsa Project’s interventions by creating new participatory governance roles and institutions that could be embedded in the context. Meaning is key to the understandability, acceptability, and durability of novel institutional arrangements (Cleaver & Whaley, 2018; Bussu et al., 2022).

The term ‘meaningful participation’ is seldom clearly articulated. So, I point to useful contributions to preface my framing of meaningful participatory governance.

The United Nations Declaration on the Right to Development recognises ‘active, free and meaningful participation’ as a human right (UN, 1986; Piovesan, 2013), in which participation in development is ‘an effective expression of popular sovereignty in the adoption of development programs and policies. Meaningful participation and empowerment are reflected by the people’s ability to voice their opinions in institutions that enable the exercise of power, recognizing the citizenry as the origin of and the justification for public authority’ (Piovesan, 2013, p.106). Meaningful participation, therefore, indicates participation on the ‘higher’ end of the participation spectrum (Table 3.1), where there is substantive influence over decision-making, multiple views are represented, and there is active support and encouragement of participation in ways that empower participants.

However, it is important to acknowledge the earlier points made about optimal participation. Meaningful participation could sit towards the middle if it is clearly discussed with stakeholders. Indeed, when community members are faced with the practical realities of water management, they may well want to leave it to experts - within a thoroughly discussed framework. If there is trust between communities that enables the delegation of power to experts, then it could be fully consistent with meaningful participation.

The term ‘meaningful’ is often used of the participation of a marginalised group for whom participation is commonly meaningless, such as women (McEwan, 2003), indigenous communities (Whiteman & Mamen, 2002; Ruwhiu & Carter, 2016), children and youth (Oliver et al., 2006), or people with disabilities (Zhang & Bennett, 2003; Fletcher-Watson et al., 2019). Each of these groups has characteristics that make them unable to access conventionally designed participatory opportunities. One relevant example from the literature is the participation of indigenous communities in mining developments that impact the CSES in which they live. In their case study of mining in New Zealand, Ruwhiu and Carter (2016) find that many participatory opportunities are meaningless for indigenous populations unless they make sense within the local indigenous population’s customary framework and the broader legislative framework. In another relevant case study conducted with a rural community impacted by tourism developments in the former Transkei, Setokoe et al. (2019) highlight the need for mutual understanding between the actors that could lead to empowerment and meaningful participation. These manifestations of exclusion and pathways to meaningful inclusion underscore the importance of meaning.

Next, I introduce two common uses of the term ‘meaning’ to support my elucidation of meaningful participatory governance: *meaning akin to definition* and *meaning akin to significance*.

Two common uses of the term ‘meaning’

Meaning *akin to definition* is closely linked to understanding. One might ask: *Do you understand what I mean by the word catchment?* An acceptable response to this question would be: *The meaning of the word catchment is the landscape that collects water for a river* – a common understanding of the word and concept of ‘catchment’ in the English language. From this, we can see that *meaning is an aid to assist in the simplification of a complex world*. The meaning placed on the word ‘catchment’ turns it into a tool to support communication. We can simplify reality in order to communicate by agreeing on the meaning of words (Peterson, 2007). People who do not speak the same language will struggle to communicate because they do not have the same tools (words and grammar) for sharing meaning. For example, there is no direct translation for the word ‘catchment’ in isiXhosa. Similarly, people with different forms of knowledge might have trouble communicating concepts. The word ‘data’ might mean interview transcripts and observational diary entries to an anthropologist, while a hydrologist might understand data to mean tables of quantitative rainfall intensities and flow rates.

The second use of meaning, *akin to significance*, relates to importance and purpose. In Victor Frankl’s *Man’s Search for Meaning* (Frankl, 1959), he describes how it is possible to find purpose in life (and therefore a desire to stay alive) in the most horrific circumstances – in Frankl’s case, a concentration camp during the Second World War. Frankl’s realisation was that meaning is related to purpose. Being

a prisoner and psychologist (with prior training as a neurologist and psychiatrist) in a concentration camp during the Second World War, Frankl was driven by his professional interest in the human experience. He realised that meaning is related to purpose, through which he could find meaning in his suffering by recognising the potential contributions of his experiences. Thus an individual was able to find meaning at the level of the individual through an engagement with broader levels of reality – the group, society, and even global knowledge generation.

These two uses of the word ‘meaning’ introduce two perspectives. Meaning akin to definition emphasises the relational nature of meaning as seen in our use of language as a tool for referring to objects and actions and exchanging and making meaning through dialogue; while meaning akin to significance highlights interactions between levels of reality (e.g., individual to group to society) – that is, a phenomenon can derive meaning by making sense in relation to another level of reality.

Framing of meaningful participatory governance in complex systems

In my research, meaningful participatory governance must be understood as part of a CSES (Section 3.1). Meaning is both subjective and held by individuals as well as something that emerges from interactions between system elements. Which interactions are meaningful to whom, and in what ways, becomes a fundamental question. Meaning is also context-dependent: what is meaningful to someone in one context may not be meaningful in another. Finally, meaning in participatory governance can be understood using multiple scales (e.g., linguistic, cognitive, emotional, and practical) across levels (e.g., individual, group, and society). My framing of meaningful participatory governance aligns with the literature conceptualising and promoting embedded participatory governance, which is when ‘it sits in a productive relation to the other institutions of the democratic system’ (Bussu et al., 2022, p.135). My focus on ‘meaning’ highlights the meaning beyond the formal realms of governance. I explore further this framing of meaningful participation in CSEs regarding the two common uses of the word ‘meaning’ introduced above.

Meaning akin to definition refers primarily to the linguistic and cognitive dimensions of human experience. Communication through language accounts for a substantial portion of meaning conveyance and creation. While an individual may create or define words, they can only be considered meaningful if others can understand the words. While languages create generalised structures for communicating meaning, people’s associations with a specific word may change over space and time. Individuals communicate with one another, as well as broader social groups and society; in doing so, the meaning exists at multiple nested levels. Contemplating meaning akin to definition prompts questions such as: *Can people understand one another? Are the basic building blocks for participation present?* It also raises enquiries about epistemic justice and the treatment of participants in their

capacity as actors with knowledge (Fricker, 2007; Anderson, 2012): *Is the language meaningful to all participants in similar or comparable ways? Do participants lack the interpretive resources to engage meaningfully?* Therefore, a participatory interaction would be meaningful if all (or most) participants understood; evaluation is not straightforward. An example of a meaningful interaction is one in which meaning is co-created in a way that allows participants to gain perspectives on a concept (Reed & Abernethy, 2018; Wyborn et al., 2019; Palmer et al., 2022).

Meaning in the second sense (i.e., significance) highlights the purpose and outcomes of an interaction or process. At the individual level, interactions can be meaningful to participants for varied reasons. For example, participants could be looking to improve their skills, or they could want to represent their views or the views of their group, or the engagement could be part of their work (Gustafson & Hertting, 2017). An interaction could be significant if it contributed to achieving a participant's goals. Interactions that are meaningful only to those in positions of power might be considered undesirable, and might fall into the negative patterns for which participatory approaches are critiqued. An emergent question might be: *Is an interaction coherent within broader social, economic, environmental, and technical trends? Does it fit?*

This section highlights the importance of meaning in participation. I expand on this general framing when I re-frame meaningful participatory governance in the observed context as part of the findings (Sections 6.4.8 & 6.5.4).

3.4. Leverage points for sustainable transitions

The concept of leverage points was formalised most famously by Donella Meadows (Meadows, 1999). Meadows's (1999) '12 places to intervene in a system' is an ontological framework for understanding systems; the emphasis on intervention implies a practical orientation (Table 3.3). The crux of the framework is that tinkering with internal parameters and system dynamics without shifting the dominant underpinning paradigms can only result in minor system change; the focus should be placed on higher leverage points (Textbox 5).

Textbox 5 | Focusing on high leverage points

Leverage points are commonly presented in an ascending order of leverage: from low leverage mechanistic parameters to high leverage intangible paradigms. In Table 3.3, I have inverted the list so that the highest point of leverage is at the top. I intentionally focus on the highest leverage points. Placing the material interventions at the top of the list unintentionally reinforces ingrained habits of focusing on the lowest leverage points. I invert the list throughout the thesis.

Table 3.3. The leverage points as listed by Meadows (1999).

The list starts with the leverage points that are the most effective for creating system change and the most difficult to change.

1. The power to transcend paradigms. Understanding and embodying the fact that any worldview is necessarily an incomplete understanding of the ‘immense and amazing universe that is far beyond human comprehension’ (Meadows, 1999).
2. The paradigm out of which the system arises. The entire system is nested within and influenced by ubiquitous paradigms (Davelaar, 2021). However, they are also deeply personal; any broader paradigm shift is predicated on a comparable change within individuals (O’Brien, 2018; Ives et al., 2019).
3. The goals of the system. System goals are emergent outcomes of the interactions between system elements rather than what any individual actor proclaims (Meadows, 1999). Goals in small, closed systems are easier to identify than those in large, open, and complex systems. For example, species survival and economic growth are powerful and large system-level goals.
4. The power to add, change, or self-organise structure. Self-organisation is the emergence of new patterns out of a set of elements. Evolution is a process of self-organisation, as is the growth of a seed (Meadows, 1999). Eliminating diversity reduces the potential value of self-organisation.
5. The rules of the system. The rules of a system define the system, the boundaries, and the interactions (Meadows, 1999); they are institutions in which system elements interact.
6. The structure of information flows. Information flows describe who has access to what information, when, and how. Information flows can create feedback loops; for example, public participation is the inclusion of the public in governance.
7. The speed and strength of positive feedback loops. Positive reinforcing loops are self-reinforcing: inputs and outputs are the same. Reducing the speed of reinforcing loops creates change, but can be difficult. For example, anti-poverty programmes are often weak balancing forces against the entrenched reinforcing loops that enable the rich to get richer while the poor get poorer.
8. Balancing negative feedback loops. Negative feedback loops are self-correcting. Accountability can create a balancing loop with the potential to reduce the undesirable behaviour of individuals in positions of power.
9. The length of delays relative to the rate of system change. Too-short delays result in rapid oscillations that tire everyone out, and too-slow delays lead to long and increasing oscillations. Delays related to physical changes are hard to interfere with – for example, the rate at which grass grows or the construction time for a road cannot easily be changed.
10. The structure of material stocks and flows. Changing physical infrastructure is usually the slowest and most expensive change one can make in a system; however, there is leverage in influencing the design of the infrastructure.
11. The size of buffer stocks relative to their flows. Buffers are the emergency stock kept onsite to deal with shocks and changes, and relate to how much redundancy is built into the system.
12. Parameters and material characteristics. Parameters are modifiable, mechanistic elements such as subsidies, taxes, and standards. Parameters are often the easiest to conceptualise and implement, but are the least likely to shift system behaviour.

The leverage points framework has been summarised in a variety of ways. Abson et al.’s (2017) ‘four system characteristics’, which contain three leverage points, are a consolidation that has been most popular in recent years (Fischer & Riechers, 2019; Dorninger et al., 2020; Davelaar, 2021). The four

system characteristics are the following: (1) *Intent*: the underpinning paradigms and goals of actors that shape the system orientation; (2) *Design*: the social structures and institutions that manage a system's functioning; (3) *Feedback*: the internal interactions between elements in a system of interest; and (4) *Parameters*: relatively mechanistic characteristics that are most commonly the focus of policy and practice.

The leverage point framework has been applied to a variety of CSEs. Two examples are using systems thinking to find high leverage to mitigate drought (Rhoades et al., 2014) and using leverage points to support and rank indicators for community development (Nguyen & Wells, 2018). Building on Abson et al. (2017), various authors have explored the potential for using the leverage point framework to orient sustainability interventions towards deep systemic transformations – for example, to analyse interactions in a social network of actors who are working to enable sustainable transformations in Southern Transylvania, Romani (Lam et al., 2020b), and to identify leverage points to facilitate sustainability transformations in a local government in Australia (Bryant & Thomson, 2020). Dorninger et al. (2020) conducted a broad review of sustainability interventions in energy and water systems, identifying that interventions and research that engage with high-leverage points are scarce.

One strength of the leverage points framework as an analytical tool is that it encompasses the possibility of a wide range of interventions, from simple mechanistic ones to profound societal-level paradigm shifts (Fischer & Riechers, 2019). There are, however, concerns about the breadth of the framework. First, there is a direct trade-off between breadth and depth to consider when bounding the analysis. Second, the methods used to analyse the effect of low leverage points are not the same as those used for higher leverage points; therefore, the broad view offered by the leverage point framework requires the use of various tools from different disciplines (Ives et al., 2019). For example, Nguyen and Bosch (2013) used four methods to investigate four levels in their case study in the Cat Ba Biosphere Reserve, Vietnam. Moving from low leverage to high leverage, Nguyen and Bosch (2013) investigated the system using facts and figures to describe *discrete events*; behaviour-over-time graphs to describe *systemic patterns*; *systemic structures* in the form of causal loop diagrams; and *mental models* in the form of narratives about the situation.

The language and concepts that make up the leverage point framework reflect Donella Meadows's training and methodological orientation in the field of systems thinking and system dynamics. While terminology such as 'feedback loops' and 'stocks and flows' indicates the technical engineering origins of the field, the concepts have been replicated in the implementation of system dynamic simulation and qualitative models such as causal loop diagrams, which I use in my systemic analysis in Chapter Six (Section 6.3.2).

One caveat is that the leverage point framework is ‘tentative, and its order is slithery. Every item has exceptions that can move it up or down the order of leverage’ (Meadows, 1999, p.19). The framework assists in identifying these levers towards transformations.

3.5. Transitions and transformations

System change is often put on a spectrum, from incremental to transitional and ultimately to transformational or radical (Grin et al., 2010; Sterling, 2010). Many sustainability scholars, including those who apply the leverage point framework, advocate radical transformations instead of incremental ones (Abson et al., 2017; Horcea-Milcu et al., 2019; Lam et al., 2020b). Davelaar (2021) overlays three orders of change on the leverage points framework to suggest that low leverage points are associated with first-order incremental change, while higher leverage points relate to third-order transformational change.

While I agree that transformational change requires grappling with high leverage points (Olsson et al., 2014), I also acknowledge the value of incremental change. The utility of gradual change stems from the recognition that knowledge advances incrementally (Stirzaker et al., 2010) and that complex problems need to be ‘loosened’ through iterative progress (Weber & Khademian, 2008). Indeed, the literature suggests that transitions start in innovative niches where the rules are more flexible (Geels, 2010), new futures can be explored, and adequate preparation can be made to access windows of opportunity (Olsson et al., 2006). When a local innovation takes off, it can influence the broader regime (the established practices that stabilise a system) by which a system operates, and this systemic change can then impact the wider landscape (Olsson et al., 2004b; Van den Bosch & Rotmans, 2008; Geels, 2010). Therefore, orders of change can be conceptualised as a nested model, where incremental steps are essential to transitional and transformational changes (Swilling, 2020). One emerging approach is ‘radical incrementalism’ (Halpern & Mason, 2015; Swilling, 2020), which underscores the need for a solid normative stance but also acknowledges that systemic change occurs slowly.

These conceptions of change and transitions sit within a panarchy lens that provides a fuller model, including cycles of collapse and renewal that CSES naturally exhibit (Gunderson & Holling, 2002; Berkes & Ross, 2013; Chaffin & Gunderson, 2016; Cosens & Gunderson, 2018). These cycles can be understood as two broad phases of change: (1) the processes of slow growth and stability (exploitation and conservation), and (2) the processes of rapid change and instability (release and reorganisation), which feed back into exploitation (Gunderson & Holling, 2002). Furthermore, the panarchy lens

emphasises the nested nature of CSES, in which interactions across and between scales and levels interact across oscillations (Chaffin & Gunderson, 2016).

Achieving transformations requires moving beyond existing ways of working. Vogel and O'Brien (2022, p.656) highlight the value of incorporating diverse methods and types of knowledge through transdisciplinarity, transgressing established rules where necessary, and, ultimately, transcending old ways of working and going "beyond the range or limits of existing capacities, including the persistent difficulties of trying to decide or establish whose view of the world is 'right'."

3.6. From sustainability to social-ecological justice

The concepts of 'sustainability' and 'sustainable development' have been powerful tools for shaping development trajectories in recent decades and for creating standards for development that consider intergenerational equity (Behnassi et al., 2021). Sustainable development is defined as 'development that meets the needs of the present while safeguarding Earth's life-support system, on which the welfare of current and future generations depends' (Griggs et al., 2013, p.306). One outcome of the sustainable development discourse has been the United Nations Sustainable Development Goals, announced in 2015, which build on the Millennium Development Goals and provide a comprehensive framework for engaging with the intertwined social, ecological, and economic challenges faced locally and globally (UN, 2018).

However, there has been increasing criticism that the three-legged sustainability approach often prioritises economic growth as an underlying imperative in a way that undermines the environmental and social dimensions of sustainable development (Davelaar, 2021; Grossmann et al., 2021). The critics suggest that the preoccupation with quantitative growth cannot resolve the pressing sustainability challenges (Max-Neef, 2005; Swilling & Annecke, 2012; Göpel, 2016; Davelaar, 2021), and therefore call for social-ecological justice, which places the economy as part of the social system (Grossmann et al., 2021). Proponents of social-ecological justice recognise the profound interdependence of social and ecological systems and the inherent requirement for both human well-being and environmental health (Yaka, 2019).

A complementary social-centred approach to development is the capabilities approach (Sen, 2002), which brings capabilities to the fore as a means to creating valuable and meaningful governance and as the objective of development itself (Oosterlaken, 2009). In his book *Development as Freedom*, Sen (2001) argues that capabilities provide the best basis for thinking about development goals. The emergence of the capabilities approach has shifted the focus from people as a means to people as the central focus of development (Bockstael & Berkes, 2017). Van Breda and Swilling (2018) recognise the

advantages of a capability approach to sustainability and social-ecological justice, arguing that it provides a workable normative framework to consider sustainability beyond the satisfaction of needs.

In this thesis, I take the normative stance that, to support the realisation of social-ecological justice (such as human flourishing while living in and gaining value from healthy ecosystem services), the land and water governance system (L&WGov system) in the TsRC must support the capabilities of rural residents to participate in the governance processes that impact their lives.

3.7. Conclusion, and links to subsequent chapters

Governance in CSEs is not easy, and requires approaches that can navigate the failures and discontinuities that are inevitable if transformations are to be realised at large scales across nested systems. Therefore, participatory governance that meaningfully enables the inclusion of diverse perspectives, supports accountability, balances power structures, and builds citizen capabilities is a vital part of broader adaptive governance systems. In this chapter I posit a general framing of meaningful participatory governance that I will use to support the identification of leverage points.

The conceptual foundations presented in this chapter sit alongside the research context (Chapter Two) in framing my research and informing the selected research methodology and approach (Chapter Four). The conceptual framing is built upon and clarified in the next chapter, on the methodology and research approach (Chapter Four) and in the three substantive findings chapters (Chapter Five, Six, and Seven) (Table 3.4).

Table 3.4. Conceptual overview, with links to conceptual development in subsequent chapters. The conceptual framework outlined in Chapter Three introduces the foundational concepts, which are expanded and deepened throughout the thesis.

Introduced in Chapter Three	Deepened and expanded in subsequent chapters
The complex social-ecological systems (CSES) framing, characteristics of complex systems, and social-ecological justice (Section 3.1).	• I introduce the general theory of complexity and systems thinking (Section 4.1). • I describe system functioning as nested elements – events, patterns, and structures (Section 6.1).
Governance in general (elements, institutions, and interactions), and theories and approaches related to governance in CSESs (Section 3.2).	• I introduce institutions at multiple levels and the three-story framework (Section 5.2.1). • I posit participatory governance roles (Section 5.2.2). • I use dimensions of connectivity between system elements (Section 5.2.3).
Meaningful participatory governance is a general framing within the broader set of complexity-sensitive approaches (Section 3.3).	• I frame meaningful participatory governance in the Tsitsa River Catchment (Section 6.5.4).
The leverage point framework emerged from the field of systems thinking, and has been developed as a tool to inform interventions in complex systems to enable sustainable transitions (Section 3.4).	• I elucidate the leverage point framework using metaphors (Section 7.2). • I discuss transformation trajectories and pathways (Section 7.5.2).

CHAPTER FOUR | Methodology and research approach

This chapter provides a philosophical framing for the entire thesis concerning the methodology and research approach. The underlying logic is that the methodology informs the research approach (the processes and tools) in which the methods are embedded (Figure 4.1). In this chapter I:

- outline philosophical and methodological framing (Section 4.1) and detail the guiding principles that support the translation of philosophy into methods (Section 4.2);
- describe my research approach (Section 4.3) and give an overview of my research methods (Section 4.4), which are detailed in the relevant substantive chapters (Chapters Five, Six, and Seven); and
- discuss considerations relating to generalisability (Section 4.5) and ethics (Section 4.6).

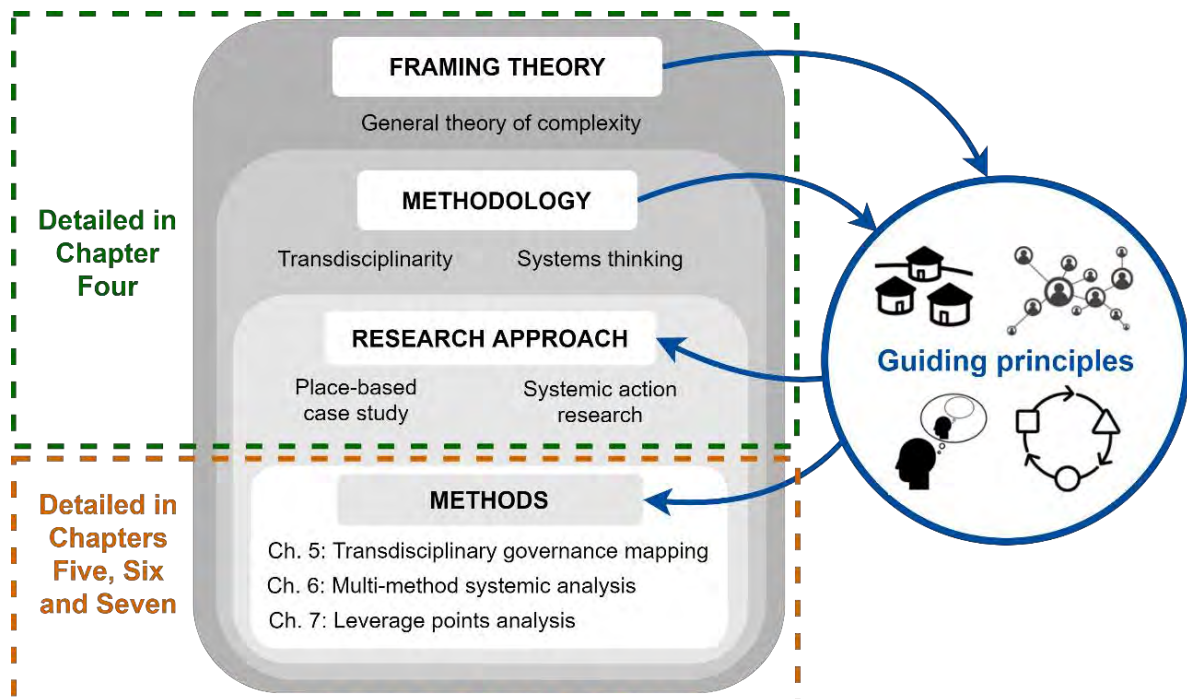


Figure 4.1. Overview of the nested methodology and research approach with guiding principles. The data collection and analysis methods are embedded within a research approach that is informed by the place-based case study approach and systemic action research. The research approach is embedded within the transdisciplinary and systemic methodology. I frame the research methodology within a complexity ontology. Guiding principles derived from the framing theory and methodology inform the research approach and methods. The framing, methodology, and approach are detailed in Chapter Four, with an overview of the research methods. The research methods are detailed in Chapters Five, Six, and Seven.

4.1. Philosophical and methodological framing

I now clarify my methodological framing to support the interpretation of my findings (Creswell, 2014; Moon & Blackman, 2014). I rely on a general complexity theory as a foundational ontology (Cilliers, 2000; Audouin et al., 2013) or an understanding of what exists, about which humans can acquire knowledge (Blaikie, 2007; Kant, 2014). I also draw on transdisciplinarity and systems thinking as complementary methodologies for studying and improving complex systems (Meadows, 2009; Jahn et al., 2012; Lang et al., 2012).

4.1.1. Theories of complexity

Humans create models (e.g., mathematical, scientific, story-based, or allegorical) to understand reality and make predictions that help with decision-making (Box, 1976). However, we cannot predict the future perfectly because a model that fully incorporated the complexity of reality would inevitably be as intractable to understand as reality – and would therefore have limited practical utility (Cilliers, 2000). In this thesis, I draw on an understanding of ‘critical complexity’, as distinct from ‘computational complexity’, which foregrounds the capacity to quantify and simulate complex behaviour (Audouin et al., 2013; Preiser, 2019). Critical complexity goes beyond analyses of complexity to explore what it means to participate in complex systems (Boulton et al., 2015; Preiser, 2019).

Proponents of the complexity paradigm highlight the value of working slowly (Brock & Carpenter, 2007; Palmer & Munnik, 2018) and of making clear but modest assertions (Cilliers, 2005) while exploring and challenging conventional approaches (Preiser & Cilliers, 2010). Complexity does not oppose conventional science, but offers a critique and promotes innovative strategies (Audouin et al., 2013).

Several characteristics of complex systems help to orient work in such systems, namely that they are: (1) relationally constituted, (2) radically open, (3) context-dependent, (4) adaptive, (5) self-organising, and (6) characterised by emergent phenomena that come about as a result of complex causalities (Cilliers, 2000; Preiser, 2019). I expand on these characteristics in the paragraphs that follow.

Complexity theory highlights *interconnectivity and relationality*, therefore differing from traditional scientific methods that are founded on reductionism (Berkas et al., 2003). While I highlight the move away from reductionism, I am equally cautious of an extreme holism that ignores the need for a robust ontology (Preiser, 2012). Therefore, while complex systems are *inherently open to outside influence* (Cilliers, 2001), system bounding is necessary to support analysis.

Complex systems are *context-dependent*, meaning that a changing context influences a system’s functioning. Acknowledging context dependency does not mean that everything is unique to each situation; indeed, the identification of complex system characteristics indicates the existence of

similarities across systems. Furthermore, the study of systems and complexity is predicated on the assumption that we can learn about common patterns and archetypes.

Complex systems also have *adaptive capacities that allow for self-organisation* and the development of complex structures without external intervention or centralised control. Furthermore, *dynamic relations* between internal feedback loops and external systems can unexpectedly suppress or amplify disruptions. This nonlinearity contributes to the complex causality, resulting in phenomena ‘which have systemic properties that are different and nonreducible to the properties of the constituent elements’ (Preiser, 2019). Therefore, when studying complex systems, the ‘presence of emergent properties does not provide an argument against causality, only against deterministic forms of prediction’ (Cilliers, 2000, p.24).

Considering complexity does not provide a sure path to positive transformations, but it does help to avoid oversimplification and misleading conclusions (Preiser & Cilliers, 2010). Critical complexity acknowledges the necessity of clarifying the normative (value-based) frameworks that underpin research (Audouin et al., 2013). A normative orientation differs from an ‘objective’ one, which is said to be based on undisputable facts (Moon & Blackman, 2014). Research paradigms sit on a spectrum from normative to objective. However, I would argue that no matter how rigorous the scientific evidence, there is necessarily a normative framework that directs inquiry. However, I believe we can create evaluative frameworks and identify desired outcomes. As my central research aim implies (Section 1.4), the increased participation of rural residents in land and water governance processes impacting their lives and livelihoods is desirable.

The theory of complexity does not suggest that all interventions are pointless but that we must be cognisant of the characteristics of complexity and therefore be humbler with what is possible to achieve and by when.

4.1.2. *Systems thinking*

‘A system is an interconnected set of elements that is coherently organized in a way that achieves something’ (Meadows, 2009, p.11). ‘Someone who pays particular attention to interconnections is said to be systemic’ (Ison & Straw, 2020, p.14). Complexity emphasises the relational (interconnected) nature of systems, suggesting that the interactions between elements are as significant as the characteristics of the elements (Cilliers, 2006). System thinkers use a set of tools, methods, and principles to discover and articulate the interrelatedness of forces and feedback loops in systems (Richmond, 1993; Kim, 2000; Senge, 2006) while recognising that the whole is greater than the sum of its parts (Ison, 2008; Meadows, 2009). Arnold and Wade (2015, p.675) define systems thinking as ‘a set of synergistic analytic skills used to improve the capability of identifying and understanding

systems, predicting their behaviours, and devising modifications to them in order to produce desired effects. These skills work together as a system.’ Therefore, systemic thinking and practice aim to understand the purpose of a system and how it works in order to contribute to desirable change; praxis is theory-informed practical action (Ison & Straw, 2020).

Rather than let disciplinary boundaries obscure particular perspectives, systems thinking provides a rigorous toolbox that allows a problem to dictate the system of interest (Stroh, 2015) (Textbox 6). The CSES framing (Section 3.1) exemplifies systems thinking by highlighting the often arbitrary and artificial distinction drawn between social and ecological systems (Folke & Berkes, 1998) and by generating a collection of approaches and methods that can support studies that transcend the social-ecological divide (Biggs et al., 2021). Importantly, systems thinking explicitly includes the researcher as a component of the system of interest – which means that the system bounds include the relationship between the researcher and the system under investigation (Holling, 2001; Ison, 2010a; Weaver et al., 2019).

Textbox 6 | Bounding the system of interest

The bounds, or focus, of the analysis are clarified at multiple points in my thesis: first, by introducing the social and ecological characteristics of the Tsitsa River catchment (Section 2.1); second, as part of mapping governance in Chapter Five, I describe key social and ecological elements in greater detail than peripheral ones, thus clarifying the research focus; finally, as part of the analysis in Chapter Six, I describe the unusual bounding that does not focus on a specific bio-physical problem with accompanying actors, but on distinct manifestations of participation across the entire land and water governance system in the Tsitsa River Catchment.

In reality, CSEs are radically open to external influence. However, systems analyses require bounding to create a relational dynamic between a system and its environment. The relational dynamics between levels are achieved by acknowledging and/or indicating outputs to another level or inputs from another level.

Bounding also includes deciding on the level of detail required. Stirzaker et al. (2010) propose the idea of ‘requisite simplicity’ to remove unnecessary detail while maintaining the required level of conceptual clarity and scientific rigour. They suggest four principles: knowledge advances incrementally; a lack of certainty is no excuse for inaction; there are no simple answers; and working with complex systems requires a degree of humility.

4.1.3. Transdisciplinarity

Transdisciplinary forms of research have emerged in response to pressing societal challenges and to ongoing critiques of conventional knowledge generation (Bernstein, 2015), and are therefore

designed to address wicked problems that are embedded in complex systems (Roux et al., 2017; Lang et al., 2017; Liehr et al., 2017; Wolff et al., 2019) (Textbox 7). I introduce transdisciplinarity as influential with my methodological framing; however, I have also drawn on transdisciplinarity as an overarching guiding principle (Max-Neef, 2005; Lang et al., 2012).

Textbox 7 | Popular definitions of transdisciplinarity

‘A reflexive, integrative, method-driven scientific principle aiming at the solution or transition of societal problems and concurrently, of related scientific problems by differentiating and integrating knowledge from various scientific and societal bodies of knowledge’ (Lang et al., 2012, p.26).

‘A reflexive research approach that addresses societal problems by means of interdisciplinary collaboration as well as the collaboration between researchers and extra-scientific actors; its aim is to enable mutual learning processes between science and society; integration is the main cognitive challenge of the research process’ (Jahn et al., 2012, p.4).

Transdisciplinarity has been posited as a way to bridge the gap between theory and practice in sustainability science in general (Lang et al., 2012; Van Breda & Swilling, 2019) and more specifically in natural resource management (Cockburn et al., 2018b; Wolff et al., 2019). Through a commitment to adaptation and evolution in response to societal needs and contextual changes (Wickson et al., 2006), transdisciplinary research can meet scientific goals while simultaneously tackling complex, societal problems. My research was supported by the Tsitsa Project (Textbox 8).

From a philosophical perspective, transdisciplinarity is proposed as a way to engage the four levels of knowing – from the empirical (*what exists?*), to the pragmatic (*what are we capable of?*), to the normative (*what do we want to do?*), and ultimately to the value level (*what should we do?*) (Max-Neef, 2005). Strong transdisciplinary research engages all four levels to integrate the normative and value levels into a research process, as the theory of critical complexity suggests is necessary (Audouin et al., 2013). Objectives One and Two set out to explore social and ecological elements and the interactions between them (empirical level) in a land and water governance context (pragmatic level). My aim is to identify leverage points to support the emergence of meaningful participatory governance in the TsRC, so that rural actors are increasingly able to be meaningfully involved in governance (normative level), and thus able to contribute to social-ecological justice in the form of human well-being and ecosystem health (value-based level).

Textbox 8 | Transdisciplinary process

I describe my research approach, using the three-phase transdisciplinary research process (Jahn et al., 2012; Lang et al., 2012; Wolff et al., 2019).

- *Phase A: Team building and problem framing*

I entered the five-year-old Tsitsa Project in 2019, thus joining an established transdisciplinary team (Section 2.2). My problem framing was informed by the Tsitsa Projects research strategies and objectives, which resulted from a collaborative planning process involving Tsitsa Project researchers and Department of Forestry, Fisheries and the Environment officials and managers (Fabricius et al., 2016; Biggs et al., 2019).

- *Phase B: Co-creation of solution-oriented and transferable knowledge*

Working in the Tsitsa Project also enabled knowledge co-creation to integrate different forms of knowledge. I engaged with both academic knowledge embedded in the academic literature and experiential knowledge held by societal actors and documented in the grey literature (Tengo et al., 2014).

- *Phase C: Re-integration and application of knowledge*

Phases B and C were conducted simultaneously through ongoing learning and reflection (Cockburn et al., 2018b), with generated knowledge being iteratively fed back into the Tsitsa Project's operations to inform planning and action. Knowledge integration activities included regular project meetings, presenting at research colloquiums and conferences, and co-drafting policy briefs.

In the next section, I introduce the four guiding research principles that I distilled from the methodological framing outlined in this section.

4.2. Guiding principles

Complexity-sensitive approaches suggest using principles rather than step-by-step recipes to guide research (Lang et al., 2012; Palmer et al., 2015; Wolff et al., 2019). I now describe the four guiding principles that informed my research design (Palmer et al., 2015; Cockburn et al., 2018b): (1) personally engage with the problem context, (2) work collaboratively with societal actors, (3) maintain a critical and reflexive orientation, and (4) adapt to changing circumstances. These four principles sit in tension with the dominant forms of doing research, revealing continua along which my research necessarily navigates.

Personally engage with the problem context in an action-oriented way

My methodological framing aligns with my ethics and highlights the value of engaging directly with societal challenges – therefore, not only seeking to understand a problem but also to identify possible levers for change while grappling substantively in the ‘real world’. The value of action-oriented engagement is particularly highlighted in transdisciplinarity (Section 4.1.3), but is also echoed in the

understanding of systems thinking, that a researcher necessarily forms part of, and in turn influences, a system under investigation (Ison, 2008). Indeed, analysing complex systems requires direct observation, as systems rarely do what individuals or institutions say they will do. It is necessary, therefore, to engage personally and to see what emerges (Meadows, 2009).

A corollary of engaging personally in a problem space is acknowledging and remaining aware that we are all multidimensional beings with hopes and concerns beyond immediate interactions (Palmer et al., 2007, 2015), which is a key consideration for working collaboratively.

Work collaboratively with diverse researchers and societal actors

The necessity for a collaborative team that includes societal actors is well-acknowledged in transdisciplinary research (Lang et al., 2012; Wolff et al., 2019) and in the philosophy of critical complexity (Audouin et al., 2013). The necessity of collaboration follows from adopting an engaged and action-oriented approach – practically and epistemically. *From a practical perspective*, working with collaborators in the field is necessary for entering and navigating various spaces and interactions – for example, navigating different cultures and languages. *From an epistemic perspective*, collaboration and dialogue with collaborators are necessary for co-creating transferable knowledge (Ryan et al., 2019; Wolff et al., 2019). Indeed, creating valid, understandable, and usable results requires collaborative meaning-making processes (Olan & Edge, 2019; Kulundu et al., 2020) to create a knowledge base that is bigger than the sum of its parts (Cockburn et al., 2018b).

Engaging with diverse worldviews is key to ensuring that work is independent of dominant ideologies. Palmer et al. (2007) highlight the need for balanced engagement among team members and tolerance of divergent ideas when working collaboratively in a transdisciplinary team.

Maintain a critical and reflexive orientation

Theories of complexity emphasise the limitations of our knowledge (Section 4.1.1) while prompting the necessity of modest assertions (Brock & Carpenter, 2007) and reflexivity (Cilliers, 2006). Reflection is the continuous practice of examining our experiences and opening our practice to scrutiny (Bolton, 2010). Beyond reflection, reflexivity is the ability of a researcher to turn back upon themselves (Robertson, 2002) and to acknowledge the system's impact on them and their impact on the system (Ison, 2008). 'To be systemic is also to be reflexive' (Ison, 2018). Reflexivity is necessary for conducting transdisciplinary research (Temper et al., 2019) and sustainability science (Ives et al., 2019; Knaggård et al., 2018). Practising greater reflexivity has also been recommended in various natural resource management settings (Cheng & Randall-Parker, 2017; Koot et al., 2020). The justification for increased reflexivity comes from a critique of objectivist research styles that ignore the individual's influence in the research process (Rogers et al., 2013; Koot et al., 2020).

Practically enabling reflection and reflexivity requires actively creating opportunities for reflection, individually and as a team (Palmer et al., 2007, 2015). Reflection and reflexivity can lose efficacy if forced (Hobbs, 2007), if conducted as a box-ticking exercise (Bolton, 2006), or if they are uncritical in a way that reinforces dominant ideologies (Sharkey, 2004). Maintaining a reflexive orientation is being ready to accept mistakes and adapting to changing circumstances.

Adapt to changing circumstances

Both systems thinking and the evolving transdisciplinary methodology highlight the value of working iteratively and allowing for personal strategies and adaptations rather than being stuck in a linear, mechanistic conception of research (Checkland, 1993; Ison, 2008; Lang et al., 2012; Ison et al., 2021). Furthermore, they highlight the need for ongoing evaluation and learning to support adaptation (Cockburn et al., 2018b; Wolff et al., 2019). Research in CSEs requires working in adaptive ways that acknowledge and work with inherent complexity (Biggs et al., 2017). Discontinuities are inevitable: people come and go, and ideas shift (Palmer et al., 2015). Palmer et al. (2007) suggest an awareness of discomforts and tensions that may lead to knowledge generation and trust building. In a complementary way, Rogers et al. (2013) recommend habits of mind that enable openness, situational awareness, and awareness of when to act and when to restrain action.

4.2.1. Principles invoking continua

The framing and methodology introduced thus far have emerged in reaction to observed failures in dominant ways of working (Van Kerkhoff, 2014; Cockburn et al., 2018b; Tsitsa Project et al., 2021f). Therefore, the new principles provide guidance, and neither are immediately attainable in an ideal form nor represent a static goal to be ‘achieved’. The identified principles validate novel research methodologies, but do not replace dominant methodologies; instead, they invoke multiple dialectic tensions, with both sides being essential and valid (Table 4.1).

Table 4.1. Research principles in generative tension with opposing principles.

My guiding research principle	Opposing principle
Engaged research that grapples with complex problems in context.	Theoretical and conceptual work that is removed from practical problems in specific contexts, but enables coherence and integration.
Collaborative research involving multiple perspectives.	Individual growth, exploration, and learning through self-study.
Reflexive and self-aware research that values subjectivity.	Research that strives for a level of objective certainty.
Adaptive research that responds to change.	Rigid research that aims to be comparable and repeatable.

‘The notion of a dialectic means that the tension is never resolved but the movement between them, with the critical consciousness of what the one has that the other lacks, is “the pulse” that helps actors to address a particular issue’ (Cockburn et al., 2018b, p.18). Viewing conflicts between methodologies as dialectics can help to reframe differences in belief in a positive light and ‘develop a productive space between’ (Van Kerkhoff, 2014, p.149). One can seek to address the limitations of one methodology by engaging with another through generative tensions (Cockburn et al., 2018b).

4.3. Research approach

In this section, I introduce the place-based case study approach (Section 4.3.1) and systemic action research (Section 4.3.2) – two complementary approaches to research that provide well-documented ways of conducting research in line with the guiding principles outlined above. After outlining the approaches, I clarify the iterative and adaptive modes of reasoning that are used to generate findings and conclusions from data collection and existing theories (Section 4.3.3).

4.3.1. *Place-based case study approach*

The case study approach can be defined as an empirically grounded approach that investigates a contemporary phenomenon in context, highlighting that we cannot draw distinct boundaries between the ‘case’ and the broader context (Hays, 2003; Yin, 2017). Place-based case study approaches emphasise framing research around a particular place, highlighting the value of carefully bounding a study, engaging with a specific place, and adapting research to suit that place (Cockburn et al., 2018a; Paddock et al., 2021). Place-based research and case study research are both well-articulated approaches for exploring the interaction between local systems in a broader context (Norström et al., 2017), with the potential to enable lessons learnt at a local level to inform more comprehensive transformations (Carpenter et al., 2012).

Place-based research highlights the need for empirical experimentation, active learning, and understanding of how CSEs respond to interventions by drawing on diverse forms of knowledge (Balvanera et al., 2017; Cockburn et al., 2018a). Case study research provides an adaptable framework within which methods can be adjusted in real time in response to challenges and opportunities (Patton, 1987). Case study research requires purposeful system bounding (Textbox 6), as porous boundaries inevitably result in more variables than data points (Yin, 2017). Therefore, arriving at valid results relies on building on prior theoretical propositions and drawing on multiple sources of evidence for triangulation. The contemporary phenomenon under investigation in this study is participation in the land and water governance system in the Tsitsa River Catchment. I understand this phenomenon as one that is embedded in the broader context of the Eastern Cape and South Africa.

I conduct a single-case holistic case study (Yin, 2017). Contextual nuances in CSEs (Section 3.1.2) and in manifestations of meaningful participatory governance (Section 3.3) mean that in-depth cases are key to contributing to more general knowledge generation and to learning subtle lessons that can then be used to understand similar contexts. While the case under investigation comprises multiple sub-systems, I study the case holistically as a single unit of analysis. Land and water governance in the TsRC has both *common* and *unusual* characteristics that contribute to it being a critical case, and thus justify applying a single-case-study approach (Yin, 2017).

- The TsRC is unusual in that it contains large volumes of unharnessed water resources, and is one of the last remaining large dam sites in water-scarce South Africa (DWS, 2014). The presence of the large dam site has prompted the planned Mzimvubu Water Project (Section 2.2), the importance of which has triggered substantial investment in research in the TsRC. These investments, and the body of knowledge generated, provide the potential for insights that could inform land and water governance in the former homelands across South Africa.
- The TsRC, which forms part of the former Transkei homeland (Section 2.1), is a common case in that it has comparable social and ecological challenges to those of other former homelands (in which around 17 million people live).

A common concern with place-based research and single-case studies is the difficulty of generating generalisable results or findings that can be transferred and upscaled (Flyvbjerg, 2006; Noor, 2008; Carpenter et al., 2012; Yin, 2017). Rather than seeing these limitations as a fundamental flaw, I acknowledge them while not letting go of the considerable benefits of generating in-depth insights into a particular contemporary phenomenon in its context (Noor, 2008; Carpenter et al., 2012). The in-depth single-case-study approach can complement more replicable and generalisable research approaches (Flyvbjerg, 2006; Barnett et al., 2016).

4.3.2. *Systemic action research*

I understand action research as a set of practices that bring together action, reflection, theory, and practice to engage collaboratively with societal actors in search of practical solutions to issues of concern (Reason & Bradbury, 2008). The general characteristics of action research are immersion in context, the emergence of questions and problems from the context, iterative theory testing and development, and collaboration between researchers and actors from the context (Checkland & Holwell, 1998; Holwell, 2004; Reason & Bradbury, 2008). Therefore, action research is an established approach to research that is in line with my guiding research principles (Section 4.2).

Through the action research process, the researcher interacts with the complexities of the real world (Checkland, 1993), trading in the ‘high ground of technical rationality for the swamp of real-life issues’

(Ison, 2008, p.154). Such immersion is necessary because a 'real or full understanding, including that of complexity, can only come from an internalised intersection of understanding (intellectual) and practising (lived)' (Rogers et al., 2013, p.1). As with transdisciplinary research (Textbox 8), the action research approach is a collaborative and emergent process that cannot be pre-determined, but is designed to enable local dynamics to influence and direct inquiry (Checkland & Holwell, 1998).

At the core of the action research approach are iterative cycles of planning, action, reflection, and learning through which findings are generated (Taylor et al., 1997; Ison, 2008; Reason & Bradbury, 2008). One rendition of the action research process is the 'soft' systems methodology (Checkland, 1993), which is an iterative 'learning system' in which an analyst observes a system, builds a theory, and then compares and validates this theory in order to decide on appropriate action.

My approach was guided by a systemic action research cycle consisting of four iterative phases (Checkland & Holwell, 1998; Ison, 2008; Clifford-Holmes, 2015) (Figure 4.2). The numbering of the phase descriptions below relates to Figure 4.2.

- Entering real problem situations with a guiding framing (i).
- The researcher engages with a problem context and collects data (ii).
- The researcher then reflects on the experiences and analyses the data (iii),
- to generate learning and themes (iv).

My interpretation of the action research cycle places academic and societal collaborators at the centre of the iterative cycle, creating an explicit link to the ideal-typical mode of transdisciplinary research, which involves teamwork and collaboration with diverse actors in all research stages (Textbox 8).

The envisioned outcome of action research is improvement in practice (as judged by the people in the situation) through learning and action (Checkland & Holwell, 1998; Reason & Bradbury, 2008), which results in new problems to learn about (Checkland, 1993). In the case of my research, the leverage points framework (Section 3.4) suggests that there are recognisable points in any system where decisions and actions are more likely to shift the system towards a desirable outcome (Meadows, 1999; Abson et al., 2017). I apply the action research approach to support the identification of desirable trajectories and of places to intervene to enable transitions.

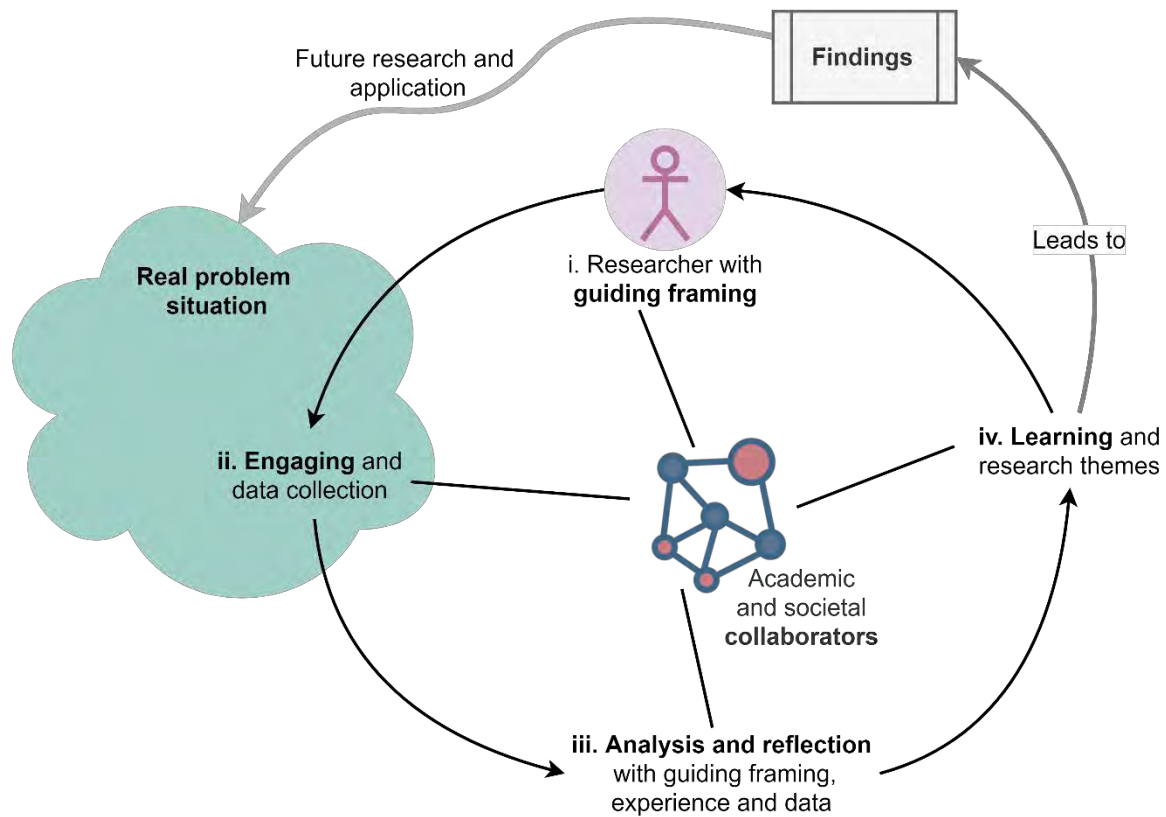


Figure 4.2. The systemic action research cycle: A collaborative approach.

The systemic action research cycle shows a central iterative loop moving anti-clockwise, starting with the researcher with a guiding framing: i. Design guiding framing; ii. Engage with the real problem situation; iii. Analyse and reflect; iv. Learn and draw out research themes. These four phases are conducted with academic and societal collaborators, allowing for confidence in the findings to grow and to consolidate the research findings, which in turn influence future research and application. Adapted from Checkland and Holwell (1998), Ison (2008), and Clifford-Holmes (2015).

As with single-case studies, action research studies can be limited in transferability and influence beyond the immediate system of interest. Action research can be enhanced if it is connected to broader social movements, thereby increasing the impact of locally generated learning and solutions (Gustavsen, 2002). Action researchers can enable the connection of specific to general by bridging the gap between the academic and the practical and can, therefore, play a crucial role in designing and maintaining transdisciplinary learning processes in a system (Roux et al., 2017).

4.3.3. Modes of reasoning

My research is founded on qualitative methods, which are commonly used to answer research questions about the experiences, meanings, and perspectives of people involved in a social situation – data that are not easily quantifiable (Hammarberg et al., 2016). Qualitative research approaches and methods commonly consist of interrelated steps that co-occur (Maxwell, 2008; Creswell, 2014).

Therefore, I apply an adaptive approach that iterates between deductive and inductive modes of reasoning to use data and existing theory to generate findings, discuss implications, and draw

conclusions (Layder, 1998). Inductive logic focuses on the emergence of categories and patterns (or regularities) through reviewing data, thus creating generalisations (Patton, 1987; Braun & Clarke, 2006), which enable descriptions that can provide answers to ‘what’-type research questions (Blaikie, 2018). An approach founded on purely inductive logic is grounded theory, which foregrounds the importance of building theory that is based on data rather than on pre-existing theories (Charmaz, 2006; Glaser & Strauss, 2006). Conversely, deductive logic relies on theories to categorise and make sense of data (Braun & Clarke, 2006), building on existing theories and providing evidence to support or test them against distinct sets of data (Blaikie, 2018). Place-based case study approaches and systemic action research draw on empirical observations and existing theoretical frameworks, making them coherent with an adaptive strategy.

I use inductive reasoning as a foundational sense-making tool, allowing the context and the data that emerges to influence the direction of the research. I use predominantly inductive reasoning to arrive at the empirically grounded findings I present in Chapters Five and Six (Sections 5.4 – 5.6 and 6.4). I then combine inductive and deductive reasoning in an adaptive approach, drawing on the data collection and the existing literature, to arrive at synthetic findings in Chapters Five and Six (Sections 5.7.1 and 6.3.8), and achieve the Central Aim in Chapter Seven. This adaptive and iterative approach aligns with conceptions of abductive logic, which seeks to ‘generates social scientific accounts from everyday accounts of social life’ (Blaikie & Priest, 2017, p.9).

4.4. Research process and methods overview

I entered the Tsitsa Project in 2019, when it was already an established research project that, at the time, was increasing the level of implementation (Figure 4.3). Therefore, I built my research on the project’s solid conceptual and social foundation. Furthermore, my research process overlapped with the end of the Tsitsa Project, and I was thus able to contribute to the concluding research and documentation (Figure 4.4).

The Tsitsa Project was a social network of collaborators (Section 2.2.1). Academically, the CoP coordinators and researchers housed at Rhodes University were a highly capable research team with connections with research institutions across South Africa. The formal governance actors predominantly working under the Department of Forestry, Fisheries and the Environment (DFFE) and the societal collaborators living and working in the TsRC provided a substantive connection to a societal problem, and supported the realisation of a transdisciplinary team (Textbox 8). The Tsitsa Project’s Catchment Coordinator helped me to enter the field and meet the local governance actors, while LIMA’s senior social facilitator did translation and co-facilitation during the data collection. The

Community Liaison Officers (CLOs) supported my research by facilitating focus groups. (Refer to Appendix A2 for a detailed description of the collaborators and of my work with each academic and societal group.)

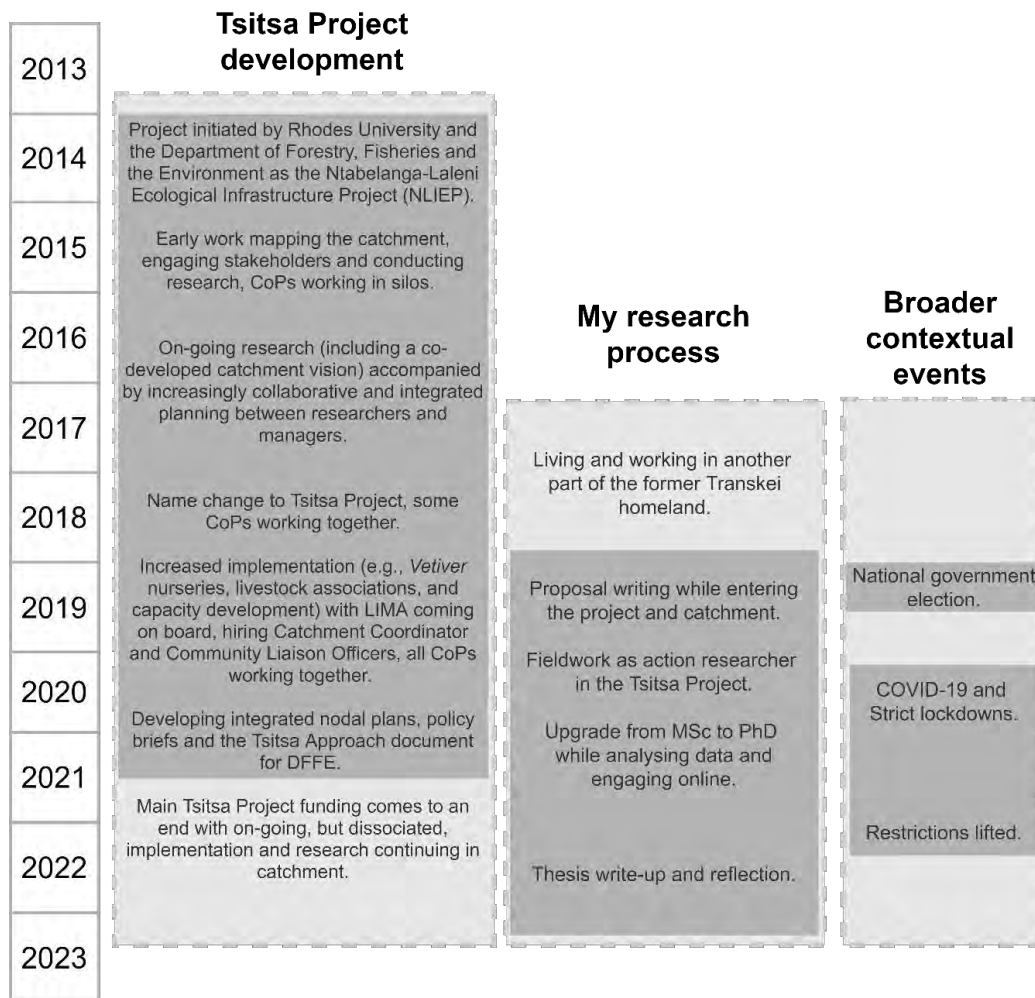


Figure 4.3. High-level timeline showing Tsitsa Project development with my research process.

I was involved in a range of activities as part of my role in the Tsitsa Project (shown in blue in Figure 4.4). Including co-facilitating village level planning workshops and learning words processes and monitor capacity development processes. Notably, I was lead organiser and facilitator for the learning words expansion workshops that contributed to my data collection (see Section 5.3.4 for more details).

Attending short courses and presenting my research both supported collaborative knowledge sharing and networking with other academics (Figure 4.4). The short courses included one content course (the social-ecological systems winter school), four methods courses (e.g., the system dynamics short course), and two eight-week mindfulness meditation courses which supported reflexivity (Rosch,

1997). I presented my research in two Tsitsa Project research colloquiums and at one national and one international conference.

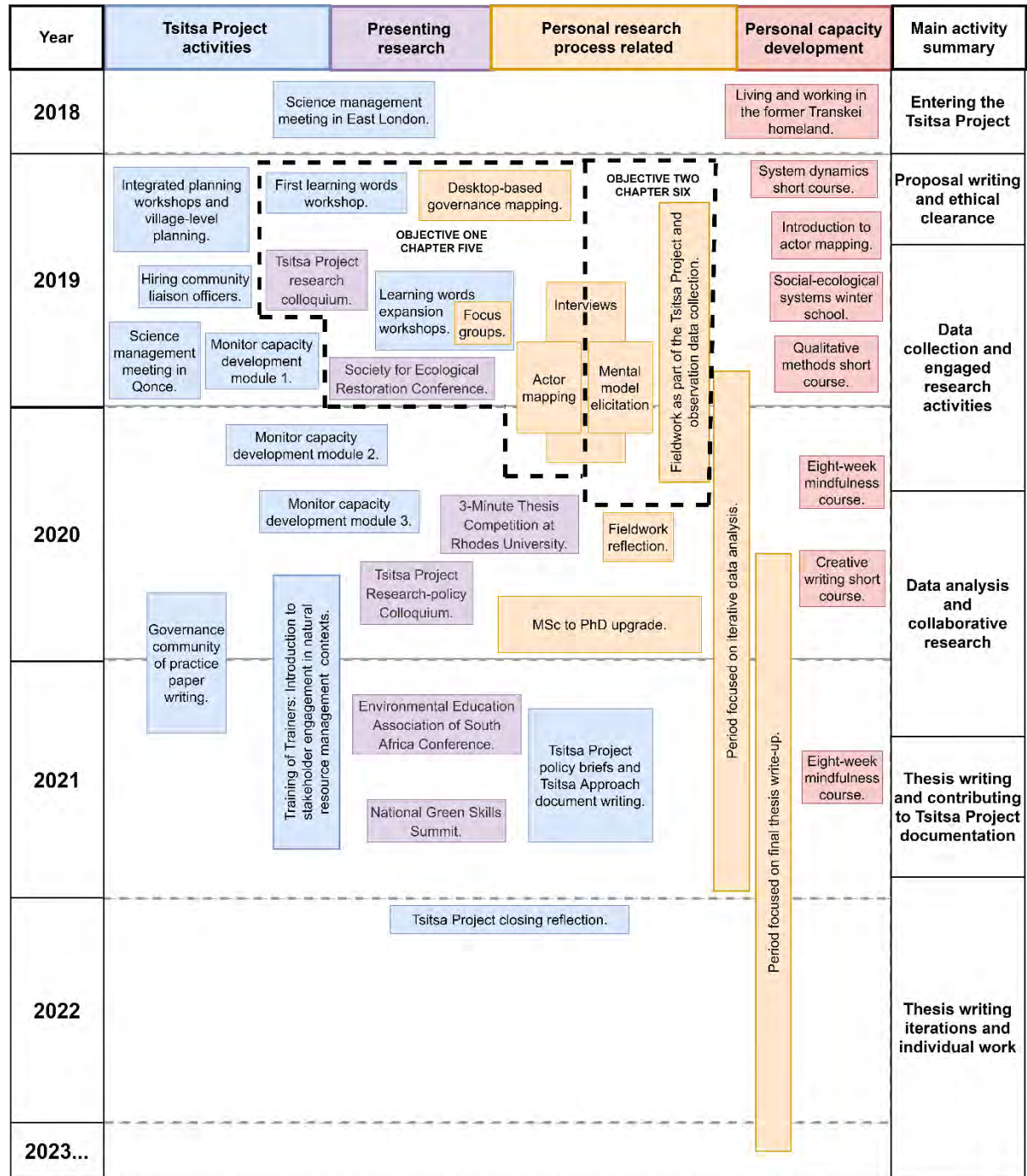


Figure 4.4. Timeline showing my key research events and Tsitsa Project activities. The events are divided into four categories: Tsitsa Project activities in which I was involved (blue); events at which I presented my research (purple); personal research-related activities such as data collection and analysis (orange); and personal capacity development short courses (red). The two dotted shapes indicate activities related to the achievement of specific objectives. All activities contributed holistically to the central research aim.

My primary data collection was conducted during embedded in-residence fieldwork between April 2019 and February 2020, and formed part of my broader role in the Tsitsa Project from December

2018 until December 2021. The engaged research outcomes achieved during my fieldwork are described in Section 8.3. Details of sampling, data collection, and analysis methods are in the main findings chapters (Five, Six, and Seven). One overarching limitation to my research was the onset of the coronavirus disease of 2019 (COVID-19), which impacted the Tsitsa Project (Section 2.2) and the amount of fieldwork that I was able to conduct in 2020 and 2021.

Table 4.2. Overview of methods with research objectives.

Broader, catchment, and village stories are the three analytical levels selected to structure the tri-mode method to achieve Objective One (Section 5.2.1).

Objective/aim	Methods	Data collection and analysis methods
Objective One: Map the complex social-ecological system of interest – the TsRC L&WGov system.	Tri-mode trans-disciplinary governance mapping (Chapter Five).	Broader Story: Document review of legislation and government websites. High-level maps were drawn as organisational arrangements (Section 5.3.2).
		Catchment Story: I mapped actor networks with 15 local governance actors, using individual semi-structured interviews. I mapped local actor networks, using qualitative detail and social network analysis concepts (Section 5.3.3).
		Village Story: Ten focus groups were held in three villages, with a total of 93 participants. I mapped the interactions between social and ecological elements (Section 5.3.4).
Objective Two: Conduct a systemic analysis of participatory governance in the TsRC L&WGov system.	Multi-method systemic analysis (Chapter Six).	I elicited the mental models of 15 local governance actors in individual semi-structured interview contexts. A diagram-based analysis was applied (Section 6.3.2).
		I conducted participant observations over ten months of embedded fieldwork. Narratives supported a thematic analysis (Section 6.3.3).
Central aim: Identify leverage points to support the emergence of participatory governance in the TsRC L&WGov system.	Leverage point analysis (Chapter Seven).	No primary data collection. I built on the findings developed under Objectives One and Two to conduct an analysis using the leverage point framework (Section 7.3).

4.5. Generalisability and confidence in research validity

My in-depth focus on a single CSES limits the generalisability of my findings (Section 4.3.1). Furthermore, following the Tsitsa Project's footprint (Section 2.2.3), my research does not cover the whole of the TsRC. I focus on the former homeland areas that overlap with the Elundini Local Municipality (see Figure 2.4 in Section 2.2). Therefore, my findings relate most directly to the former homeland part of the Tsitsa River Catchment. However, I aim to use the findings to contribute to the broader literature on land and water governance in complex social-ecological systems (Section 1.2.1).

Several factors allow me, as the researcher, to have confidence in the validity of my findings within the outlined methodological framing (Section 4.1). Data saturation – the point at which further data collection would not reveal any new information – is a standard tool for gauging research validity (Mason, 2010; Dworkin, 2012). However, using a saturation point generally suggests well-defined boundaries of a system of interest. It is, therefore, not consistent with my view of the TsRC L&WGov system as a CSES with porous borders (Section 3.1.2). Therefore, in an iterative and evolving methodology, judging saturation relies on a researcher being ‘confident that enough has been done to provide a satisfactory answer to the research questions’ (Blaikie, 2018, p.637). In action research, validity is promoted through a recoverable process that is based on an explicit philosophical framing (Checkland & Holwell, 1998). Thus I enhanced the dependability of my findings (Nowell et al., 2017) by carefully documenting and explaining the methods. Furthermore, the iterative and adaptive analytical process of generating findings and drawing conclusions allowed me to weave together theory and practice – building theory on practice and checking theory against practical experiences (Section 4.3.3).

Inductive reasoning involves assumptions about the generalisability of observed phenomena to represent broader, unobserved phenomena. The mechanisms used to limit false representation and interpretation, credibility, and understandability (Nowell et al., 2017) are listed below.

- Substantial collaboration with Tsitsa Project team members ensured that my research made sense in the context, while presenting at national and international conferences supported the positioning of my work within broader academia (Section 4.4).
- Extended fieldwork involved extensive experiences and observations (Section 4.4).
- Learning-based methods (Shackleton et al., 2009; Ison, 2010) involved the research participants in data generation and analysis (Hauck et al., 2015; Metelerkamp & Biggs, 2020). Learning-based mapping approaches included real-time generating data and preliminary reflection and analysis as part of mirroring back data (Engeström, 2010; Palmer et al., 2017).
- Multiple methods in Chapters Five and Six enabled triangulation, which is the application of two or more methods in the study of the same phenomenon (Noor, 2008). By triangulating data sources and data analyses, my approach supported comparison and triangulation towards cohesive theory building (Barbour & Morgan, 2017; Yin, 2017).

I have put multiple measures in place to ensure that I am confident about the validity of my results within the scope and limitations of my study. I am confident about the validity of my findings as a map rather than as a ‘true’ representation – a map that is valid if it can support the navigation of a complex problem (Section 4.1.1).

4.6. Ethical considerations

Ethics is an essential consideration for all research, and the complexity of ensuring ethical research practices increases as research becomes increasingly engaged and transdisciplinary (Wolff et al., 2019; Sellberg et al., 2021). While recognising that ‘the final word on ethics cannot be spoken’ (Preiser & Cilliers, 2010, p.265), considering the ethics of a research methodology and approach is necessary, and indeed is required by Rhodes University’s ethical guidelines (RUESC, 2014). The preservation of human safety and dignity through ethically correct conduct is a prerequisite for research; and those aspects should be preserved, even to the detriment of the research process (RUESC, 2014). I used the following steps to minimise any negative impacts of the research process.

I submitted my application to the Rhodes University Ethics Standards Committee for research with human subjects in May 2019 (Appendix B) and received ethical clearance in July 2019. I began fieldwork as part of the Tsitsa Project in February 2019 and took up residence in the TsRC in April 2019. However, my formal data collection procedures (interviews and focus groups) began in August 2019, once ethical clearance had been confirmed. All involvement in Tsitsa Project activities was covered by the overarching ethical clearance given by Rhodes University. Signed consent was received from all interview and focus group participants. (The consent form is given in Appendix B4.) Nobody was forced into participating in this research, and as far as possible, all participants were made fully aware of the research background and purpose. Participants’ identities, personal information, and data were considered confidential and were safeguarded from unauthorised access, use, or disclosure. Anonymity was maintained to protect participants’ identifying characteristics, such as names and descriptions of physical appearance. Audio recordings and photographs were used to support data collection with prior permission.

Abiding by the ethical regulations of Rhodes University (RUESC, 2014), relevant gatekeepers were contacted before interviews, including Elundini Local Municipality, Joe Gqabi District Municipality, the DFFE regional office, and the Department of Rural Development Agrarian Reform regional office (Appendix B3). Once gatekeeper permission had been acquired, I contacted the research participant in question to negotiate a time and place to meet for the interview. Gatekeeper permission was also obtained from sub-headmen in the traditional leadership structure to conduct focus groups with groups of village residents (Appendix B5).

The data have been carefully sorted and stored so that they are not lost, destroyed, or used for reasons other than were originally intended. My research is part of a larger research project being conducted by the Tsitsa Project governance research group in the Institute for Water Research (IWR). Thus the information was made available to them. The data were stored on my laptop, password protected, and backed up daily using Microsoft’s OneDrive online data storage platform. After submission, the

data will be held on the Institute for Water Research's server for five years. That server is located on the Rhodes University campus, and is backed up daily; two backups each week are also stored offsite in case of fire or other disasters on campus.

4.6.1. *Ethics of engaged research*

Involving societal actors in the research process comes with ethical responsibilities (Leyshon, 2002). Developing ways to conduct value- and ethics-based transdisciplinary research has been noted as vital in contributing to sustainability and social justice in CSES (Weaver, 2018).

I attempted to maximise my engagement with the context by living and working in the TsRC, which provided the experiential knowledge that is crucial for engaged research (Coghlan & Brannick, 2005; Ives et al., 2017). However, in-depth involvement in the field can bring trade-offs and raise dilemmas, such as what to take responsibility for within my limited capacity as a researcher, and how to manage the process of leaving the field (Mack et al., 2002). A fundamental complication in my engaged research journey was that, while I am a South African youth, born and raised in the Eastern Cape with exposure to the isiXhosa language and culture, I am far from culturally or linguistically fluent (Section 1.3). My observations and interpretations of interactions were limited, and a translator often mediated interaction. I could not always understand what was being said or pick up on all of the cultural nuances that pervade interactions between people.

When asking rural residents to participate in my study, achieving free, prior, and informed consent was a challenge. One concern was that participants would feel coerced to participate with unrealistic expectations of benefits or jobs. Honesty and transparency in order to manage expectations was key, therefore, to ensuring appropriate consent and to attracting local people interested in land and water governance. My methodology highlights the necessity of practically relevant research that engages and attempts to 'improve' a problem situation – an essential part of ensuring that research is conducted ethically. My embeddedness within the Tsitsa Project supported the realisation of research with impact, which I discuss in Section 8.3. I reflect on ethical dilemmas in a set of essays presented in Appendix A4.

4.7. Conclusion

In this chapter I have outlined how critical complexity, systems thinking, and transdisciplinarity provide a coherent philosophical framing and methodology for conducting research in CSESs. I have also outlined four principles that emerged from the methodology and guided the design of my research approach. In the three chapters that follow, I present the research findings in line with the research aim and objectives. Each chapter is internally coherent, with a detailed presentation of the applied methods.

CHAPTER FIVE | Mapping the multilevel land and water governance system

This chapter documents the achievement of my research objective, detailed in Section 5.1. I then outline the conceptual framing used to guide the mapping methods in Section 5.2 and describe the multiple governance mapping methods in Section 5.3. The findings are divided into three parts (Sections 5.4 – 5.6), each with an introduction, body, and discussion. The findings are supported by additional documentation and findings presented in Appendix D. Finally, a synthetic discussion highlights the key insights across the three findings sections (Section 5.7).

5.1. Introducing Objective One and supporting research questions

The first objective of my thesis is to *map the complex social-ecological system (CSES) of interest*, namely the social and ecological elements and their interactions that constitute the land and water governance system (L&WGov system) in the Tsitsa River Catchment (TsRC). The mapping is focused on *participation in land and water governance in the TsRC*. This first objective contributes to my Central Aim: to uncover high leverage points to guide participatory governance interventions that could contribute to long-term, sustainable transformations in the L&WGov system in the TsRC.

Part of achieving Objective One is to delineate the bounds of my analysis, describing what is central to the investigation and what is peripheral (Carpenter et al., 2001; Pollard et al., 2014). In governance and policy analyses, governance mapping is a typical early-phase research process (Aligica, 2006; Enserink et al., 2010; Dutra et al., 2019). Indeed, most interventions seeking to promote social change will require developing an inventory of institutions and actors and of their goals and interactions (Aligica, 2006). Governance systems in CSEs, and therefore maps of governance systems, consist of *governance elements (social and ecological) that interact within an institutional framework* (Aligica, 2006; Dutra et al., 2019). Four research questions guide the achievement of Objective One:

- a) What institutions, at multiple levels, influence the TsRC L&WGov system?
- b) Which social and ecological elements are important in participatory governance in the TsRC L&WGov system?
- c) How do the social and ecological governance elements connect?
- d) At what governance level should the systemic analysis focus in order to identify leverage points that enable meaningful local-level participatory land and water governance?

Given my focus on participatory governance, my mapping focuses on social elements, the interactions between them, and the formal and informal institutions which inform their actions. While land and water governance happen at multiple levels (Cash et al., 2006; Vatn & Vedeld, 2012), it is at the most local level of governance where the social elements in the governance system interact directly with the ecological elements. Therefore, substantive engagement with ecological elements is limited to the ‘Village Story’, the most local component of the mapping (Section 5.6).

5.2. Conceptual background for governance mapping

In this section I introduce governance mapping concepts that build on the conceptual overview given in Chapter Three. Section 5.2.1 introduces multilevel institutions, which I conceptualised as three stories of governance for this study. Social and ecological governance elements are introduced in Section 5.2.2, and the connections in Section 5.2.3. Finally, Section 5.2.4 presents a conceptual summary describing the elements and the connections in the three governance stories.

5.2.1. Institutional divisions

Governance systems are commonly divided into nested levels (Cash et al., 2006) (Sections 1.1.1 and 3.2.1). The next two subsections distinguish vertical and horizontal divisions in the TsRC L&WGov system. I first define three governance stories (I define the term ‘story’ in the next section). The stories of governance are a vertical division because they are nested domains of governance; the Village Story is nested in the Catchment Story, within the large Broader Story. I then divide each of the three stories into governance clusters (e.g., water or agriculture-related), to which I refer as horizontal divisions.

Three stories of governance

Through my theoretically informed practice, or praxis (Ison, 2018), as part of the Tsitsa Project’s GovCop (Section 2.2), I identified three distinct domains of governance that I have termed ‘stories’. The three stories of governance are the Broader Story, the Catchment Story, and the Village Story (Figure 5.1). I primarily use the term ‘story’ to avoid conflation with other uses of words that are present in the South African system of governance, such as ‘levels’, ‘tiers’, and ‘spheres’. Furthermore, the term ‘story’ emphasises a shift from formal and static conceptions of *management* and *government* towards a notion of *governance* as something pieced together by people (Cleaver, 2012) – as stories tend to be. Stories (like narratives, which I apply analytically in Chapter Six) are specific and context-dependent (Dahlstrom, 2014), and can support communication that takes into account human agency as well as the interactions between actors and the system of interest (Flyvbjerg, 2004; Tsoukas & Hatch, 2013). By using the term ‘story’, I explicitly acknowledge the limitations of my knowledge by highlighting that the stories presented in this chapter are my interpretations and

representations of reality (Section 4.1.1). I introduce the three nested stories (Figure 5.1) by drawing on the institutional levels presented above (Ostrom, 2005; Clifford-Holmes et al., 2016).

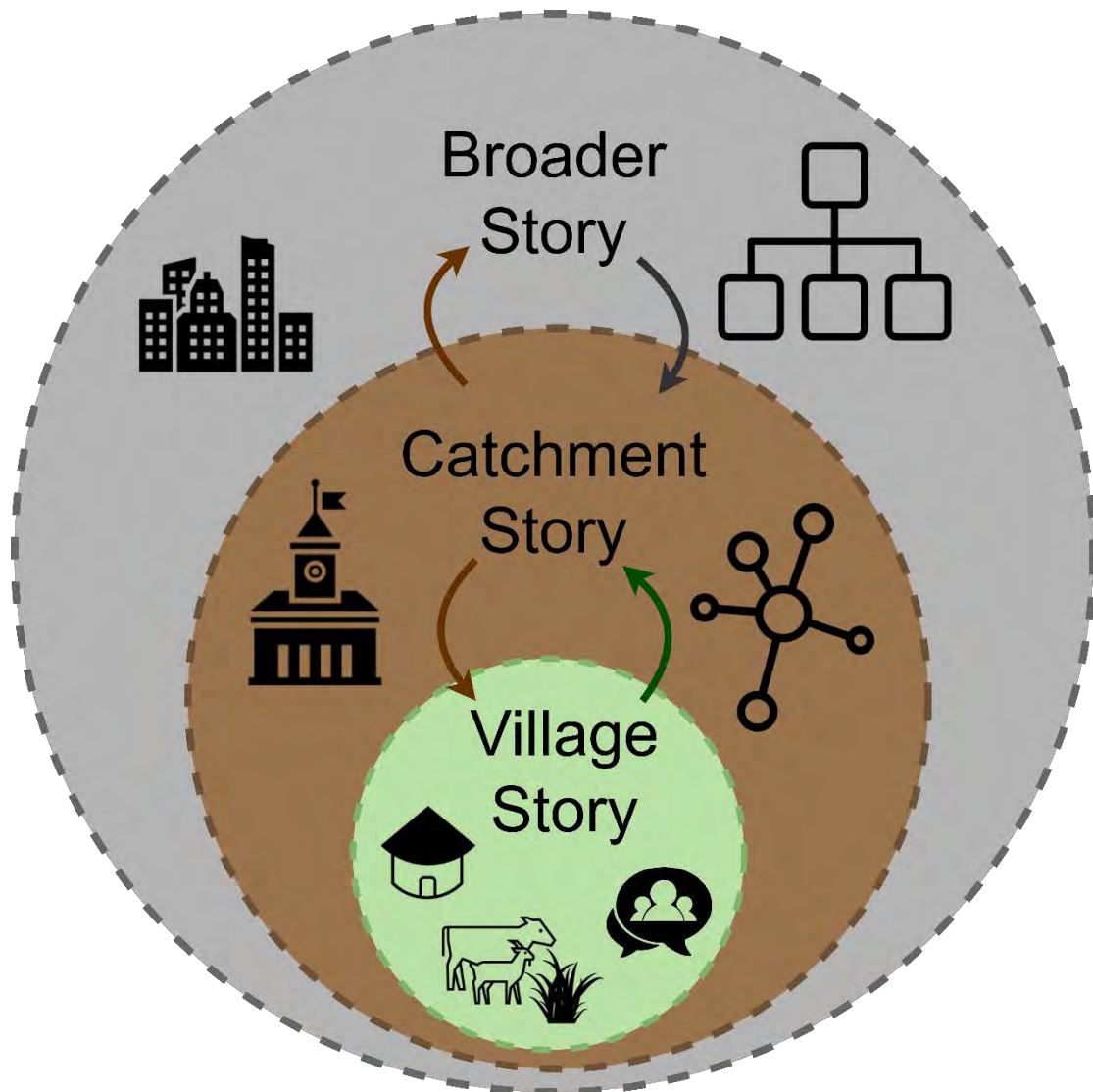


Figure 5.1. Three nested stories of land and water governance in the Tsitsa River Catchment. The Village Story is nested in the Catchment Story, within the Broader Story. The arrows indicate that the interactions between nested stories. The Broader Story (grey circle) occurs in large urban centres and is characterised by hierarchies. The Catchment Story (brown circle) takes place in small urban centres and is characterised by networks of actors. The Village Story (green circle) takes place in rural villages and is characterised by community meetings and informal in-person engagements. It is in the Village Story where social governance elements engage directly with ecological system elements; thus ecological elements (e.g., livestock and grass) are mapped mainly in the Village Story. The chosen division supports a high-resolution analysis at the local level. The Broader Story influences the highest level on the spatial scale, and I refer to it as the ‘highest’ story.

The Broader Story refers to the broader system that impacts land and water governance in the TsRC. The Broader Story influences the largest spatial and jurisdictional levels, and describes the formal land

and water governance conducted by government departments across South Africa and the Eastern Cape Province. The Broader Story includes the vision and organisational architecture that are laid out in high-level documents and legal provisions that dictate how governance is supposed to happen (Textbox 3). The Broader Story also includes the regulatory and operational mechanisms that inform implementation at lower levels through norms.

The Catchment Story refers to governance institutions, actors, and interactions within the spatial bounds of the TsRC. The Catchment Story includes local government actors (local and district municipalities), provincial and national government department representatives, and implementers of governance activities through which operations and projects are implemented. Actors in the Catchment Story interpret the formal rules from the Broader Story, and implement them in the local reality, where informal rules influence what happens (Textbox 3).

The Village Story refers to land and water governance at the sub-catchment level in rural areas of the TsRC. The operational manifestations in the Village Story – what happens on the ground – result from interactions between formal and informal institutions. As the influence of formal governance institutions decreases, the importance of community members who form part of extended family units increases. In the Village Story, community members work together to manage land and water resources such as water and grasslands.

Textbox 9 | Socio-economic disparities between stories.

Mirroring the socio-economic inequality in South Africa (Section 1.2.1), boundaries between the three stories go beyond governance. The actors in the Broader Story live in urban centres with generally operational and functional infrastructure. The actors in the Catchment Story live in small towns, where the infrastructure is usually functional but has increasingly been failing in the Eastern Cape and across South Africa. The actors in the Village Story live in small villages where there is poor or even no infrastructure.

The mode of transport seems to be an indicator of story. Actors in the Broader Story drive private cars and fly regularly; in the Catchment Story, work trucks and utility vehicles are driven; while in the Village Story, people walk or take intermittent public transport. On occasions when actors from the Broader Story were present in Nqanqarhu (Figure 2.1) – for example, while attending a high-profile funeral – the types of car in town were noticeably different. A formal rule does not define the choice of transport by actors in each of the three stories. Still, it is a substantive indicator of socio-economic inequality and of the realities of the various governance actors.

My conceptualisation of a ‘story’ of governance allows for a consideration of the broader contextual differences between the stories – differences that mean that actors who cooperatively govern a single geographic area do so from profoundly different realities (Textbox 9). It must also be noted that actors are classified according to the ‘home’ story in which they mostly engage, however, there are not hard

boundaries between the stories and actors can move between stories and even change their home story over time – for example a community member living in a rural village who becomes a ward councillor (as one of the Tsitsa Project’s community liaison officers did).

Clusters within stories

To scaffold the analysis further, I divide the governance stories into clusters. I take the term ‘cluster’ from network analyses, where clusters are groups of elements in a system that, based on their connectivity, are deemed to be a distinct community or group (Horcea-Milcu et al., 2020). The clustering of governance elements differs between the three stories (Table 5.1). The Broader Story is clustered according to national government departments. In the Catchment Story, I divide actors into seven clusters according to the focus of their work. The Village Story is clustered around specific ecological elements, which means that the analysis of the Village Story is divided up so that actors who interact with common ecological elements are discussed in the same cluster.

Table 5.1. Horizontal clusters in the three stories of governance.

Three stories of governance, which represent ‘vertical’ divisions in the governance system, are divided into ‘horizontal’ clusters to structure the analysis further. The elements in each story are different, and therefore the categorisation of elements in each story is different.

Story	Story elements	Horizontal clusters structured the analysis
Broader	National government departments with subsidiaries such as provincial departments and associated agencies.	• Cooperative Governance and Traditional Affairs (COGTA). • Water and Sanitation (DWS). • Agriculture, Land Reform and Rural Development (DALRRD). • Forestry, Fisheries and the Environment (DFFE).
Catchment	Individual or organisational governance actors such as implementing agents, traditional leaders, or local municipal departments.	• Local government actors (district and local municipalities). • Traditional leaders. • Water services and water resource management actors. • Agricultural actors (public and private). • Environmental management actors. • Other actors who are not directly involved in land and water governance. • Communities within the Tsitsa River Catchment (Section 3.2.1).
Village	Social actors , such as farmers and extended families, and ecological elements , such as animals and plants.	• Water resources (rivers, wetlands, and springs) and water service provision. • Grasslands and livestock. • Indigenous and alien invasive forests. • Crops and subsistence gardens.

5.2.2. *Social and ecological governance system elements*

Governance mapping in CSEs includes social and ecological elements (Section 3.1.1). Social elements include actors and institutions (Section 3.2.1). Ecological elements (to which I also refer as ‘land and water resources’) include physical and biophysical system elements, which can be stocks (such as grass or water) or processes (such as erosion or rehabilitation) (Fanini et al., 2021). Social and ecological elements play roles in governance systems, and it is common to identify typical or critical roles to support analysis in network governance analyses and governance mapping methodologies (Lorrain & White, 1971; Borgatti et al., 2009). To support governance mapping that is oriented towards participatory dimensions of governance, I introduce two roles played by social elements, namely systems convenors and boundary spanners, and one role played by ecological elements, namely nexus elements.

System convenors are leaders who unite groups to work on common challenges. The role of a system or network convenor is to bring people together to support the emergence of innovations (Svendsen & Laberge, 2005). System convening involves facilitation across multiple groups in a system. The system convenor repeatedly brings people together to build shared understanding and trust (Wenger-Trayner & Wenger-Trayner, 2021). System convenors provide leadership in a given system, but also ‘see’ the imminent challenges outside the system. Leading by example, the system convenor demonstrates a valuable and meaningful life while facilitating the building of a community that can contribute to desirable system functioning. A system convenor has the tricky role of navigating the inevitable tensions that arise in a system – allowing actors to play their role in ways that do not compromise the vision and trust that gives rise to the articulation and pursuit of purpose.

Boundary spanners work to enable communication and integration across boundaries (Section 3.2.3). Boundary spanners are well-connected within their own group, and have strong connections to other groups (Coleman & Stern, 2018a). They can enable collaborative management of natural resources (Safford et al., 2017; Coleman & Stern, 2018a; Tsitsa Project et al., 2021d), and are invaluable for making sustainability science actionable (Goodrich et al., 2020). ‘Boundary spanners are characterised by their ability to engage with others and deploy effective relational and interpersonal competencies’ (Williams, 2002, p.110). Being multilingual is vital in the South African context, where inevitably people who speak multiple languages will be involved in governance. ‘Translation’ can relate to language; but it also refers to translation across other boundaries, such as cultural norms or kinds of knowledge. Without boundary spanners, much of the practical implementation work is more difficult as they build essential working relationships and play key roles in trust networks (Coleman & Stern, 2018a).

Actors can use *ecological elements at boundary points*, what I refer to as nexus elements, to stimulate collaborations across social and ecological boundaries. While all ecological elements (Section 3.2.1)

are embedded in ecosystems, particular elements sit at boundary points that connect multiple social or ecological subsystems. Water is an example of an ecological element that connects diverse and often physically distant landscapes, as the activities of the upstream communities influence the water quality for downstream communities.

5.2.3. *Connections*

My conceptualisation of the three stories and of the participatory governance elements is based on connectivity, which is at the core of systems thinking (Meadows, 2009). Throughout this thesis, I follow the social-ecological systems framework (Ostrom, 2009) by using ‘interaction’ as an umbrella term to refer to a single exchange between actors and governance processes. An interaction can also include direct interventions and intentional actions to create change.

Given the division of the TsRC L&WGov system into stories and then into clusters, connections can be in a single cluster, between clusters in the same story, or between two stories. In network governance analyses, connections in a single cluster are commonly referred to as ‘bonding links’ or ‘ties’ (Bodin & Crona, 2008), often when they are connections that support trust in a group (McPherson et al., 2001). Connections between clusters or stories are referred to as ‘bridging links’, and can support collaboration between clusters (Bodin & Crona, 2008).

Considering connection directionality, I categorise interactions as unidirectional or bidirectional (Binder et al., 2013). Unidirectional connections have only one direction, and are generally hierarchical connections in which substantive feedback is limited or absent. Conventional knowledge transfer from scientists to practitioners is a standard unidirectional connection in land and water governance (Roux et al., 2006). Bidirectional connections are two-way connections that allow for interaction and feedback between actors, and sit on the spectrum of participation (Section 3.3.1), from consultative processes to processes of collaboration and collective action, which allow for actors from lower levels of governance to guide and lead governance processes.

5.2.4. *Conceptual summary*

The concepts presented in the conceptual background (Figure 5.2) have guided the design and implementation of the multi-method approach.

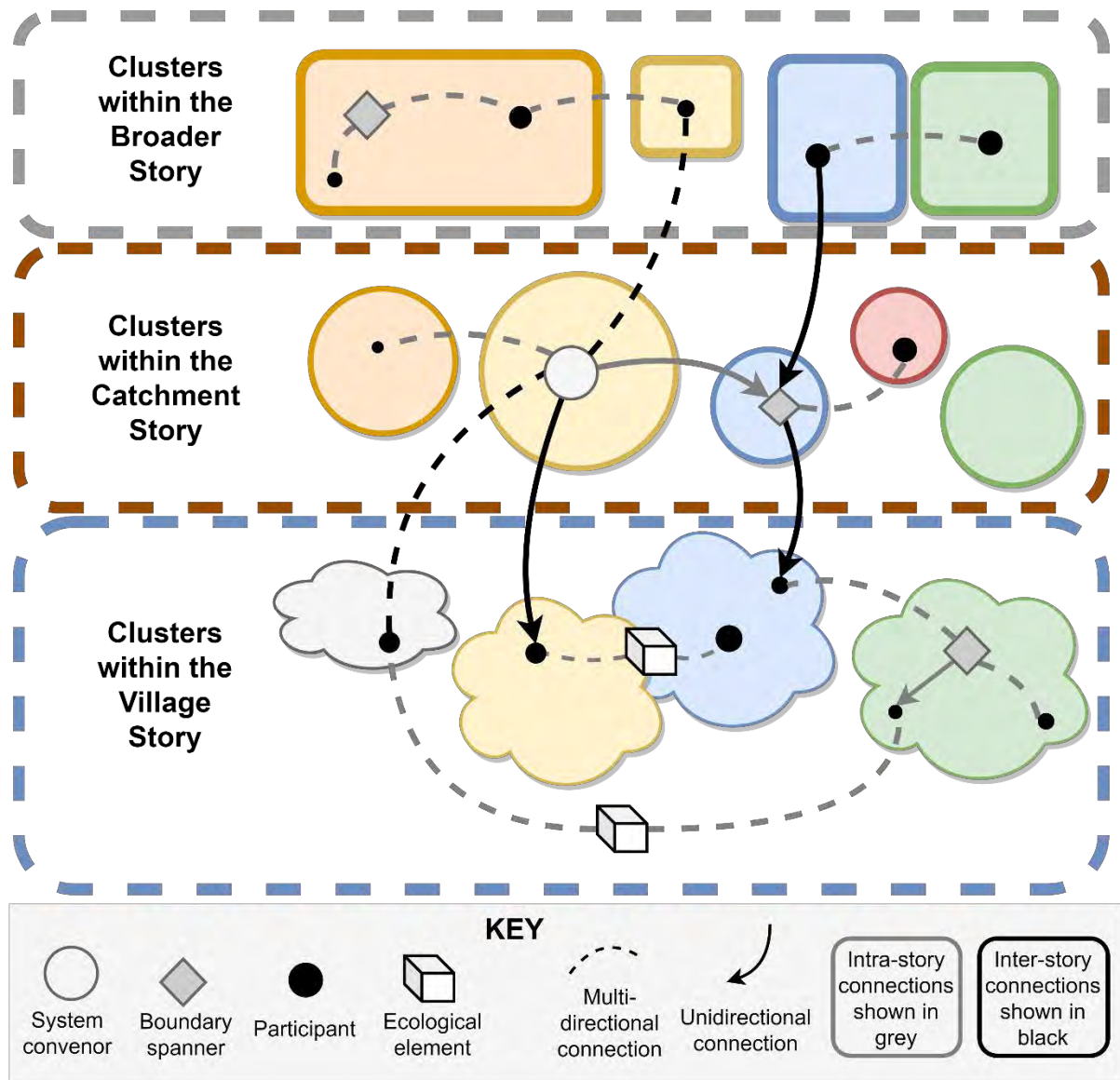


Figure 5.2. Conceptual framing for mapping participatory governance.

The three dotted rectangles show the three governance stories: Broader (grey & top), Catchment (brown & middle), and Village (blue & bottom). Colourful shapes indicate clustering: rectangles in the Broader Story, circles in the Catchment Story, and clouds in the Village Story. The framework also shows typical connections of system convenors, boundary spanners, and ecological elements at boundary points (nexus elements). I have included participants or other actors involved in the conceptual framing, as they are necessary for participatory governance. The Village Story is where people engage directly with ecological elements; thus, ecological elements are mapped predominantly in the Village Story. The conceptual framing differentiates between unidirectional and bidirectional connections and between inter- and intra-story connections.

5.3. Methods

The governance mapping methods presented in this section were embedded in an action research and single case study research approach (Section 4.3), which was nested within an overarching transdisciplinary and systemic methodology (Section 4.1). My methodology was characterised as an

iterative engagement between the context (Chapter Two) and academic theories (Chapter Three). It was operationalised through an extended time of living (ten months) and working in the context (two years) (Section 4.4). The overarching ethical considerations are addressed in Section 4.6.

Section 5.3.1 introduces governance mapping, and provides an overview of the methods used. The subsequent three sections (Sections 5.3.2 – 5.3.4) provide detail of the data collection and analysis methods. The section ends by describing how the methods relate to the findings.

5.3.1. Governance mapping

Governance mapping is used to analyse governance systems, and can be used to make complex governance systems communicable (Aligica, 2006). I follow Dutra et al. (2019) in understanding governance maps as primarily consisting of governance elements, the interactions between them, and the institutional frameworks that guide action and interaction. I map governance through a combination of textual descriptions and maps. While I use the term ‘governance maps’, they are known by various names in different fields – for example, ‘directed graphs’ in mathematics or ‘socio-graphs’ in sociology (Hanneman & Riddle, 2005).

Methods for mapping governance systems are many and diverse. Techniques such as stakeholder mapping identify actors, actor interests, and connections to one another and to the system of interest (Reed et al., 2009). Other governance mapping methods focus on power over a specific situation (Mayers & Vermeulen, 2005; Schiffer & Waale, 2008). Network analysis methods are popular for identifying and tracking connections between actors (Prell et al., 2009; Maciejewski & Baggio, 2021). When looking more specifically at mapping CSEs, the social-ecological systems framework, which builds on Ostrom’s (2011) well-respected institutional analysis and development framework, has been used to map interactions between governance systems and resource systems (Ostrom, 2009; Dressel et al., 2018). I designed a fit-for-purpose mapping method (Hauck et al., 2016) to explore participatory governance across the three governance stories. My method consists of three methods (one for each story) that respond to and reflect the problem situation (Wickson et al., 2006). I collectively refer to these three methods as the tri-mode method (Table 5.2).

The formal government mapping of the Broader Story focuses on the South African government actors and the formal institutions that guide them (Section 5.3.2). I used an actor network mapping approach (Schiffer & Hauck, 2010) to map the Catchment Story (Section 5.3.3). The actor network mapping was complemented by a series of influence and accessibility mapping exercises (Mayers & Vermeulen, 2005); ‘influence’ referred to the power actors have over land and water governance, and ‘accessibility’ referred to how easy it is for community members to access governance actors. I explored the *Village Story* through focus groups to allow for detailed discussions of local resource

governance (Section 5.3.4). Mapping the Village Story also explored which actors are perceived by community members as ‘helpful’ in supporting local land and water governance activities. The sampling process, data collection, and data analysis methods are summarised in Table 5.2.

Table 5.2. Overview of governance mapping methods for achieving Objective One.

The three governance stories – Broader, Catchment, and Village – were investigated using different methods that responded to the research contexts.

Story	General data-collection method	Specific data-collection and analysis methods	Sample description
The Broader Story (Section 5.3.2).	Data were gathered through a desktop study that included a review of documents between January and July 2019.	Formal governance maps were guided by formal actor mapping (Enserink et al., 2010).	Documents describing the establishment of formal land and water governance structures and processes, including legal documents, departmental websites, and the academic literature.
The Catchment Story (Section 5.3.3).	Data were gathered during semi-structured interviews with individuals between July 2019 and February 2020.	Actor mapping (Schiffer & Hauck, 2010) was applied through real-time digital co-creation, synthesised with social network analysis tools (Schiffer & Waale, 2008; Khokhar, 2015), and complemented by influence and accessibility mapping (Mayers & Vermeulen, 2005).	Fifteen local governance actors were selected through purposive sampling, based on their involvement in participatory governance interventions.
The Village Story (Section 5.3.4).	Data were gathered through facilitated focus groups in participatory workshops between September and November 2019.	Complex social-ecological system mapping was informed by Learning Words (Palmer et al., 2022) and Net-Map (Schiffer & Hauck, 2010).	Ten focus groups with ninety-three participants from three villages in the Tsitsa River Catchment.

The sampling methods were designed to support confidence that the collected data could be used to make generalisations about the study area; however, the samples for each story have limitations. I did not collect any primary data for mapping the Broader Story and, therefore, may have missed some case-specific nuances. In the Catchment Story, my sample was influenced by the existing relationships of the Tsitsa Projects, these relationships enabled some interviews while making others more difficult to achieve. Therefore, my sample covers local governance actors involved in participatory governance (e.g., headmen and community development workers) and environmentally related governance actors (e.g., implementing actors). My sample could have included more local political actors (e.g., ward councillors) and locally influential water and agriculture actors. For the influence and

accessibility mapping, I selected participants to explore the overlap between traditional and democratic governance systems. In the Village Story, I conducted focus groups in three villages (including representatives from at least eight villages) out of about 80 villages; the level of saturation in the Village Story data promoted confidence in these findings. The limitations were offset through the use of triangulation between the data gathered for each story (Barbour & Morgan, 2017; Yin, 2017) in order to create a more credible governance map (Hammarberg et al., 2016) (Section 4.5). Furthermore, the discrete mapping methods were embedded in a collaborative approach that was characterised by an extended time of living and working in the TsRC and by the use of learning-based approaches, which included opportunities for validation with participants (Section 4.5).

5.3.2. *Mapping the Broader Story*

At the beginning of 2019, I mapped the Broader Story through a desktop study of the national and provincial government departments responsible for land and water governance and of the relevant local government and traditional leadership. The details of these institutions are accessible through documentation; hence the application of a desktop study. A desktop study method reviews secondary data, and is relatively rapid and inexpensive compared with primary data collected through fieldwork. Mapping the Broader Story involved reviewing internal Tsitsa Project documentation (most notably the two stakeholder analysis reports (Sisitka et al., 2016; Rivers et al., 2018) and external sources such as government documentation and the academic literature. The Broader Story maps consist of the actors and their specific mandates connected by lines (Figure 5.3). The diagrams also include key guiding legislation. Following the actor mapping technique advanced by Enserink et al. (2010), I focused on details that were most relevant to the system of interest rather than attempting to provide a comprehensive map. The mapping process involved four steps, as follows:

- I. **I identified laws, legislation, and procedures**, including, for example, the South African Constitution of 1996, in which a participatory democracy is envisioned and enshrined. I also reviewed legal documents related to local government, traditional leadership, water management, and land management. All documents are cited in the text, and a complete list is given in Appendix D1. The identified documentation provided information related to the two subsequent steps – identifying actors and specify relations.
- II. **I identified formal actor roles and responsibilities**. I identified the most relevant government departments and subsidiaries in the Broader Story by building on the two Tsitsa Project stakeholder analysis reports (Sisitka et al., 2016; Rivers et al., 2018). I then reviewed further the laws and regulations to map the roles and responsibilities of the identified departments.
- III. **I mapped formal relationships between actors** by identifying the formal links between the actors identified in the previous step. The legislation describes relations. I used the distinction

between unidirectional and bidirectional connections to categorise the connections. Unidirectional connections are hierarchical connections in which one actor commands another actor, while bidirectional connections are defined explicitly as cooperative.

- IV. **I explored changes in governance post-1994.** The final part of mapping the Broader Story included reviewing the academic literature about land and water governance in South Africa to identify trends and dynamics under the post-1994 democratic South African government. The reviewed literature is referenced in the text.

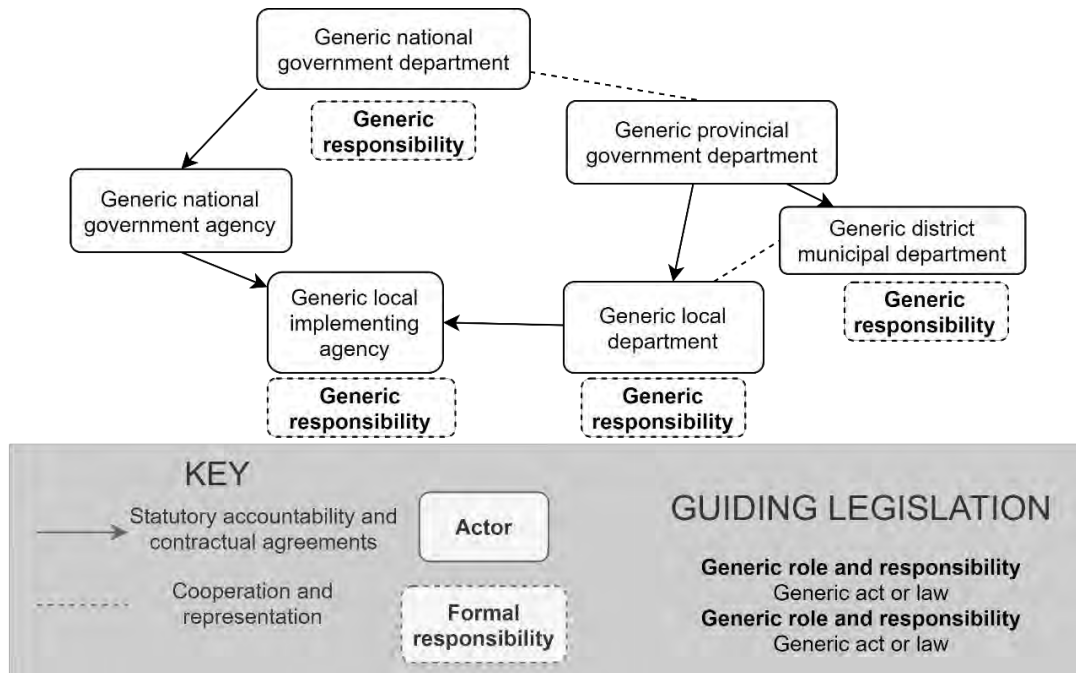


Figure 5.3. Generic formal governance map as used to present the Broader Story.

The formal governance maps, presented as part of the findings in Section 5.4, depicts the actors and their responsibilities, the connections between the actors, and the guiding legislation. Rectangles with solid borders represent actors, and rectangles with dotted lines describe the role or responsibility of the particular actor. The actors are joined by lines that represent connections. The connections are hierarchical (a solid line with an arrow) or collaborative (a dotted line with no arrow) (Section 5.2.3). The guiding legislation is included in the key at the bottom of each diagram.

The method and findings from the Broader Story informed the mapping of the Catchment Story, described in the next section. The Catchment Story mapping methods involved primary data collection and extensive engagements with research participants and are, therefore, substantially longer and more detailed than the Broader Story mapping section.

5.3.3. Mapping the Catchment Story

I mapped the Catchment Story through individual mapping exercises that overlapped and interacted (Figure 5.4).

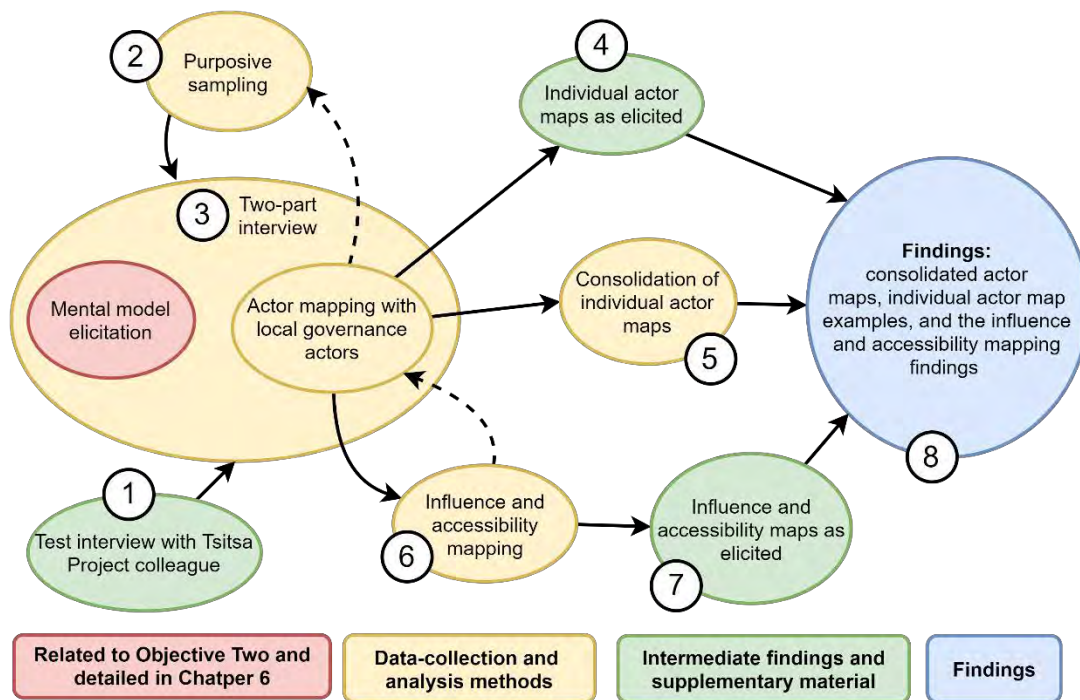


Figure 5.4. Flow diagram showing the methods used to map the Catchment Story.

The yellow ovals are the methods used to produce the green findings in Appendix D and the blue findings in Section 5.5. Solid arrows between ovals indicate sequencing, while dotted arrows indicate feedback between steps. The actor mapping was conducted as the second part of a two-part interview. As shown in red, the mental model elicitation contributes to Chapter Six. The numbers 1 to 8 assist with describing the process in the text, and are not in chronological order.

1. After designing the interview process, I tested the method with a colleague from the Tsitsa Project in July 2019; these methods and findings are given in Appendix D2.
2. In August 2019 I began mapping by *purposely sampling* participants.
3. I conducted *two-part interviews* with participants between August 2019 and February 2020, with each interview contributing to a different research objective. *Actor mapping* is presented in this chapter, while the *mental model elicitation* is detailed in Chapter 6.
4. *Intermediate actor mapping findings* are presented as co-created in Appendix D4.
5. The individual actor maps were synthesised into a *consolidated actor network map* using social network analysis methods. Data tables can be found in Appendix D5.
6. I conducted a follow-up *influence and accessibility mapping process* to explore the interactions between the local government actors and the traditional leaders.
7. *Intermediate influence and accessibility mapping findings* are presented in Appendix D6.
8. *The findings* in this chapter comprise the individual actor map examples, the consolidated actor network maps, and the influence and accessibility findings (Section 5.5.1-Section 5.5.3).

The subsections that follow detail the sampling method (#2), the interviews and actor mapping (#3), the consolidation of the actor maps (#5), and the influence and accessibility mapping (#6).

Purposive sampling

Purposive sampling is a method whereby research participants are selected on the basis of specific criteria, thus ensuring that sample selection aligns with the purpose of the research (Mack et al., 2005). Purposive sampling allows for the collection of in-depth insights rather than for broad generalisations to be drawn (Patton, 1987), and is most effective when data analysis and data collection are done concurrently and inform one another (Mack et al., 2005), as in my research approach (Section 4.3).

The sampling was informed by the Broader Story mapping (Section 5.3.2). I selected 15 interview participants in line with the second research question under Objective One: ‘Which social and ecological elements are important in participatory governance in the TsRC L&WGov system?’ Thus I selected participants on the basis of their involvement in local participatory governance, particularly identifying boundary spanners (Section 3.2.3 and Section 5.2.2). Sampling built off, but was not limited to, existing Tsitsa Project connections – indicated by ‘TP link’ in Table 5.3. Sampling was also influenced by practicalities such as who was willing and able to be interviewed. The emergent participant sample included actors from various governance clusters (Table 5.3) with diverse perspectives (Patton, 1987).

Table 5.3. List of interview participants as part of mapping the Catchment Story.

The table lists the participant role, the cluster in the Catchment Story, the alias (either interviewee or key informant), and the data collection method. Nine participants participated only in the two-part interview (mental model elicitation and actor mapping), while I conducted a follow-up influence and accessibility mapping with six participants. ‘TP link’ indicates that the participant had an existing connection to the Tsitsa Project before my research began.

Interview participants	Cluster	Data collection
Key Informant #1 – Cooperative Governance and Traditional Affairs, Community Development Worker 1	Cooperative governance	Two-part interview and follow-up interview
Key Informant #2 – Cooperative Governance and Traditional Affairs, Community Development Worker 2 (TP link)	Cooperative governance	Two-part interview and follow-up interview
Key Informant #3 – Cooperative Governance and Traditional Affairs, Community Development Worker 3	Cooperative governance	Two-part interview and follow-up interview
Key Informant #4 – Tsitsa Project, Catchment Coordinator (TP link)	Environment	Two-part interview
Key Informant #5 – Tsitsa Project, Integrated planning (TP link)	Environment	Two-part interview
Key Informant #6 – Department of Forestry, Fisheries and the Environment, local government support	Environment	Two-part interview
Key Informant #7 – Joe Gqabi District Municipality, natural resource management (TP link)	Environment	Two-part interview

Table 5.3. List of interview participants as part of mapping the Catchment Story.

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Interview participants	Cluster	Data collection
Interviewee #1 – Traditional leadership, Headman 1 (TP link)	Traditional leaders	Two-part interview and follow-up interview
Interviewee #2 – Traditional leadership, Headman 2 (TP link)	Traditional leaders	Two-part interview and follow-up interview
Interviewee #3 – Traditional leadership, Headman 3 (TP link)	Traditional leaders	Two-part interview and follow-up interview
Interviewee #4 – Elundini Local Municipality, Integrated Development Planning Manager	Cooperative governance	Two-part interview
Interviewee #5 – RAFL, Project Chairperson	Agriculture	Two-part interview
Interviewee #6 – Department of Forestry, Fisheries and the Environment, Youth Community Outreach Programme Coordinator	Environment	Two-part interview
Interviewee #7 – Department of Rural Development and Agrarian Reform, Animal Health Technician	Agriculture	Two-part interview
Interviewee #8 – Joe Gqabi District Municipality, Local Municipality Water Manager	Water	Two-part interview

In Table 5.3, I distinguish between interviewees and key informants. Key informants are those interviewees who were also research collaborators, and who therefore contributed substantially to my research beyond formal data collection (Section 2.2.1, Section 4.4, and Appendix A2). (Refer to Appendix D3 for a timeline of interactions with interview participants – i.e., meetings, interviews, follow-up interviews, and collaborations.)

Two-part in-depth interviews

An interview is generally a face-to-face interaction between an interviewer and a participant (Mack et al., 2005). Interviews are the suggested qualitative method for collecting data on personal experiences and perspectives (Denzin & Lincoln, 2005; Mack et al., 2005). While structured interviews should be consistent and have a set structure, unstructured interviews more closely mimic a discussion or dialogue, and can be influenced by the participant's answers (Kajornboon, 2005). In-depth interviews tend to be more unstructured, with open-ended questions allowing participants to express their views and explore their ideas about a topic. Interviewers can gain detailed information on a topic, while participants have the opportunity to express their views to an attentive listener (Mack et al., 2005).

The interviews conducted as part of my research were semi-structured, as I brought specific questions and topics to discuss while allowing space for clarifying questions (Kajornboon, 2005). The interviews consisted of two parts:

- mental model elicitation (Langan-Fox et al., 2007), which contributes to the achievement of Objective Two and is therefore detailed later in Section 6.3.2, and
- actor mapping (Schiffer, 2007), the primary method used to map the Catchment Story, is described in the next subsection.

The full interview protocol is given in Appendix C1. The interviews produced audio recordings, co-created actor maps, and my reflections, which were documented in my fieldnotes.

The quality of an in-depth interview depends on the rapport between the interviewer and the participant (Duncombe & Jessop, 2012). Given my positionality as an English-speaking person (Section 1.3), my data collection was supported by a research collaborator who acted as a cultural and linguistic translator (Appendix A2).

Actor mapping

Actor maps consist of actors represented by shapes, such as rectangles or circles, and connections represented by links between the actors. Network maps represent actor and relationship attributes by altering shape and link representation; for example, an actor's interest could be indicated by the shape's colour, and the thickness of a link could indicate the strength of a connection between actors. The actor mapping activity design was guided by Net-Map, an actor mapping tool for low-resource contexts (Schiffer & Waale, 2008). Net-Map has been used to support place-based action learning (Metelerkamp & Biggs, 2020). It uses interactive data collection and discussion to co-create detailed actor network maps, the purpose being to visualise and understand, discuss, and co-create knowledge, and ultimately to develop visions and strategies that improve situations in which a variety of actors influence outcomes (Reed et al., 2009; Schiffer & Hauck, 2010). Schiffer and Hauck (2010) propose Net-Map as a transdisciplinary tool that balances academia's rigour with a practitioner's time pressures to produce reliable findings quickly. My Net-Map application is described below.

Net-Map is designed for low-resource contexts, and is conducted with groups in hard copy (Schiffer & Hauck, 2010; Metelerkamp & Schiffer, 2020). In my interviews, actor maps were co-created directly in a digital format using diagramming software, draw.io v14.9.6, on Windows 11. By drawing maps digitally, I did lose some of the tangibility of a hard copy and the benefits (such as unmediated input from participants) of a more interactive hard-copy map-building process (Metelerkamp & Schiffer, 2020). However, I gained some benefits from a direct-to-digital approach (Weyer et al., 2019). One

benefit of the direct-to-digital method is that it is easier to edit than a hard-copy map, and allows the interview process to be more adaptable and the interview findings to depict the specifications of the interview participant more accurately. Generating neat and understandable data supported discussion and mirroring back. In some cases, a projector was used to make the screen more accessible for everybody to see, especially when a translator was present, which meant that three people were involved in the co-creation process and, therefore, everyone needed to see the screen.

My actor mapping method consisted of three phases: actor generation, connection generation, and discussion and mirroring (each of which I summarise in the paragraphs that follow).

Actor generation involves assembling a rich representation of stakeholders on a map. Elicitation was prompted: *Who do you interact with to do your job?* In the actor generation process, participants were prompted by suggestions: *Government departments? Non-governmental organisations?* Prompts about interaction regularity were also used: *Who do you interact with daily? Weekly? Monthly? Yearly?* During the initial interviews, the actors were not categorised, but in subsequent interviews, I used colour coding (with the interviewees' permission), based on governance clusters (Section 5.2.1): environmental, water, agriculture, cooperative governance, traditional, and other (Figure 5.5). Actors with connections to one another were positioned to avoid overlapping lines and to increase map readability.

The network of actors was then drawn by connecting actors with uni- or bidirectional lines. Elicitation questions included: *How do these actors interact? What do you do for them? Is it a strong connection or a weak connection?* The audio recordings captured the details of the discussion. Solid lines with an arrow indicate a unidirectional connection (e.g., employment), while dotted lines represent bidirectional relationships (e.g., collaboration) (Section 5.2.3).

Once the interview participants indicated their desire to move on, I would initiate a process of 'mirroring back' the actor map to the participants to encourage a collaborative analysis of the information (Engeström, 2010). The real-time digital approach enhanced the mirroring back, which ensured that each participant (1) was satisfied with the representation, and (2) had the opportunity to reflect on any novel insights that had emerged through the elicitation process.

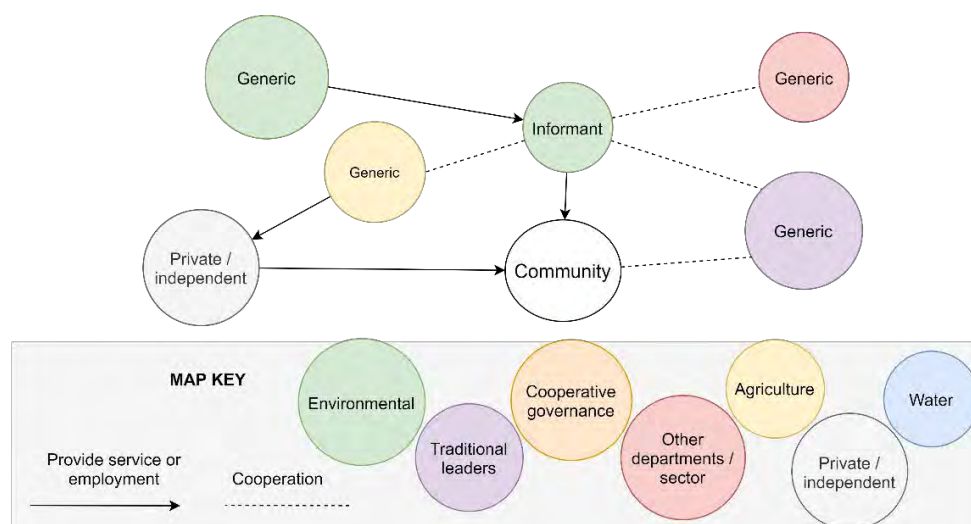


Figure 5.5. Generic Catchment Story actor map to support the description of the actor map components. Actor maps consist of actors and links between them. Actor sizing was done pragmatically to ensure readability, and does not indicate a specific attribute.

The first data analysis was done in-interview as part of the mirroring and discussion step. A secondary analysis then involved writing up descriptions of each actor map. After that, I used social network analysis as a synthetic tool to consolidate the 15 actor maps into a single consolidated actor network map, as described in the next subsection.

Consolidating the actor maps

I used Gephi (V.0.9.2 on Windows 11) to synthesise and visualise the actor network maps. Gephi is free, open-source software for exploring and visualising large-scale networks (Pavlopoulos et al., 2017). Gephi enables the visualisation of large networks (with many actors and links) to enable a high-level perspective that supports, for example, the identification of central actors with many connections. Gephi enables a range of statistical and quantitative data analyses; however, while I did use some of Gephi's quantitative functionality for visualisation (as described below), my analysis remained qualitative.

I consolidated the 15 individual actor maps into a single network map. I followed the guidelines of the 'Gephi Cookbook' (Khokhar, 2015) to convert the actor maps into Gephi-compatible data using Microsoft Excel, and then imported them into Gephi to create the consolidated network map. The actor data contained each actor's name, story, and cluster. The link data consisted of the source and target of each link. The consolidated network map consists of 109 actors connected by 313 links, and shows all of the governance actors (individuals and organisations) mentioned by the 15 governance actors. (See Appendix D5.) Below I describe the actor attributes (size, position, and colour) and the connection attributes (directionality, colour, and thickness).

I used actor centrality to define the *size* of the shape representing the actor. Actor centrality is based on the number of links an actor has (Schiffer, 2007), and indicates that a specific actor is in a position to control information and resource flows between actors (Borgatti et al., 2009). I used eigenvector centrality, which considers how many connections an actor has and the number of connections the connecting actors have (Khokhar, 2015). Eigenvector centrality, therefore, supports the identification of actors who are both well-connected themselves and well-connected to other well-connected actors; and it has been proposed as a metric that considers not only the current importance of an actor but also their future sphere of influence (Prell, 2011). The centrality of the interview participants is exaggerated as the consolidated network map includes all of their connections as elicited, while all of the other actors on the map will have a lower proportion of their connections represented. The use of centrality supported the identification of the next most central actors who were not interviewed.

The ‘community’ is unconventionally represented as a single actor; the ideal in social network analysis is to have each individual as a single actor (Scott & Carrington, 2011). My intention is not to imply that the communities of the TsRC are a single entity; instead, it is a workable representation of a complex situation with the knowledge that the Village Story grapples more substantively with the heterogeneity among communities. Therefore, my representation of the rural communities as a single actor is a placeholder, enabling the identification of actors directly connected to rural community members. These community members, as a collective, are the most prominent actor in the consolidated actor map. Given the eigenvector calculation introduced above, actors connected to the catchment communities have an exaggerated centrality because of their high eigenvector centrality—a dimension of the Catchment Story findings that needs to be acknowledged.

The actor position is determined by a selection of generic algorithms provided by Gephi. The Force Atlas algorithm (which uses the equations of gravity, in which centrality is used as a proxy for weight, to position the actors in relation to one another) was used to determine actor position. Between the use of centrality to determine actor size and algorithms to determine actor position, Gephi enabled the reduction of bias as to the position and size of actors (Khokhar, 2015).

The *thickness of the links* is dependent on the number of times that each link was mentioned; commonly mentioned links are thicker than less-mentioned links. Links show *directionality*: unidirectional links have an arrow, while bidirectional links do not. *Links* are colour coded according to the actor ‘higher’ in the governance system; actors from the Broader Story are higher than actors from the Catchment Story, who in turn are higher than actors from the Village Story (Figure 5.1).

Gephi allows the user to edit shapes and links to aid the identification of difficult-to-see patterns in networks (Pavlopoulos et al., 2017). In my research I used colour coding to identify actors who create

connections between actor groups and to analyse their position in the broader network; the colour coding enabled me to see the different groups in the network and the connectivity between them.

I generated two versions of the consolidated network map, which used different colour coding while the other map attributes remained consistent. In the first version, actors are colour coded according to the story of governance in which the actor is primarily living and working (Village, Catchment, or Broader [Section 5.2.1]), thereby supporting an analysis of connectivity (a) between stories and (b) within stories. In the second version, actors are colour coded according to their governance cluster (Section 5.2.1). The colour coding in the second version enabled the analysis of connections (a) between groups and (b) within groups.

Influence and accessibility mapping

As a follow-up exercise to the actor mapping exercise, I mapped influence and accessibility as two key actor attributes that influence participatory governance. I conceptualised influence as similar to power (Section 3.3.1). My choice of the word ‘influence’ indicates my focus beyond the formal conceptions of power (Section 3.2.1) and my desire to speak about power in a relatable, non-threatening, and understandable way. The combination of influence with ‘accessibility’ was a methodological adaptation and innovation, based on the emergence of ‘accessibility’ through the in-field analysis of the first six interviews as a key research theme. I encouraged clarifying questions throughout the mapping process to co-explore the subject matter with interview participants, rather than attempting to impose a predefined conceptualisation of the terms (Schiffer & Waale, 2008).

Mapping the attributes of actors (individuals or organisations) and their relationships is done by adjusting their representation on a map. For example, Mayers and Vermeulen’s (2005) stakeholder influence mapping tool uses actor size to represent the number of people that an actor represents and the distance from a central matter of concern (for example, a specific policy debate) to represent the actor’s influence on that matter of concern. I used actor size to represent influence, and actor position in relation to a central node to indicate accessibility (Figure 5.6).

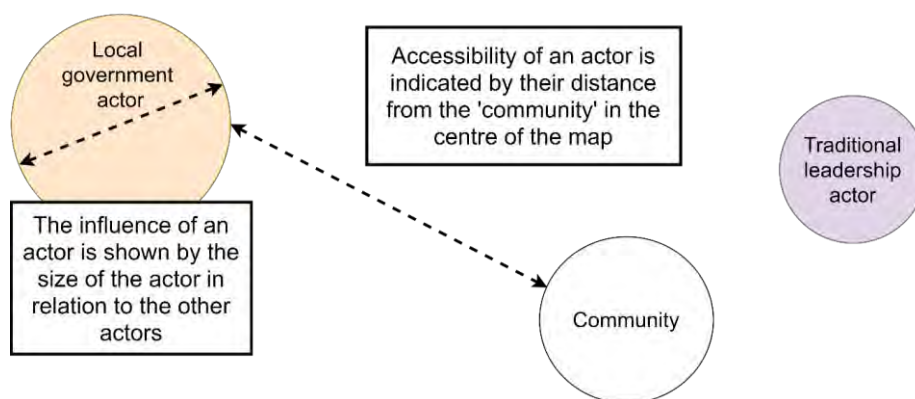


Figure 5.6. Example of actor size and influence used for accessibility mapping.

In the example, the local government actor is considered more powerful than the traditional leadership actor; however, the traditional leadership actor is more accessible.

A significant aspect of the case study is the overlapping systems of democratic and traditional governance in the TsRC (Section 2.1.2). The purpose of the influence and accessibility mapping was to gain a more detailed understanding of the interaction between traditional leaders and local government officials. Therefore, I selected the three community development workers (CDWs) who work in the democratic governance system and three headmen from the traditional leadership system, as introduced above in the subsection on sampling. The sample covers a substantial portion of the study area: three out of six CDWs and three out of ten headmen. However, the limitation of the sample was the focus on headmen and CDWs without engaging with other actors such as ward councillors from the democratic system and senior traditional leaders from the traditional leadership structures.

As with the actor mapping, the influence and accessibility maps were co-created with the research participants directly onto a computer. To avoid the time-consuming actor generation phase, I created a generic map (Appendix D6) by incorporating actors mentioned more than once in the actor mapping with headmen and CDWs.

Actor size indicates influence (Figure 5.6). The influence mapping began by asking: *How influential is this actor in land and water management in your area?* To ground the discussions of power, I would use practical conceptions of power and politics (Agnew, 2011) by asking questions such as, *How much influence does this actor have over land and water decisions?* After that, we could discuss power indicators, such as who an actor works with or the size of an actor's jurisdiction. Actor sizing was done by comparing actors; I would ask: *How influential is this actor? Are they more, or less, influential than this actor?* Graphically representing actor size was done iteratively.

The actor position indicates accessibility (Figure 5.6). I then initiated the accessibility mapping by asking: *How easy is it for community members to access this actor or institution?* Other proxies for accessibility, such as ‘closeness to the rural communities’, were also used to prompt the participants.

The influence and accessibility mapping ended with *a mirroring back process* that allowed the first level of analysis to be done with the research participants. The mirroring back was necessary, given the relativity of the actor attributes thus represented; actor size and closeness were elicited iteratively using the comparative questioning described above.

5.3.4. Mapping the Village Story

The Village Story governance maps depict the interactions between social and ecological elements at the most localised level. These maps were developed using focus groups during participatory workshops. In the subsections that follow, I first introduce the participatory workshop context and the villages where these workshops took place. Thereafter, I introduce focus groups as a method and the particular mapping exercise used to co-create the Village Story maps.

Focus group context: Participatory Learning Words workshops

As part of work aimed at building local capabilities for participatory governance, the Tsitsa Project’s GovCoP (Section 2.2 and Appendix A3) organised and facilitated a series of 12 workshops that brought together Tsitsa Project researchers, implementing agents working under DFFE, and residents. The workshop series ran from February 2019 to February 2020. These workshops were called ‘Learning Words workshops’, and were designed to co-create a shared understanding of particular words used in natural resource management (Palmer et al., 2022). The Learning Words workshops used a collaborative word-cloud (Figure 5.7) generation process (Palmer et al., 2022) (Appendix D7).



Figure 5.7. Photograph of governance mapping focus groups in a Learning Words workshop. The workshop formed part of the Tsitsa Project’s GovCoP’s work building participatory governance capabilities in the TsRC. Location: a classroom at Tlokoeng Junior Primary School in Ntatyani village in the Hlankomo traditional council area. (Photo by Anthony Fry, 18 November 2019)

I ran ten focus groups in three of the Learning Words workshops in October and November 2019, which were hosted in difficult-to-access villages in the Tsitsa Project's research nodes (see Figure 2.4 in Section 2.2.3). The three workshops were held in three of the 80 villages in the study area, and included 93 residents. The three villages fall in three different wards within the boundaries of Elundini Local Municipality, and are located in three different traditional council areas (Table 5.4).

Tsitsa Project Community Liaison Officers (CLOs) (Section 2.2.1) were responsible for recruiting participants and organising the workshop venue (Figure 5.7). The recruitment process included consultation with and permission from the relevant traditional leader (Appendix B5), who was regarded as the gatekeeper for the community in which they live. In all cases, traditional leaders advised the CLO on recruitment and supported the process by announcing the workshop in a traditional council meeting. Using traditional leaders to support recruitment helped remove sampling bias, which might have resulted from a CLO doing the recruitment in isolation. The CLO's support role was necessary to overcome the difficulties of recruiting and communicating with potential participants in a rural context. Providing appropriate compensation for participation is an ethical consideration (Section 4.6.1). We did not give monetary incentives, but we provided a meal that we shared with participants.

Focus group process: Mapping the Village Story

A focus group can be described as a discussion about a specific topic with a small group of people in which a researcher, who is actively encouraging participation and is attentive to the interactions, is present (McQuarrie & Krueger, 1989; Freeman, 2013; Ryan et al., 2014). Focus groups are similar to interviews, except that they reveal the perspective of a group rather than of an individual (Yin, 2017), and are widely regarded as a reliable method for generating socially embedded data about complex issues that require discussion (Stewart & Shamdasani, 1990; Reed et al., 2009). A focus group approach can incorporate a range of perspectives in learning and building a shared understanding (Schiffer, 2007). Following Ryan et al. (2014), I outline the focus group method applied in my research using four design characteristics: participant role, facilitator role, focus group structure, and data analysis and presentation.

The participant's role was to contribute their knowledge to building Village Story maps of land and water governance in their area. Each workshop accommodated between 22 and 38 participants, who were divided into three or four focus groups. Table 5.4 shows the number of participants in each workshop and focus group. Figure 5.7 shows an ideal focus group setup, with around six participants and one facilitator per group (Schiffer, 2007).

Table 5.4: Number of participants in Village Story focus groups.
The table shows the number of participants and groups in the three community workshops located in three Tsitsa Project research nodes (See Figure 2.1).

Workshop location	# Participants	# Groups	Approx. # per group
Upper Sinxako in the Elangeni traditional council area	22	3	7
Ntatyani in the Hlankomo traditional council area	33	4	8
Sigoga in the Lower Tsitsana traditional council area	38	3	12
TOTALS	93	10	

The role of the facilitators in these sessions is significant and requires skill (Schiffer, 2007). I co-facilitated these workshops with an isiXhosa research collaborator from LIMA Rural Development Foundation who collaborated with the Tsitsa project (Section 2.2.1). Our role was to guide the workshop process, including introducing the workshop, describing the activities, and answering related questions.

The CLOs facilitated the groups. Training the CLOs included each CLO participating in at least three similar focus groups with experienced facilitators. Running parallel groups facilitated by CLOs meant that I could not be involved in all of the focus group discussions, and therefore had to rely on conversations with the CLOs and the synthesised presentations given by the groups. The CLOs' role in facilitating the focus groups reduced the potential of epistemic injustice. First, the CLOs were able to facilitate the groups in isiXhosa. Second, the CLOs were less intimidating than a researcher. Furthermore, the facilitation experience was a learning opportunity for the CLOs. In preparing for and reflecting on the focus groups with the CLOs, we discussed common focus group challenges, such as 'focusing the focus group' on the specific topic, tempering dominant characters, and encouraging quieter participants (Freeman, 2013).

The focus group structure was designed using Net-Map (Section 5.3.3), which has been used as a learning-centred tool for exploring relationships in other low-resource contexts in South Africa (Metelerkamp & Schiffer, 2020). Net-Map was adapted to suit the context (i.e., mapping social and ecological elements in a focus group in a rural village) and the explorative intention of Objective One (Section 5.1). The mapping method is summarised below.

- Introduce and explain the workshop's background and purpose.
- Generate system elements by asking, *Who helps you with land and water management?* and *What do they help you with?* Responses were noted on coloured notes and distributed on large sheets of paper.

- Draw connections between elements by asking, *How are these actors helpful? What services do they provide?*
- Rate elements on their ‘helpfulness’. The focus on helpfulness falls within the practical conception of power used to guide the influence and accessibility mapping in the Catchment Story, which relates to what people do or could do that influences other people’s lives (Agnew, 2011). Wooden counters are used to represent *helpfulness* (Figure 5.8).
- Group discussions are prompted by the facilitator ‘mirroring back’ the map to the group (Engeström, 2010).
- Two group members from each group present their map. Group presentations are then recorded, transcribed, and translated.

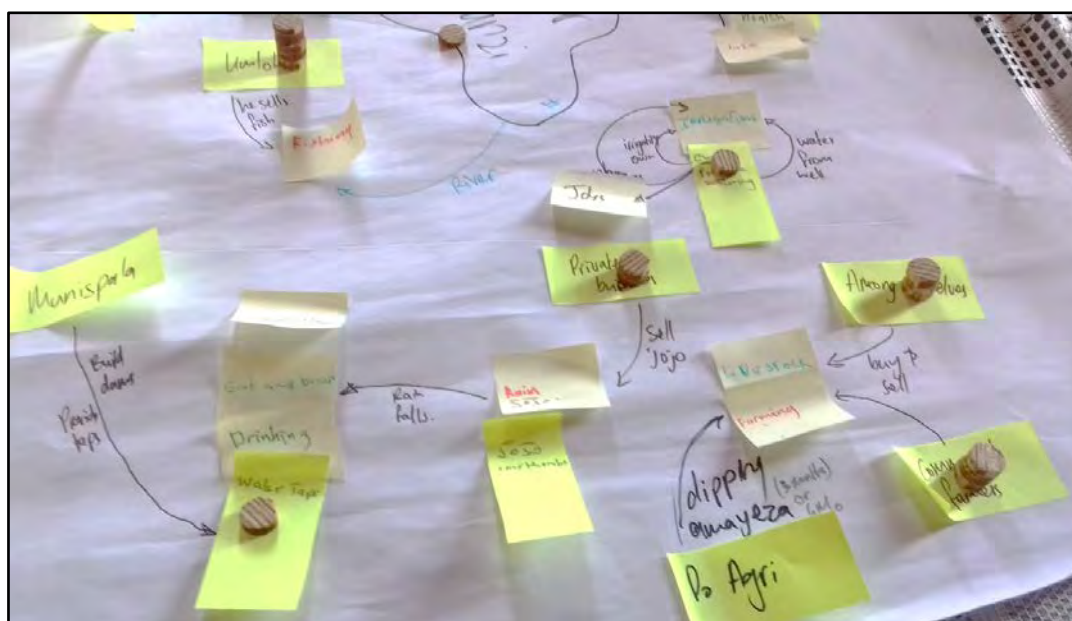


Figure 5.8. Example of a hard-copy Village Story map created with a focus group in Upper Sinxako. The names of human and non-human elements are written on the sticky notes; the lines between sticky notes indicate connections between elements; and the wooden counters represent the helpfulness of a specific element – more counters mean more ‘helpful’.

The ten groups in the three workshops provided ten maps *to analyse and present*. I consolidated the ten maps onto a single map, which I then divided into four (one for water and three for land). The four maps provide a generalised picture of the Village Story, which I used to discuss the differences between the focus group outcomes from the various villages. In most cases, the group's maps overlapped with and corroborated one another, indicating a satisfactory saturation level (Sandelowski, 1995).

The Village Story maps contain social and ecological elements connected by arrows, with labels describing the connection (Figure 5.9). The chosen representation method follows the method that

many focus groups used when completing the mapping task; thus, the map presentation was informed by the research participants (Figure 5.8).

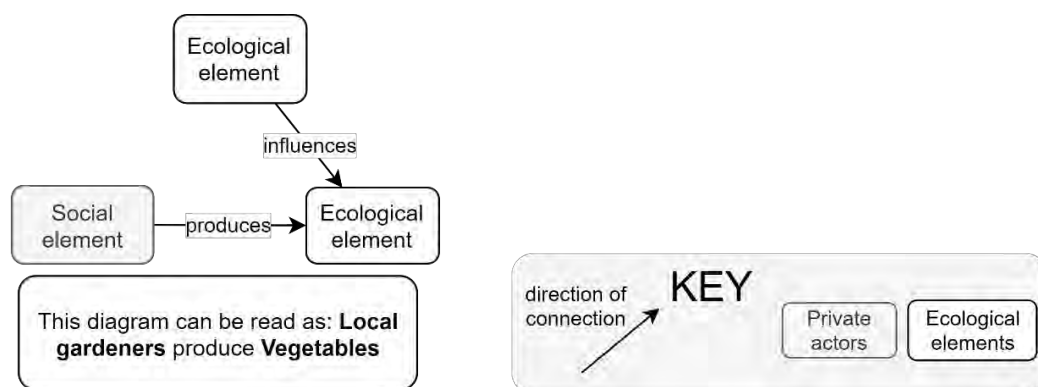


Figure 5.9. A simplified example of a Village Story map.

Village Story maps show social and ecological elements connected by arrows. Elements are indicated by colour-coded rectangles and connected by links with labelled arrows.

5.3.5. Connecting methods and findings

The findings are divided into three stories (Table 5.5). Interactions between the stories are explored as part of the synthesis discussion (Section 5.7). Together, the findings respond to three research questions under Objective One (Section 5.1), which can be summarised as, ‘What are (Q1a) *the institutions*, (Q1b) *the elements*, and (Q1c) the connections that make up the TsRC L&WGov system?’

Table 5.5. Chapter Five data presentation is divided between Chapter Five and Appendix D. A brief comment on the method used to research each story is linked to where the findings can be found. The findings in Chapter Five contain the core findings with examples of the collected raw data, while the supplementary data and bulk findings are presented in Appendix D.

Story	Method	Findings in Chapter Five	Findings in Appendix D
Broader Story	A desktop study of formal relationships and mandates.	Five formal governance maps (Section 5.4).	A list of reviewed documents (Appendix D1).
Catchment Story	Actor network mapping with governance actors, and network analysis.	One individual actor map and two consolidated network maps (Sections 5.5.1 and 5.5.2).	One individual actor map (test interview) (Appendix D2). All 15 actor maps and the consolidated network data (Appendix D4).
	Influence and accessibility mapping.	One example of an influence and accessibility map (Section 5.5.3).	Six influence and accessibility maps (Appendix D6).
Village Story	Social and ecological mapping with focus groups.	Two group presentation transcripts, one focus group map exemplar (Section 5.6.1), and four Village Story maps (Sections 5.6.3 and 5.6.4).	Ten digitally rendered versions of the focus group maps (Appendix D8).

5.4. Broader Story: findings and discussion

I first present the Broader Story findings (Textbox 10) and discuss them. These findings include an introduction to the Broader Story (Section 5.4.1), a mapping of the national and provincial actors and institutions (Sections 5.4.2 and 5.4.3), and a mapping of local government and the traditional leaders (Section 5.4.4). To conclude the section, I discuss the high-level changes post-1994 and the systemic transformations implied by these changes (Section 5.4.5).

Textbox 10 | A narrative summary of the Broader Story

The Broader Story plays out predominantly in big urban centres, out of sight of the average citizen. Formal government institutions in the Broader Story are structured in hierarchies and are directed by legislation and policy. The individual actors in the Broader Story are generally well-paid and disconnected from the everyday realities of people living in rural areas. While the individuals in the Broader Story may not be personally disconnected, the professional environment requires a degree of professional disconnection. The work environment is pressurised, with actors meeting many commitments to many people while navigating diverse interests and agendas. The actors in this story often travel by aeroplane around the country to attend various events – although, throughout the COVID-19 pandemic, many worked online from their homes with access to functional infrastructure. Although the actors in this story come from diverse backgrounds, the language of engagement is English. Language and terminology are up to date.

5.4.1. Introduction

The South African Constitution of 1996 lays ‘the foundations for a democratic and open society in which government is based on the will of the people and every citizen is equally protected by law’ (RSA, 1996, p.1). The constitution supports the South African government’s efforts to tread new development pathways in order to tackle the range of developmental dilemmas entrenched during the period of colonisation and apartheid (Section 1.2.1).

The South African government comprises three spheres: the executive, the judiciary, and the legislature (RSA, 1996). The executive authority is tasked with national coordination, upholding the South African constitution, and promoting unity for collective benefit; it is led by the president, and consists primarily of the ministerial cabinet and the deputy ministers. The judicial authority is responsible for the courts and the administration of justice, with the apex court being the Constitutional Court, which is tasked with upholding the Constitution. Parliament is the legislative authority, and has the power to make laws; it consists of the National Assembly and the National Council of Provinces (RSA, 1996). These three spheres (judicial, executive, and legislative) operate across three tiers of government: national, provincial, and local (which includes district and local municipalities). National and provincial government departments are required to cooperate with local government through formal government institutions.

The arrangement of national government departments has undergone numerous changes since 1994 (Figure 5.10). Two cabinet reshuffles (a term that refers to changes in the composition of ministers in a president's cabinet) took place during my research period – one after the national elections in May 2019, and the second towards the end of 2021 – both resulting in the restructuring of the leading departments responsible for land and water governance. The proliferation of cabinet changes since 1994 (Figure 5.10) highlights the instability that has characterised the South African political landscape in the decades post-1994. Figure 5.10, and my analysis in general, focuses on the post-1994 period.

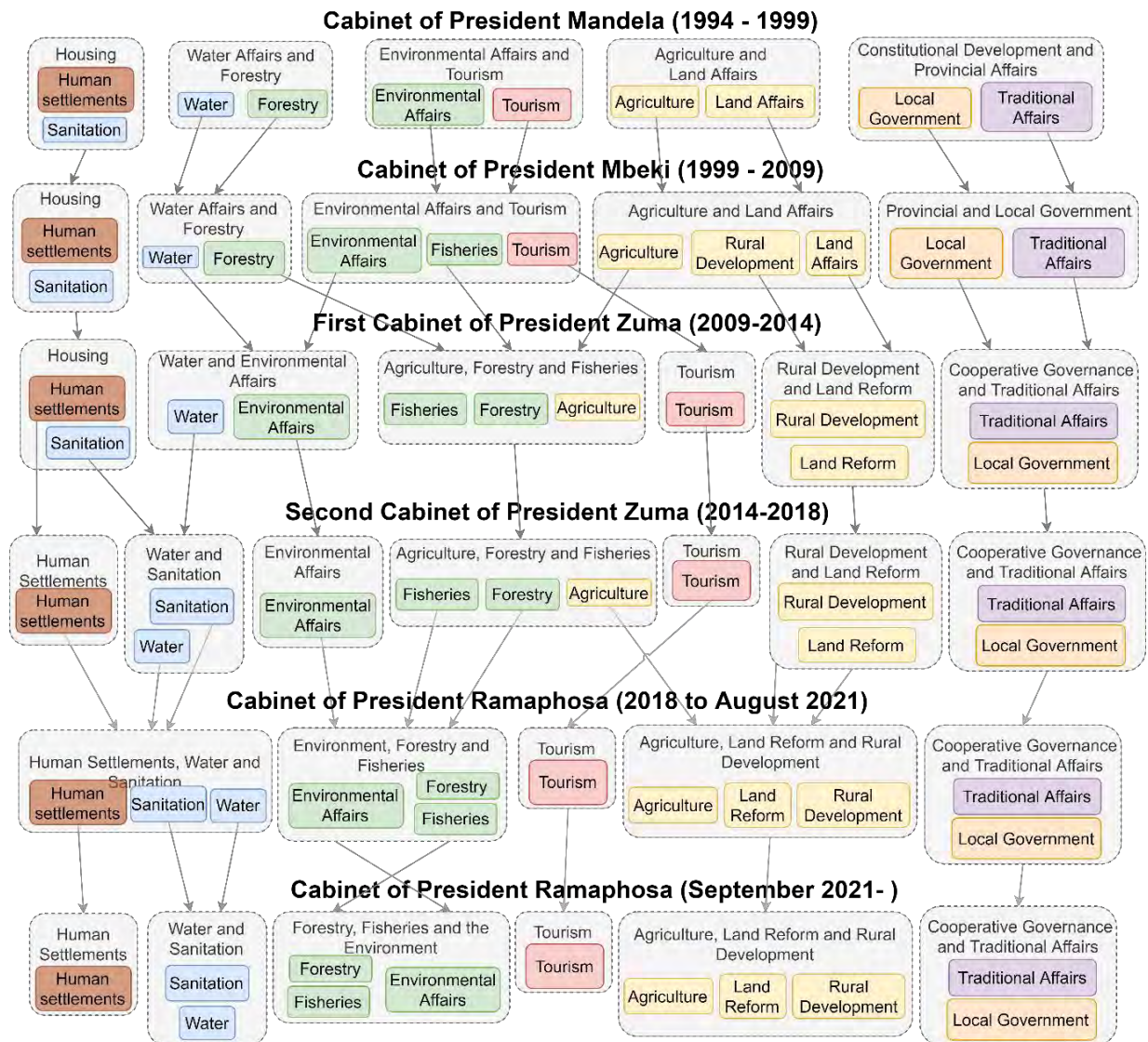


Figure 5.10: Presidential cabinet reshuffling of departments involved in land and water governance. The figure shows the division of relevant departments under ministers in the South African presidential cabinet between 1994 and 2021. The departments are colour coded according to the first cabinet configuration under President Ramaphosa, which was in place during the data collection for this thesis.

Cabinet reshuffling reflects superficial changes at the ministerial level, and can come about as a result of practical and political forces beyond the president's control. However, the reshuffling does also

reflect real changes in attitudes and affiliations. Figure 5.10 illustrates the intractable challenges of neatly dividing up land and water governance mandates. The first challenge is to divide land from water, and the second is to divide human resource use (or service provision) from resource protection. Until 2014, Water was clustered with land-related departments: first with Fisheries and Forestry, and later with Environmental Affairs. This early clustering indicated a recognition of the interconnectivity of land and water systems and the primacy of protecting water resources through integrated water resource management, as laid out in post-1994 legislation (e.g., the National Water Act of 1998). The division of Water from Environmental Affairs and its pairing with Human Settlements in 2018 indicates the entrenchment of a focus on water service provision over resource management (see Section 5.4.2 for a deeper analysis). Similarly, the clustering of Agriculture with Forestry and Fisheries in land governance indicates an acknowledgement of the interaction between land protection and land use. The later clustering of Forestry and Fisheries with Environmental Affairs, and Agriculture with Rural Development and Land Reform, indicates a separation of land use and land protection. Throughout the presentation of my findings, I grapple with the necessary but artificial divisions of integrated ecological systems, and I explore the resultant fracturing substantively in the discussion (Section 5.7).

While the presentation of my findings uses the departmental names in the second cabinet configuration under President Ramaphosa (the last configuration in Figure 5.10), there are instances when it is necessary to refer to previous departmental arrangements, as they were responsible for certain work. For example, when starting my research in 2019, the Tsitsa Project was working with the Department of Environmental Affairs, which changed to the Department of Environment, Forestry and Fisheries (DEFF) after the 2019 election. Between May 2019 and October 2021, the name changed again to the Department of Forestry, Fisheries and the Environment (DFFE), then changed back to DEFF and then back to DFFE, where it remained at the time of writing (late 2022).

The Broader Story maps land and water governance arrangements, including the relevant institutions, mandates, and legal documents. The Broader Story starts with the formal water governance under the Department of Water and Sanitation (DWS) (Section 5.4.2); formal land governance institutions are then mapped separately: rural development and land reform under the Department of Agriculture, Land Reform and Rural Development (DALRRD), and environmental management under DFFE (Section 5.4.3). The Broader Story also includes the municipal and traditional leadership structures supported by the Department of Cooperative Governance and Traditional Affairs (COGTA) (Section 5.4.4). I use formal water governance under DWS as an example to explore institutional change happening at the national level since 1994. Therefore, I provide more detail of institutional flux in the formal water governance section than in the other two formal governance sections.

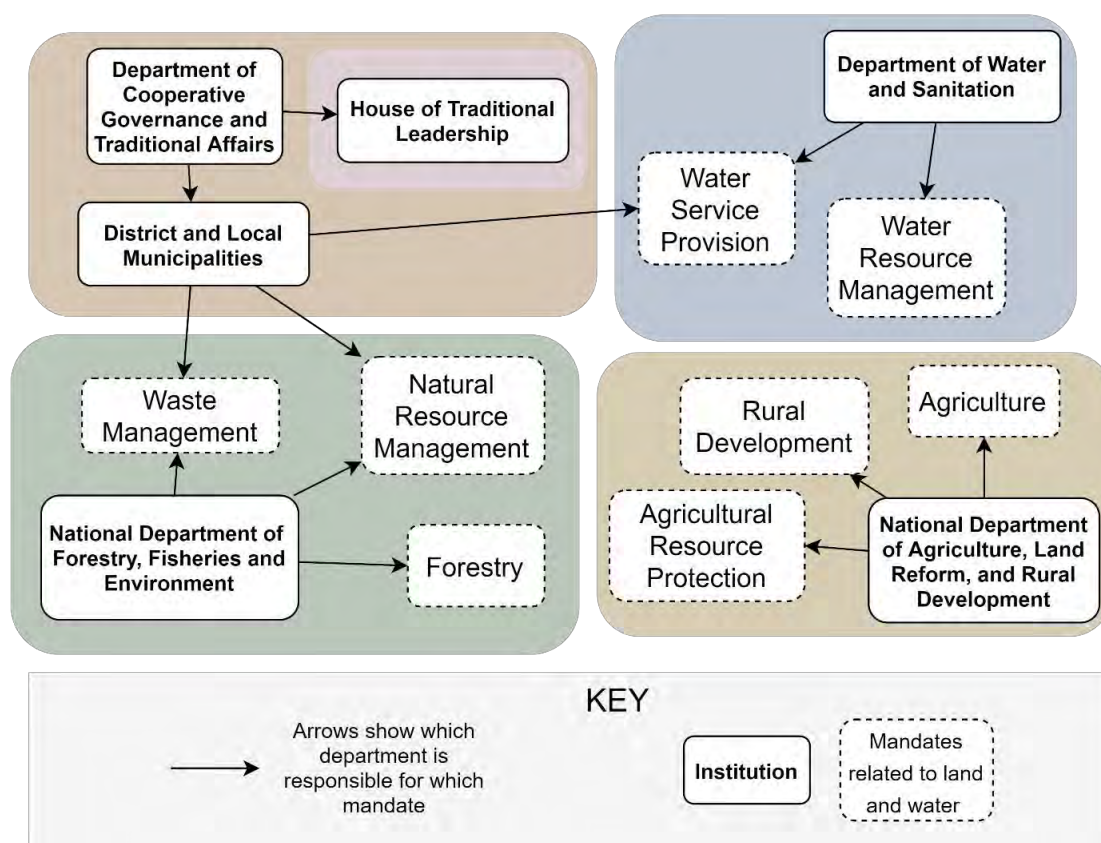


Figure 5.11. A high-level overview of the Broader Story, showing the formal division of mandates. Water governance under the Department of Water and Sanitation (blue) is presented in Section 5.4.2. Land governance in the Department of Forestry, Fisheries and the Environment (green) and in the National Department of Agriculture, Land Reform and Rural Development (yellow) is presented in Section 5.4.3. The Department of Cooperative Governance and Traditional Affairs (orange), which oversees local government and the traditional leaders (purple), is presented in Section 5.4.4.

5.4.2. Formal water governance

Water resource management and water service provision fall under the national DWS (Figure 5.12). The National Water Act (Act 36 of 1998) (NWA of 1998) guides water resource management to provide for water use and water service delivery. The Water Services Act (Act 108 of 1997) (WSA of 1997) guides the provision of water and sanitation services (Figure 5.12) (DWS, 2018). Municipal-level water service provision is guided by the Municipal Financial Management Act (MFMA), the Municipal Systems Act (Act 32 of 2000), and the Municipal Structures Act (Act 117 of 1998), which will be introduced in the section on local government (Section 5.4.4).

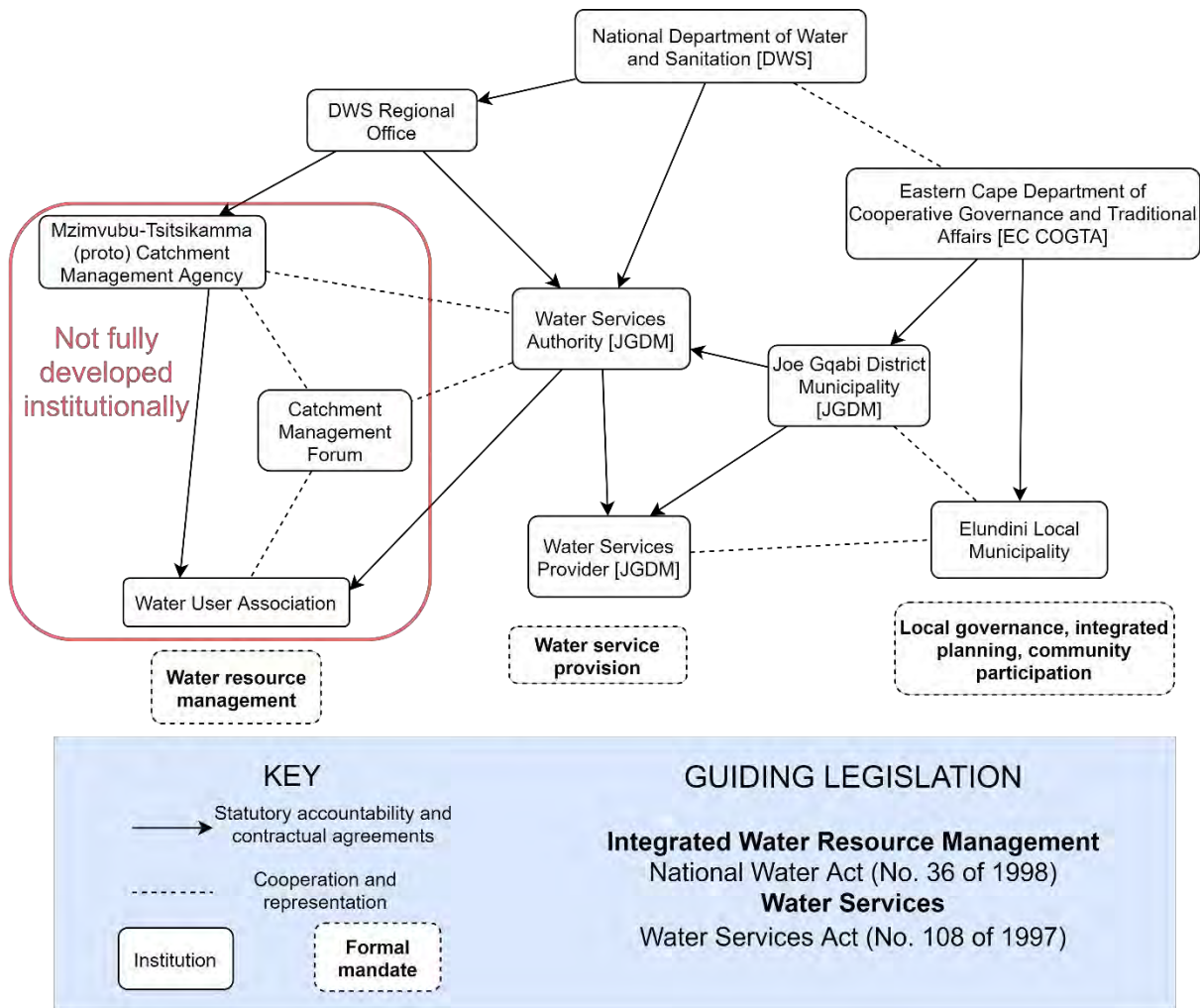


Figure 5.12. Broader Story governance map depicting formal water governance institutions. Formal water governance falls under the national Department of Water and Sanitation (DWS). Water resource management is supposed to be coordinated through a catchment management agency that works together with the local water user associations and catchment management forums, but these are not yet fully institutionally developed. Concurrently, water service provision is devolved through the provincial DWS office to the local government tier, where district and local municipalities are responsible for water service provision.

The NWA of 1998 was instituted as part of an attempt to transform the water governance framework and to replace the Water Act of 1956 (Union of South Africa, 1956) (Meissner et al., 2013). The NWA of 1998 promotes a more decentralised governance structure with the increased involvement of actors from outside formal water resource governance. The NWA of 1998, which was heavily influenced by the theory of integrated water resource management, highlights the principles of equity, environmental sustainability, and efficiency to guide policy and implementation in overcoming historical injustices. The NWA of 1998's core objectives have been summed up in the slogan, 'Some for all, forever' (Palmer et al., 2002).

Before the NWA of 1998, the Water Act of 1956 differentiated between public and private water, where private water rights depend on land ownership. Given the pre-1994 legal framework, which prohibited black people from owning land in South Africa (Section 1.2.1), the link between land ownership and water rights meant that black people were systematically excluded from access to water resources. The NWA of 1998 decoupled water rights from land ownership to distance the water reform process from the intractable land reform process (as described later in Section 5.4.3). The NWA of 1998 did this by removing the public-private distinction and considering water as a holistic and uninterrupted cycle, thus simultaneously removing the link between land ownership and water rights (Vanan Koppen et al., 2021).

As part of the legislation drafted post-1994, the WSA of 1997 lays out the devolution of water service delivery, and recognises water service authorities and providers housed in local government as local-level institutions for enabling service provision (Figure 5.12). The water service authority's role includes planning and regulation, financial and human resource management, and project management of water service provision. In contrast, the water service provider is responsible for water infrastructure operations and maintenance. While the authority and the provider should each have a level of independence, there are many problematic cases where they sit in the same institutional entity. In the case of the TsRC, they both sit in the district municipality.

The WSA of 1997 is explicit about the primacy of water for people, while the NWA of 1998 gives primacy to the reserve, which consists of both the basic human needs reserve that 'provides for the essential needs of individuals served' and the ecological reserve 'required to protect the aquatic ecosystems of the water resource' (RSA, 1998, p.30). The NWA of 1998 deals with water resource management, including raw water for service provision (domestic use such as potable water supply and sanitation) and other uses, such as irrigation, afforestation, industrial, livestock, mining, and power generation (DWS, 2018). Irrigation for agriculture is the biggest user, accounting for around 61% of the total water resources, while domestic use accounts for 27%; however, 41% of that 27% is currently lost through leaks and unmetered connections.

The management of raw water for service provision is ancillary to the broader resource management. Accordingly, the WSA of 1997 was supposed to be subject to the NWA of 1998. Still, in the political expression of priority, there has been an increasing tendency to focus on service provision and a decreasing emphasis on the fact that the supply is dependent on the resource. A tangible consequence of the prioritisation of water services is dysfunction in water resource management institutions (Figure 5.12). Reimagining water as an uninterrupted cycle included the creation of water management areas (WMAs), which divide water resource management according to catchment area boundaries rather than political boundaries (i.e., local government and provincial boundaries). Formally, a WMA is

governed by a catchment management agency (CMA). Post-1994 legislation and policy proposed 19 WMAs to be overseen by 19 CMAs (DWA, 2004); however, in 2012 these were consolidated into nine WMAs in an attempt to consolidate resources to create fully functional CMAs (DWA, 2013). The establishment of CMAs has faltered, with only two of the nine envisioned catchment management agencies currently being functional (Stuart-Hill & Meissner, 2018; Munnik, 2020; Vanan Koppen et al., 2021).

Catchment management forums (CMFs) fall under CMAs, and are formally designed to represent the interests of people living in a catchment, generally at the sub-catchment scale (tertiary or quaternary). The establishment of CMFs was intended to be stakeholder-driven, with support from DWS; however, strong institutional actors are required to drive this process. Therefore, the active participation of residents with agency is foundational to establishing CMFs (Burt et al., 2015). Catchment management forums were designed to enable the coordination of diverse stakeholders (DWA, 2013). Unfortunately, in many parts of South Africa, low levels of education ensure that certain groups are excluded from these participation processes (Förster et al., 2017). A lack of trust and cooperation has also been identified as a hindrance to implementing participatory water resource management institutions (Seršen et al., 2016).

Towards the end of 2021 there was an attempt by DWS through the Mzimvubu-Tsitsikamma proto-CMA to foster a network of CMFs, one of which was in the TsRC. Unfortunately, after four last-minute cancellations, the CMF meeting in the TsRC was deferred indefinitely.

The establishment of water user associations was laid out in the NWA of 1998. Water user associations were predominantly seen as a mechanism to integrate the pre-1994 irrigation boards with the elected local government responsible for providing water services. The integration of pre-1994 irrigation infrastructure owned and managed by commercial farmers into municipal water service provision systems was seen as the only way to overcome the unequal provision of services and the large scale of service provision required to reform water service delivery in rural areas. The process of developing inclusive governance structures between commercial farmers (mostly white) and the elected local government (mostly black) has been largely unsuccessful (Zwarteveen et al., 2017). In the former homeland areas, where there were no irrigation boards to begin with, the envisioned water user associations have not been formed. Therefore, formal rules are not in use. Instead, inherited institutions, such as the provincial levels of the national DWS and the predominantly untransformed irrigation boards, retain the *de facto* decision-making power (Förster et al., 2017).

Across South Africa, municipalities cannot deliver water and sanitation services to national norms and standards, and the water resources and water service infrastructure is deteriorating (DWS, 2022c,

2022a, 2022b). Water governance in South Africa has faced a daunting task that has been created by two significant escalations of scale. The first escalation came from decoupling land and water, which meant that an entirely new administrative licensing system was required to allocate water. The second escalation resulted from the change from a pre-1994 government that focused solely on the provision of services to white people (roughly 10% of the population) to service provision to all South Africans (Woodhouse, 2012). Despite the difficulties, the increased instances of water governance failure have prompted proposals for institutional reform.

The emerging challenges that relate to implementing an integrated water system that considers both resource management and service provision have prompted moves towards proposed institutional reform. There have been two suggestions for an overarching law that consolidates the NWA of 1998 and the WSA of 1997; however, neither has reached the point of public participation. One suggestion was the proposal of a 'General Water Laws Amendment Bill' in Parliament in 2014 (PMG, 2014), and the other was the announcement in 2018 of the drafting of a 'National Water and Sanitation Bill' in DWS's National Water and Sanitation Master Plan (DWS, 2018). Beyond these proposed legislative changes, two sets of institutional reforms have been mentioned in the past, but seem recently to have been given priority by DWS. The first is an increased involvement of DWS in municipal water service provision; and, given the widespread failure of municipalities to facilitate service provision, the intervention falls within the guidelines of the South African Constitution and the WSA of 1997 (DWS, 2022c). The second institutional reform is the creation of a National Water Resource Infrastructure Agency, which will take on the development and maintenance of national water infrastructure – a role currently shared by DWS and the Trans-Caledon Tunnel Authority (a project implementer that reports to DWS) (Muller, 2021; Barclay, 2022). While neither of these institutional reforms would result in the kind of fundamental shift that a legislative change would make, they could substantially impact local level water governance, and the TsRC in particular.

The Mzimvubu Water Project is a large dam-building project that is planned in the TsRC and that prompted the initiation of the Tsitsa Project (Section 2.2). The MWP, the initiation of which has been both extended and messy, is a high-priority project for DWS (DWS, 2022c). The MWP involves all levels of government; it is a national project that is being managed by the regional DWS office in collaboration with the local water service authority. Despite the construction of access roads that began in 2020, by the end of 2021 progress on the MWP had stalled, and there was still uncertainty about whether the project would go ahead (Bonani, 2021). Establishing a National Water Resource Infrastructure Agency could accelerate the development of the Mzimvubu Water Project by increasing investment in water infrastructure maintenance and construction (Muller, 2021; Barclay, 2022).

5.4.3. Formal land governance

I first present rural development and land reform, which fall under DALRRD, and then environmental management, which falls under DFFE.

Rural development and land reform

The government's efforts to promote agriculture, rural development, and land reform are led by the national Department of Agriculture, Land Reform and Rural Development (DALRRD). Figure 5.13 shows a governance map of the formal actors working under DALRRD.

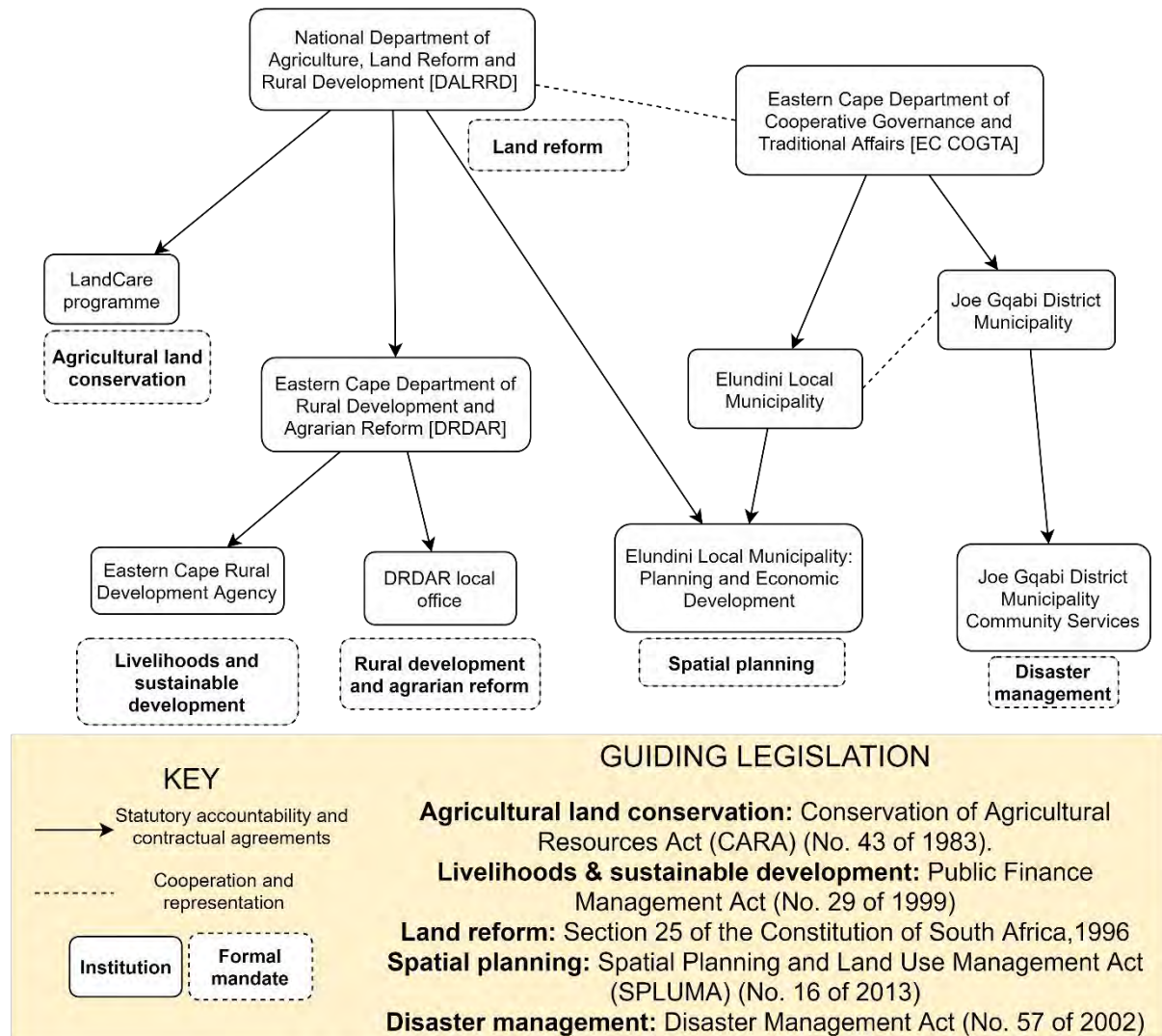


Figure 5.13: Broader Story governance map depicting formal land governance structures.

Formal land governance falls under the national Department of Agriculture, Land Reform and Rural Development (DALRRD), which oversees the work of the provincial Department of Rural Development and Agrarian Reform (DRDAR). Provincial DRDAR has a local office in Nqanqarhu (formerly Maclear), and supports the Eastern Cape Rural Development Agency. National DALRRD and DRDAR cooperate with the Eastern Cape Cooperative Governance and Traditional Affairs and the relevant local government entities. The map distinguishes between hierarchical connections (solid line with a single-sided arrow) and formal relationships of cooperation and representation (dotted line without an arrow).

The land reform mandate falls under DALRRD (Figure 5.13). According to section 25 of the Constitution of South Africa (RSA, 1996), land reform is a mechanism to redress the injustices of apartheid. Access to and ownership of land is the most contentious issue related to land governance (Kepe & Hall, 2018). Land is not only valued as ‘an economic or environmental asset, but as a social, cultural and ontological resource’ (Mahlati et al., 2019, p.15). The umbrella term ‘land reform’ includes restitution, redistribution, and land tenure reform. Land restitution focuses on restoring land ownership to people who were displaced after the Land Act of 1913 (Diala & Cotton, 2021). Land redistribution aims to make land available to people who previously could not own land (Mahlati et al., 2019). Land tenure reform intends to reform the legal and institutional framework for land administration.

Insecure land rights for rural residents in the former homelands have negatively impacted the development of those areas (Adams et al., 1999; Ntsebeza, 2004; Claassens & Cousins, 2008; Antonio & Griffith-Charles, 2019). Insecure land tenure is not the only challenge for rural development. In their case study of successful development projects in the former homelands, Coleman and Kenyon (2018) suggest that the problems relate to municipal capacity and land administration rather than specifically to land tenure.

Restructuring the system of land ownership entrenched through colonisation and then apartheid is contentious, and will remain a problematic part of South African land governance for the foreseeable future (Claassens & Cousins, 2008; Weinberg, 2015; Mahlati et al., 2019). Progress on land reform has been slow, and it is estimated that 60% of South Africans still have no formal land or property rights (Mahlati et al., 2019). The South African government has received a range of criticism for the slow rate of land reform and the unmet targets (Hall & Kepe, 2017; Mahlati et al., 2019; Sihlobo, 2021). There are ongoing debates around the proposal to amend the South African Constitution by allowing the expropriation of land without compensation in order to accelerate land reform (ANC, 2017). However, evidence suggests that the limiting factors are related to governance capacity and political will rather than to the legal position of the Constitution (Ngcukaitobi, 2021).

National DALRRD oversees the Eastern Cape Provincial Department of Rural Development and Agrarian Reform (DRDAR). The DRDAR local office in Nqanqarhu supports subsistence and emerging farmers in the areas of the TsRC under customary law. The work of the DRDAR local office features prominently in the Catchment Story. Provincial DRDAR also supports the Eastern Cape Development Agency, which focuses on livelihoods and sustainable development (Figure 5.13).

Land degradation in the former homelands has been a concern for rural development organisations and government departments since at least the 1930s (Beinart, 1984; Rowntree, 2014). Beinart (1984) observed external intervenors continuing to plan major restructuring while failing to recognise rural

people's ongoing political struggle to retain independent management of their lifestyles, land, and livestock. Land degradation in the former Transkei homeland is an ongoing problem, evidenced by the initiation of the Tsitsa Project in response to the negative impact of land degradation on water resources (Section 2.2).

I elucidate the land governance roles of local government and traditional leaders in Section 5.4.4, on local government and traditional affairs in the Broader Story, and then further explore the contextual nuances in the Catchment Story in Section 5.5.3. In particular, local government is responsible for drafting a spatial development framework that dictates land use within their jurisdiction. The local government's role in spatial planning is derived from the Spatial Planning Land Use Management Act No. 16 of 2013, which places more responsibility in the hands of the local government. National DALRRD cooperates with the Eastern Cape Department of Cooperative Governance and Traditional Affairs (EC COGTA) in supporting the local government's role in land use and development.

Environmental management

Environmental management falls under the Department of Forestry, Fisheries and the Environment (DFFE). Figure 5.14 shows a governance map of the formal actors working under DFFE.

Section 24 of the 1996 Constitution is explicit about protecting the environment for present and future generations, placing people and their needs at the forefront of environmental management (Scholtz, 2005). The National Environmental Management Act of 1998 (NEMA of 1998) is the foundational legislation that guides environmental governance and establishes principles for decision-making and institutions for cooperative environmental governance, consistent with the formalisation of cooperative governance in the 1996 Constitution. NEMA of 1998 explicitly recognises the connection between the environment and people's social and economic rights (Goolam, 2000), thereby opening up the potential for governance that is in line with the CSES conceptual framework.

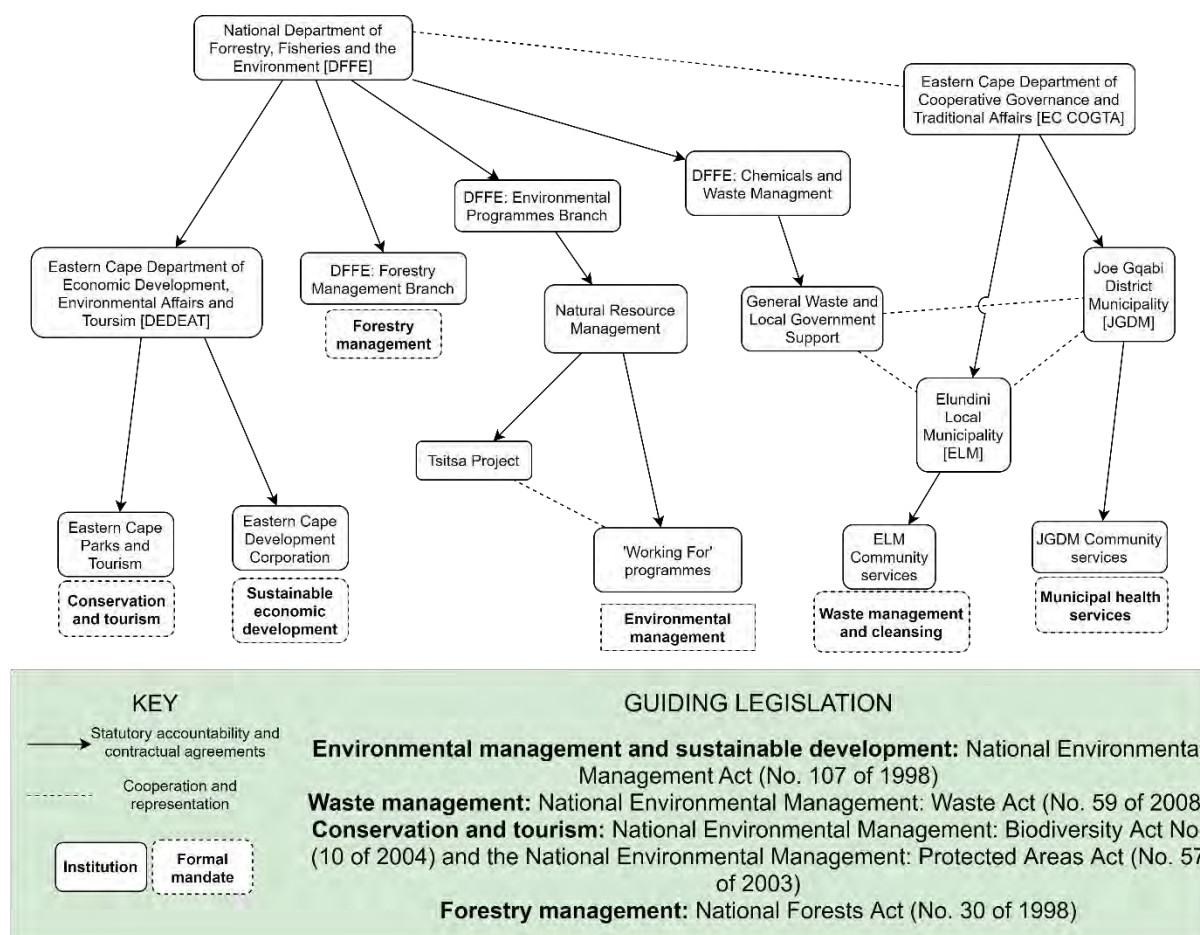


Figure 5.14: Broader Story governance map depicting formal environmental management. Environmental management falls under the national Department of Forestry, Fisheries and the Environment (DFFE). National DFFE fulfils its mandate through eight national directorates. The map shows the three national directorates most closely related to my research. I have also placed the Tsitsa Project on this map to situate it in its formal institutional context. Maps in the Broader Story distinguish between hierarchical connections (solid line with single-sided arrow) and formal relationships of cooperation and representation (dotted line without an arrow).

The Tsitsa Project falls under DFFE's national-level Natural Resource Management Chief Directorate under the Environmental Programmes Branch. The Tsitsa Project is linked to the 'Working for' programmes that were founded on the principles laid out in NEMA of 1998, and that have been recognised internationally for the scale at which they have grappled with environmental challenges and labour-intensive job creation (Turpie et al., 2008). The 'Working for' programmes include a range of environmental management initiatives such as 'Working for Water', which clears invasive alien plants (IAPs); 'Working for Land', which attempts to reduce erosion and land degradation; 'Working for Wetlands', which restores and protects wetlands; and 'Working on Fires', which attempts to reduce the negative impact of fires. The 'Working for' programmes are managed by implementing agents. I explore the position of these implementing agents in the Catchment Story (Section 5.5.1).

5.4.4. *Local government and traditional leadership*

The Department of Cooperative Governance and Traditional Affairs (COGTA) has the mandate to enable cooperative governance by supporting all spheres of government and by supporting traditional affairs, a mandate derived from Chapters Three and Seven of the constitution (RSA, 1996). The two subsections introduce local government and traditional leaders.

District and local municipalities

The Constitution (RSA, 1996) and the White Paper on Local Government (RSA, 1998) laid the foundations for local government (made up of local and district municipalities) as an independent sphere of government rather than as a function of the national or provincial government, as it was pre-1994 (Ntsebeza, 2004). The developmental duties of municipalities include managing their resources and planning and coordinating development activities to prioritise community member's basic needs, and to promote social and economic development (RSA, 1996). The concept of 'developmental local government' expressed in the White Paper on Local Government therefore requires integrated planning to coordinate development activities in their jurisdiction and to set its focus on improving the standard of living and quality of life of the most impoverished (Pycroft, 1998; RSA, 1998). Furthermore, while cooperation is legislated across all levels of government, the inclusion of the public is the responsibility of municipalities, which are mandated, by the Constitution to 'encourage the involvement of communities and community organisations in the matters of local government' in order to improve decision-making and accountability (RSA, 1996).

Local government in South Africa was formalised in its current form between 1998 and 2000 with the introduction of the Municipal Structures Act of 1998, the Municipal Demarcation Act of 1998, the Municipal Systems Act of 2000, and the Municipal Finance Management Act of 2003. For the first time, South Africa was covered 'wall-to-wall' by a democratic system that allowed the mechanisms for services to be delivered where there were previously none (SALGA, 2015). The inclusion of the former homelands in the democratic system led to overlapping traditional and democratic systems (Section 2.1.2).

My research falls within Joe Gqabi District Municipality, which consists of three local municipalities. One of them is Elundini Local Municipality, which has 17 wards, six of which are included in the study area (Figure 2.4).

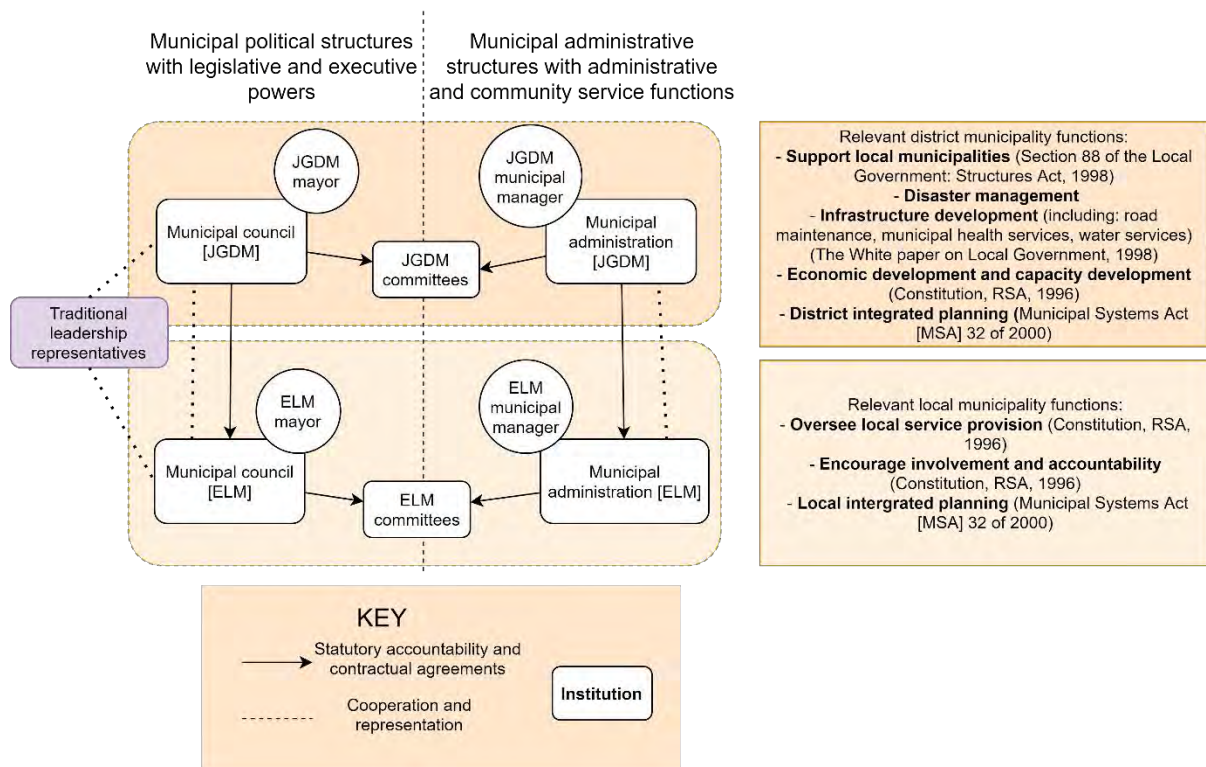


Figure 5.15. Formal governance map showing the divisions and functions of local government. The map shows the division of functions between local and district municipalities and between municipal administration and municipal political structures. Traditional leaders are present in both municipal councils. The boxes on the right of the diagram indicate the primary functions of both municipalities. Maps in the Broader Story distinguish between hierarchical connections (solid line with single-sided arrow) and formal relationships of cooperation and representation (dotted line without an arrow). JGDM: Joe Gqabi District Municipality; ELM: Elundini Local Municipality.

The Municipal Structures Act defines the roles and functions of the municipality, recognising two distinct parts of local governance: the administrative and the political structures (Figure 5.15). The administrative branch of the local municipality is headed by the municipal manager, and is responsible for implementing the functions assigned to the local municipality. The political branch centres on the municipal council, which the municipal mayor heads. In the local municipality, the municipal council comprises councillors who represent different political parties (proportional to the number of votes received in the local election) and ward councillors (elected to represent each ward in the local municipality).

Ward committee meetings occur at a ward level between the ward councillor and all of the ward committee representatives in that ward. The ward committee meetings sit quarterly, and are chaired by the ward councillor as ‘the first level where development issues are deliberated’ (ELM, 2019). The ward councillor also hosts ward community meetings, which are open to residents and are supposed to give communities a chance to speak directly to the ward councillor.

One function of all municipalities is the development of an integrated development plan (IDP) that incorporates a spatial development framework (SDF). According to the Municipal Systems Act, all development activities must be included in the IDP and be consistent with the land-use designations in the SDF. The IDP is supposed to be a planning process and an accountability mechanism. The IDP manager and team are responsible for monitoring and evaluating programmes in the municipality. The IDP is reviewed every year, and undergoes major re-evaluation every five years. These review processes allow for stakeholder engagement. The district and local IDPs are intended to create a point of contact for the local government actors to discuss service provision.

Local government, which is recognised as an autonomous tier of government, is supported by national government. The difficulties with establishing local government as a functional tier of government are well-recognised, as evidenced by the multiple interventions by national COGTA, which I list below. Historical interventions include the ‘Local Government Turnaround Strategy’ that was initiated in 2009 to systemically ‘turnaround’ local government in order to improve service delivery, and the ‘Back to Basics’ programme that was launched in 2014 to improve the ability of local government to provide basic services (Clifford-Holmes, 2015). More recently (in 2019), the District Development Model was initiated by President Ramaphosa in an attempt to overcome the horizontal and vertical silos that were identified as a hindrance to cooperative governance (COGTA, 2019). The District Development Model aims to integrate cooperative planning efforts at the district municipal level, thereby consolidating the district municipality’s role as a key institutional level that mediates between national and provincial departments and the realm of local government.

Traditional leadership system

The role of traditional leaders was established in the South African Constitution, and has been further embedded by the Traditional Leadership and Governance Framework Act of 2003 (TLGFA of 2003). As shown in Figure 5.16, TLGFA of 2003 recognises headmen as the lowest traditional leadership position, although it provides for lower structures according to localised customary law. In the TsRC, some sub-headmen work beneath the headmen (RSA, 2003). While some areas also have females who are headwomen and sub-headwomen, I only interacted with males in these roles, and therefore refer exclusively to headmen and sub-headmen. Headmen are under the authority of a senior traditional leader who reports to the relevant king or queen. These traditional leaders cooperate through a hierarchy of traditional leadership houses that mirror the three-level democratic governance structure (RSA, 2003). Traditional councils are the lowest traditional governing body. Traditional leaders from traditional councils represent their constituents in the local house of traditional leadership, which then elects representatives to the provincial house of traditional leaders; and the same happens with the national house of traditional leaders (RSA, 2003).

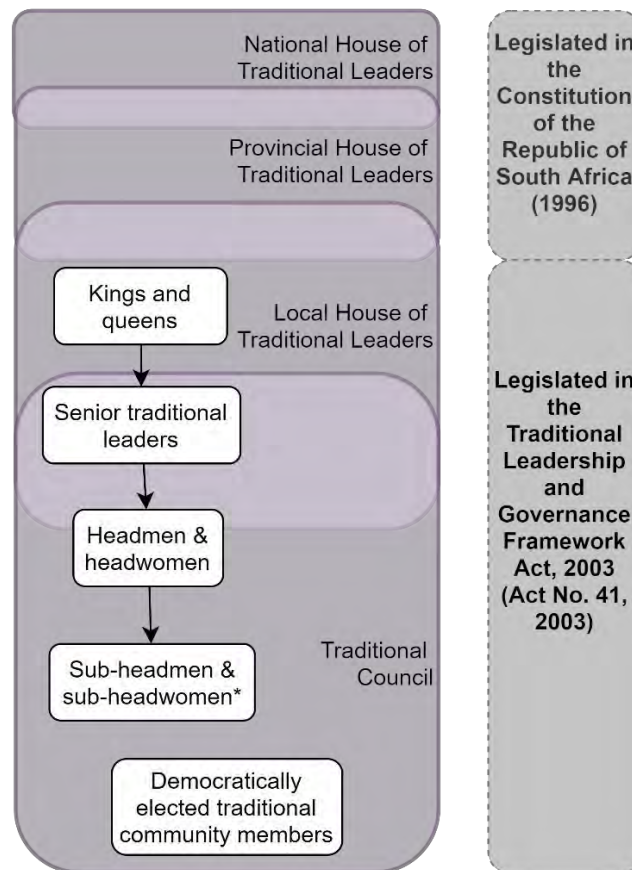


Figure 5.16. Map of the traditional leadership structure in South Africa.

*Although their roles are not detailed in the legislation, sub-headmen do exist across the Tsitsa River Catchment.

The eras of colonisation and apartheid intentionally weakened traditional leaders' respect and status (Khunou, 2011), often using them as representatives to legitimise decision-making processes (Leonard, 2019). In post-1994 South Africa, traditional leaders formally have decision-making powers related to traditional leadership and customary law.

Since 1994, there have been two main attempts to create laws which strengthen the role of traditional leaders. First, the Communal Land Rights Act of 2004 that was struck-down in 2010 and, secondly, the Traditional Courts Bill of 2018 that is, despite multiple controversial amendments, in its final stages of enactment (Diala, 2022). Notably, the Traditional Courts Bill does not provide rural residents the option to opt-out of traditional courts and attempts to control the behaviour of rural residents. The Traditional Courts Bill is set to exacerbate inequality as it creates a parallel and separate legal system in which the rural residents of the former homelands are forced to abide (Claassens, 2014). This is particularly problematic given 'that traditional courts are presided over by mostly male traditional leaders, many with questionable legitimacy. Some are direct descendants of apartheid-imposed

rulers. Others are accused of being appointed without adherence to indigenous laws' (Diala, 2022, p.1). I explore the *de facto* role of traditional leaders in the TsRC in the Catchment Story (Section 5.5.3).

The problems associated with removing the autonomy of rural residents abound. For most residents in the former homelands, their rights to ownership of and access to land are uncertain and vulnerable (Weinberg, 2015). The Interim Protection of Informal Land Rights Act (IPILRA) of 1996 was implemented to improve the land security of residents living under customary law. Despite land in the former homelands being state-owned and administered by traditional leaders, IPILRA of 1996 ensures that rural communities must give full and prior consent before external actors can implement projects in the community's land. However, there are numerous examples of collusion between traditional leaders and external actors in ways that mirror historical patterns of exploitation (Forrest & Loate, 2018; Leonard, 2019). There have been numerous cases, particularly related to mining (Section 3.2.2), where government departments have been complicit in signing contracts with traditional leaders in ways that contradict the consultation and consent requirements of IPILRA of 1996 (Forrest & Loate, 2018; Zamchiya, 2019).

5.4.5. *Broader Story discussion*

I now explore the potential of the progressive post-1994 legislation and the multilevel transformations implied by the legislative changes. Implementing these transformations has been slow, and has been occurring in an unstable institutional context.

Substantive changes have been made to South Africa's legislative framework post-1994. Together, documents such as the South African Constitution of 1996, the NWA of 1998 (Section 5.4.2), and the NEMA of 1998 (Section 5.4.3) create solid foundations for a system of governance that is cognisant of the coupled nature of complex social-ecological systems. While human flourishing is the primary objective, human flourishing depends on ecological flourishing; the 1996 Constitution acknowledges that 'everyone has the right to an environment that is not harmful to their health or wellbeing' (RSA, 1996, p.9). Furthermore, the inclusion of all citizens and residents in governance processes is enshrined in the South African Constitution, which envisions individuals as active citizens rather than as subjects to be governed by a ruling elite. For example, through public participation, governance institutions engage with interested and affected individuals (SA Legislative Sector, 2013).

The changes in the Broader Story create a new vision of South African land and water governance at all levels, implying substantial changes at multiple levels, thus constituting a systemic transformation. For example, the NWA of 1998 substantially shifted how water resources were conceptualised and managed (Section 5.4.2). The NWA of 1998 changed the conception of water, from a dividable resource that could be managed as part of the land management system into an uninteruptable cycle

that flows across institutionally constructed boundaries. The bureaucratic implication of the changes enshrined in the NWA of 1998 is that water management now requires its own management system. The escalation of bureaucratic systems required to manage water separate from land is just one example of how high-level changes have implications for governance.

Despite the promising legal provisions and innovative programmes, there have been various challenges to implementation, as the processes of the decentralisation and redistribution of resources have raised a range of new dilemmas (Koelble et al., 2014). The cabinet reshuffling that characterises South Africa's post-1994 government is an external symptom of the resulting instability (Figure 5.10). The insidious effects of institutional flux are linked to eroding institutional memory and fracturing (often fragile, yet somewhat functional) working arrangements. In the political context, the population's trust in the ruling government is at a post-1994 low (Moosa & Hofmeyr, 2021).

The problems experienced by South Africa are, in some ways, to be expected. However, they should be a cause for alarm. South Africa has undergone massive shifts across the governance system. In the Broader Story, I explore some of these changes in land and water governance, relating to fractured water governance (Section 5.4.3) and slow reforms in land governance (Section 5.4.3). The instability carries through into the local government and traditional leadership, where, although there have been ongoing interactions between these systems in the former Transkei (and other former homelands), the current arrangement is only 20 years old – a short period for change in a large bureaucratic government structure. The challenges are well-acknowledged, and new strategies and models are regularly launched to overcome them (Section 5.4.4). The transitions undertaken in the years post-1994 have not been smooth, as old legacies continue to have influence long after formal changes have been made (Cleaver, 2012; Clifford-Holmes et al., 2016).

The fracturing and instability identified while mapping the Broader Story is discussed as part of the synthesis discussion (Section 5.7). I now move onto the Catchment Story.

5.5. Catchment Story: findings and discussion

I first present the findings of the Catchment Story mapping and then discuss them. I begin the Catchment Story (Textbox 11) by analysing a consolidated network map that was created by combining individual actor maps that were developed with 15 local governance actors. These consolidated network maps consist of 109 actors connected by 313 links. I use these network maps to analyse interactions between clusters (Section 5.5.1) and inter-story connectivity (Section 5.5.2). The presentation of the two network maps is accompanied by one individual actor network map. (The individual actor network maps are given in Appendix D4.) The influence and accessibility of local government representatives and traditional leaders are then elucidated (Section 5.5.3). The Catchment Story discussion focuses on the particular governance roles supporting participatory land and water governance (Section 5.5.4).

Textbox 11 | A narrative summary of the Catchment Story

The Catchment Story plays out in the small urban centres in and around the Tsitsa River Catchment, with connections to cities such as Mthatha and East London. The local and district municipalities are influential actors in this story, but it also moves beyond the formal tiers of government to include private actors, non-governmental organisations, and civil society. The Catchment Story includes the implementation of policies and guidelines drawn up in the Broader Story. The Catchment Story is regularly about ‘firefighting’ specific issues that arise as plans go awry. Budgets are tight, and tensions can run high as different actors attempt to operate and secure money and jobs for themselves and their communities. In the Catchment Story, the actors drive bakkies and trucks and speak various languages, but everyone is expected to know English.

To investigate the Catchment Story, I conduct a series of actor mapping exercises with various local governance actors. Although communication via cell phone and emails become a less reliable communication channel in the Catchment Story, the relationships in it are more accessible to investigation than in the Broader Story, as the actors are working in the area.

5.5.1. Interactions between land and water governance clusters

Below I describe the actors in the Catchment Story and their connectivity with other clusters. In mapping the Catchment Story, I divide the actors (both individuals and organisations) into seven clusters that align roughly with the government departments outlined in the Broader Story, as follows:

- *Environmental in green* includes actors with an environmental interest working under DFFE, the municipality, and non-state actors.
- *Water in blue* includes actors with a water interest involved in both water service provision and water resource management.

- *Agricultural in yellow* includes actors working under national DALRRD and provincial DRDAR, private farmers and non-governmental organisations, and emerging farmers from the areas under customary law.
- *Cooperative governance in orange* includes actors directly under provincial COGTA or in the district and local municipalities. Municipal actors explicitly involved with water, agriculture, or the environment are coded according to those clusters rather than cooperative governance.
- *Traditional in purple* includes the traditional leaders.
- *Others in red* includes actors without a direct mandate related to land and water. For example, schools are not directly involved in land and water governance, but multiple research participants have connections to schools through environmental education initiatives.
- *Rural communities in grey* refers to the various communities throughout the study area. While representing the various rural communities as a single circle might suggest that the heterogeneous communities in the TsRC are portrayed as a homogeneous whole without the necessary agency to create diverse connections, this is certainly not my intention. I address the problematic tendency to view rural communities as homogeneous in Section 6.5.1. The choice of a single large community circle reflects the fact that the Catchment Story was mapped with governance actors, and thus did not represent a community perspective (captured in the Village Story). Furthermore, the analysis decision does provide utility in that it places the ‘community’ at the centre of the consolidated actor map (Section 5.3.3)

The ‘community’ circle is surrounded by a cluster of municipal-related (orange) actors from the traditional leadership structure (purple). The environment-related actors (green) on the left side of the map have links to the municipality and the traditional leaders. Most agriculture-related actors (yellow) are in the bottom left corner, and are particularly well-networked with the traditional leaders with whom they work in the areas under customary law. There are a few water-related actors (blue) in the top left corner, primarily connected to the provision of water services. Finally, the miscellaneous actors (red) are scattered across the map. Throughout the discussion, I have put the actor labels in square brackets to link the textual descriptions to Figure 5.17.

of Health; DHA: Department of Home Affairs; DRDAR: Department of Rural Development and Agrarian Reform; DSA: Digital Soils Africa; DSD: Department of Social Development; DWS: Department of Water and Sanitation; ECDC: Eastern Cape Development Corporation; EHT: Environmental health technician; ELM: Elundini Local Municipality; ELM EE: ELM Environmental Educators; ELM MM: ELM Municipal Manager; EPWP: Extended Public Works Programme; GIB: Gamtoos Irrigation Board; HM(N#): Headman (node #); IDP: Integrated Development Planning Unit; ISD: Integrated Service Delivery; JGDM: Joe Gqabi District Municipality; JGDM WSA: JGDM Water Services Authority; JGDM WSP: JGDM water services provider; JoGEDA: Joe Gqabi Economic Development Agency; MHS: Municipal Health Services; MWP: Mzimvubu Water Project; NRM: Natural resource management; RU: Rhodes University; SAPS: South African Police Service; SASSA: South African Social Security Agency; SAYM: South African Youth Movement; SEDA: Small Enterprise Development Agency; SHM(N#): Sub-headman (Node #); STL(N#): Senior Traditional Leader (Node #); TP: Tsitsa Project; TP IP: TP Integrated Planning; TP CC: TP Catchment Coordinator; UFS: University of Free State; WC(N#): Ward councillor (Node #); WCR (N#): Ward committee representative (Node #); YCOP: Youth community outreach programme.

Traditional leaders (15/109 actors in Figure 5.17) and municipal officials (32/109) provide the primary channels for rural communities to access formal institutions and to participate in governance. Both local and district municipal actors are involved in the Catchment Story. The Elundini local municipal offices are in Nqanqarhu (formerly Maclear) in the TsRC, while the district municipal offices are outside the TsRC in Barkley East, about two hours from Nqanqarhu.

My analysis is based predominantly on my interaction with three research nodes in the TsRC (Figure 2.1); thus the consolidated network map shows municipal actors and traditional leaders from three parts of the TsRC. In reality, hundreds of local government actors play a variety of roles at a sub-catchment level; these roles include the ward councillors [WC], community development workers [CDW], the ward committee representatives [WCR], and community participation liaison officers [CPLW]. For example, my study area includes six wards – therefore, six ward councillors and six community development workers. The six ward councillors oversee six ward committees, each with ten representatives. Furthermore, the local municipality has employed 152 community participation liaison workers who support the work of the ward councillors (Section 5.4.4). The traditional leadership structure relevant to the Catchment Story is a three-tiered hierarchy, with senior traditional leaders [STL] overseeing headmen [HM], who in turn oversee a cluster of villages with a sub-headman [SHM] in every village (of which there are around 80 in the study area). If I were to create a *comprehensive* map showing all of the actors from across the catchment, there would not necessarily be many more environmental or water-related actors. The map would thus be even more dominated by local government actors related to the municipality and the traditional leadership structure. The headmen and CDWs who make up a notable proportion of the sample (Section 5.3.3) are introduced in the next section (Section 5.5.2) with the second version of the consolidated actor map.

Environment-related actors are the next most represented in the consolidated network map (22/109). Environment-related actors include the Tsitsa Project and the DFFE ‘Working for’ programmes and environmental actors in the local and district municipalities. The ‘Working for’ programme (Section 5.4.3) implementing agents who are present in Figure 5.17 are the following:

- The Gamtoos Irrigation Board [GIB] focuses on dryland rehabilitation in the lower catchment. The GIB was also involved in the Tsitsa Project’s livestock management efforts to protect the newly rehabilitated land, which I discuss as part of the Village Story (Section 5.6.4).
- TakeNote Trading focuses on invasive alien plant (IAP) clearing in the upper catchment as part of the ‘Working for Water’ programme.
- The Joe Gqabi District Municipality’s natural resource management team [JGDM NRM] implements both ‘Working for Water’ and ‘Working for Wetlands’ programmes.

The Joe Gqabi District Municipalities Natural Resource Manager [JGDM NRM] (Key Informant #7) works in the district municipality’s community services [JGDM CS], which receives funding and support from the DFFE to implement the environmental programmes. Key Informant #7 is well-connected to district-level institutions (i.e., the actors responsible for water services [JGDM WSP], JGDM disaster management, and the municipal health services [JGDM MHS]) through their district environmental forum and community services standing committee. Being a resident of Nqanqarhu, Key Informant #7 has an extensive social network in the Catchment Story. Implementing agents have a connection to local stakeholders, including traditional leaders and municipal representatives, primarily through ad hoc project steering (or advisory) committees. Key Informant #7, as a representative of JGDM NRM, forms part of the local fire association through which he connects with commercial farmers. High centrality and diversity of connections indicate that Key Informant #7 plays a boundary-spanning role between clusters and stories (as shown in Figure 5.19, presented in the next section).

Restoration implementing agents under DFFE also conduct restoration activities such as re-sloping steep erosion gullies and placing barriers to reduce erosion by slowing runoff (Section 5.4.3). Working in collaboration with the restoration implementers, the Tsitsa Project’s Livelihoods CoP has established 16 local *Vetiver* nurseries to supply implementers with the hardy grass (Tsitsa Project et al., 2021c). *Vetiver* grass has been used extensively in soil conservation projects because its roots help to stabilise soil and to improve infiltration (Rowntree et al., 2019).

Environmental activities in local government are also supported by the DFFE local government support [DFFE LGS] at the district level and by the Youth Community Outreach Programme [YCOP] coordinator at the local municipality level. Both roles provide crucial links to the local governance system. DFFE local governance supports municipalities in environmental planning and management, including

convening the district municipal level environmental forum, which is supposed to include all actors working with environmental issues, such as JDGM NRM and the provincial DEDEAT. The YCOP coordinator, in collaboration with a team of ‘environmental ambassadors’, is responsible for raising awareness and cleaning up waste in the local municipality. A currently inactive local-level environmental forum is supposed to support the district forum by creating a space for local environmental projects, but has not yet received the institutional support required to run reliably.

The consolidated network map shows 17 actors in red. Some of the miscellaneous actors who are well-connected to community members are listed below.

- The South African Police Service [SAPS] is represented in the Catchment Story by police stations that work closely with traditional leaders on issues such as stock theft.
- The Department of Basic Education [DBE] is represented in the Catchment Story by schools, teachers, and principals. In addition to providing education and supporting environmental education, schools create jobs in rural areas.
- The South Africa Social Services Agency [SASSA] coordinates the distribution of the social grants on which many rural residents rely.

There are two separate clusters of agriculture-related actors in the Catchment Story (14/109). Given my research focus on areas under customary law, the majority (10 of the 14 yellow actors) are in the bottom left corner of Figure 5.17, and are agricultural actors in the communal areas. The RAFI agricultural project [RAFI] – piloting new crops and farming techniques by mentoring emerging farmers, whose chairperson I interviewed (interviewee #5) – is working in two of the Tsitsa Project research nodes (Figure 2.1). The consolidated network map shows the connectivity between these agricultural actors and the traditional leaders, which indicates the prominent role of traditional leaders in Village Story agricultural activities. Provincial DRDAR are present and active in the Catchment Story through their extension officers and animal health technicians, who are based at an office in Nqanqarhu; they support the growing of crops, livestock disease control, and coordinate wool shearing. While the local DRDAR office is active in the Catchment Story, three interview participants stated that they had difficulty creating cross-sector collaborations with the DRDAR representatives.

The remaining four yellow actors are agricultural actors working on private land, including the commercial forestry company PG Bison, the local farmer association, and the Maclear Fire Protection Association run by PG Bison and the commercial farmers (towards the top right of the consolidated map). The location of the two yellow clusters on opposite sides of the network map affirms the assertion that there is little contact between these actors. Despite few connections between commercial actors and communities living in traditional council areas (Figure 5.17), the two groups of

actors often live nearby and share common resources, such as the Tsitsa River (Figure 5.18). The lack of connections indicates the disconnection between the commercial farmers and the rural communities. Two common points of contention between rural communities and commercial farmers are livestock theft and wildfires, which are often blamed on rural communities. Some headmen indicated some ad hoc collaboration on these issues (Interviewee #1).



Figure 5.18. Commercial forestry adjacent to a traditional council in the upper Tsitsa River Catchment. The Tsitsa River is the boundary between the different areas. The image was taken from Google Earth and was extracted on 20 October 2020.

Finally, the smallest cluster is the water-related actor in the top left corner of the map (7/109), far removed from the rural community. Large areas in the communal parts of the catchment have no formal water supply and, therefore, no interaction with any formal institution related to water. In Section 5.6.3 I discuss the Village Story institutions that exist without formal government support.

The Water Service Authority [JGDM WSA] and the water service providers [JGDM WSP] working on water service provision under the district municipality are present in the catchment. The consolidated map also includes actors associated with the Mzimvubu Water Project [MWP] who are responsible for the dam building on the Tsitsa River (Section 2.2 & 5.4.2).

5.5.2. Interactions between the three stories of governance

I present a second consolidated network map that is colour-coded according to stories to support the identification of actors who enable inter-story connectivity. Broader actors, such as government departments, are positioned towards the top of Figure 5.19 (grey), while the Village actors, such as headmen and ward committee representatives, are positioned towards the bottom (green).

liaison officer; Coop: Farming cooperative (node #); CPLW(N3): Community participation liaison worker (node #); CS: Community services; CWP: Community Works Programme; DBE: Department of Basic Education; DFFE: Department of Forestry Fisheries and the Environment; DFFE LGS: DFFE local government support; DH: Department of Health; DHA: Department of Home Affairs; DRDAR: Department of Rural Development and Agrarian Reform; DSA: Digital Soils Africa; DSD: Department of Social Development; DWS: Department of Water and Sanitation; ECDC: Eastern Cape Development Corporation; EHT: Environmental health technician; ELM: Elundini Local Municipality; ELM EE: ELM Environmental Educators; ELM MM: ELM Municipal Manager; EPWP: Extended Public Works Programme; GIB: Gamtoos Irrigation Board; HM(N#): Headman (node #); IDP: Integrated Development Planning unit; ISD: Integrated service delivery; JGDM: Joe Gqabi District Municipality; JGDM WSA: JGDM Water Services Authority; JGDM WSP: JGDM water services provider; JoGEDA: Joe Gqabi Economic Development Agency; MHS: Municipal Health services; MWP: Mzimvubu Water Project; NRM: Natural resource management; RU: Rhodes University; SAPS: South African Police Service; SASSA: South African Social Security Agency; SAYM: South African Youth Movement; SEDA: Small Enterprise Development Agency; SHM(N#): Sub-headman (Node #); STL(N#): Senior Traditional Leader (Node #); TP: Tsitsa Project; TP IP: TP Integrated Planning; TP CC: TP Catchment Coordinator; UFS: University of Free State; WC(N#): Ward councillor (Node #); WCR (N#): Ward committee representative (Node #); YCOP: Youth community outreach programme.

Headmen [HM] and community development workers [CDW] both enable connectivity between stories. I describe their roles below. As introduced in the previous section, many local governance actors work with the local government and traditional leadership systems.

Headmen, coded green as part of the Village Story, create bidirectional connections between the Village and Catchment Stories. Although all of the traditional leaders play a role in linking their residents to formal governance structures, the headmen are profoundly connected and accountable to their communities while still being involved in formal governance in the Catchment Story. Part of the reason for their high level of connectivity is their deep embeddedness - I will discuss their accessibility in following section. Headmen and sub-headmen [SHM] are more village-based than the senior traditional leaders [STL], who are more disconnected from the daily concerns of rural residents. Headmen convene traditional council meetings, commonly involving sub-headmen and elected residents, at the traditional leader's house in their area. The traditional leaders communicate, coordinate activities, and settle disputes during traditional council meetings. In the Catchment Story, traditional leaders meet quarterly according to clusters defined by provincial COGTA. Some traditional leaders in TsRC meet in the Mount Fletcher cluster, while others are part of the Ugie-Maclear cluster. The roles played by different traditional leaders and their positions in their communities vary (Textbox 12). Headmen are also involved in municipal processes – for example, forming part of the municipal council (Section 5.4.4 in the Broader Story).

Textbox 12 | Variations in traditional governance

The manifestations of traditional leadership are heterogeneous and contested; for example:

- In one area, there was a time when the senior traditional leader was not recognised as legitimate by many of the community members, and each headman was in control of their land. Later, when the senior traditional leader returned, one part of the community refused to acknowledge him, which resulted in one of the headmen not attending the senior traditional leader's traditional council meetings.
- In another area, historically there has been competition for the headmanship, which has resulted in ongoing division in the community. In this area, there was a period when the headman under a particular king left, during which time the current headman was elected by popular vote. However, the 'rightful' headman has returned, but the current headman does not want to relinquish his power.

Community development workers (CDWs), coded brown as part of the Catchment Story, span all three stories. The CDWs are hired on full-time contracts, and must live in the municipal ward where they operate, thereby being accountable to their community. Introduced by COGTA in 2003, CDWs connect government departments and communities across a range of services. They also coordinate with other community-based workers from multiple government departments, such as animal health technicians [AHT] and agricultural extension officers. CDWs are tasked with setting up 'war rooms' – ward-based service delivery reporting spaces. While war rooms are supposed to be a place for stakeholders to come together and resolve a particular issue, they are not yet functioning in the local municipality; having a centralised space does not work in rural areas, which are characterised by low mobility. CDWs proactively attend village-level events in rural areas and visit individual households, going 'door-to-door'. The CDWs are unanimous that going from door-to-door in their communities is a valuable way of eliciting community problems and opinions in a way that is private and non-threatening. The CDWs' direct connection to community members makes them a boundary spanner between the Catchment and Village Stories.

Information flow from governance institutions to rural areas, facilitated by local governance actors, is mainly informal. Local government actors and traditional leaders have access to various governance spaces in which they are responsible for representing their communities' interests and collecting information for dissemination. Information dissemination back to rural communities is often done opportunistically at an informal gathering (such as clinics, taxi ranks, the social grants queue, or even after funerals), and is heavily dependent on the agency of the specific governance actor. Rural communities can easily be isolated if they do not exercise their agency.

Towards the centre of the consolidated map (Figure 5.19) are two well-connected Catchment Story actors: the local municipality's IDP manager [ELM IDP] and the Tsitsa Project's catchment coordinator

[TP CC]. As described in the Broader Story (Section 5.4.4), one function of the local municipalities IDP is to enable local participatory governance by connecting government departments (from the Broader Story) to governance actors working between the Catchment and Village stories. The Tsitsa Project's catchment coordinator's individual actor map is the most detailed of the actor maps, and so is presented as an exemplar below.

The Tsitsa Project Catchment Coordinator (Key Informant #9) works with the various communities of practice in the Tsitsa Project (Section 2.2) and with external Tsitsa Project collaborators in the TsRC. The actor map (Figure 5.20) shows the Tsitsa Project Catchment Coordinator's connections with governance actors in the TsRC. The Catchment Coordinator's role spans multiple levels of governance. Her experience across these multiple levels of governance enables her to play a boundary-spanning role, interpreting both language and an understanding of the activities in all three stories.

The Tsitsa Project Catchment Coordinator, and the Tsitsa Project more broadly, has successfully created connections with the traditional leaders. The Catchment Coordinator suggests that it is 'better to work with traditional leaders, as they are there [in the rural areas]'. The Tsitsa Project has more broadly connected with local government and the district and local municipalities; however, these interactions have been more formal and superficial than the in-depth engagements with the traditional leaders. The Tsitsa Project Catchment Coordinator notes that she had 'attended and presented' at a municipal council meeting, creating a unidirectional connection that did not lead to future collaboration.

The Tsitsa Project's difficulty in engaging with local government has several contributing factors. One problem is the inter-story disconnections – there are boundaries related to trust and accountability between local government and provincial and national departments. The national representative of DFFE within the local government [DFFE LGS] (Key Informant #6) described the distrust he experienced when trying to support local government actors. He was viewed with suspicion as a higher-level official coming to interfere and criticise. Another challenge is the lack of capacity among local government actors and the dominance of reactive forms of governance as I will explore in more detail in Section 6.4.4. Another factor is the mis-alignment of goals - as I will discuss in Section 5.5.4, local government does not have a strong environmental focus. Stronger connections may have been fostered if the Tsitsa Project had been able to reframe some of its work to align with the local governments imperatives or existing projects.

5.5.3. Influence and accessibility

As part of mapping the Catchment Story, I mapped influence and accessibility with three headmen and three CDWs (Key Informants #1, #2, and #3, and Interviewees #1, #2, and #3 respectively) (Section 5.3.3 & Table 5.3). I present one of six influence-and-accessibility maps (Figure 5.21).

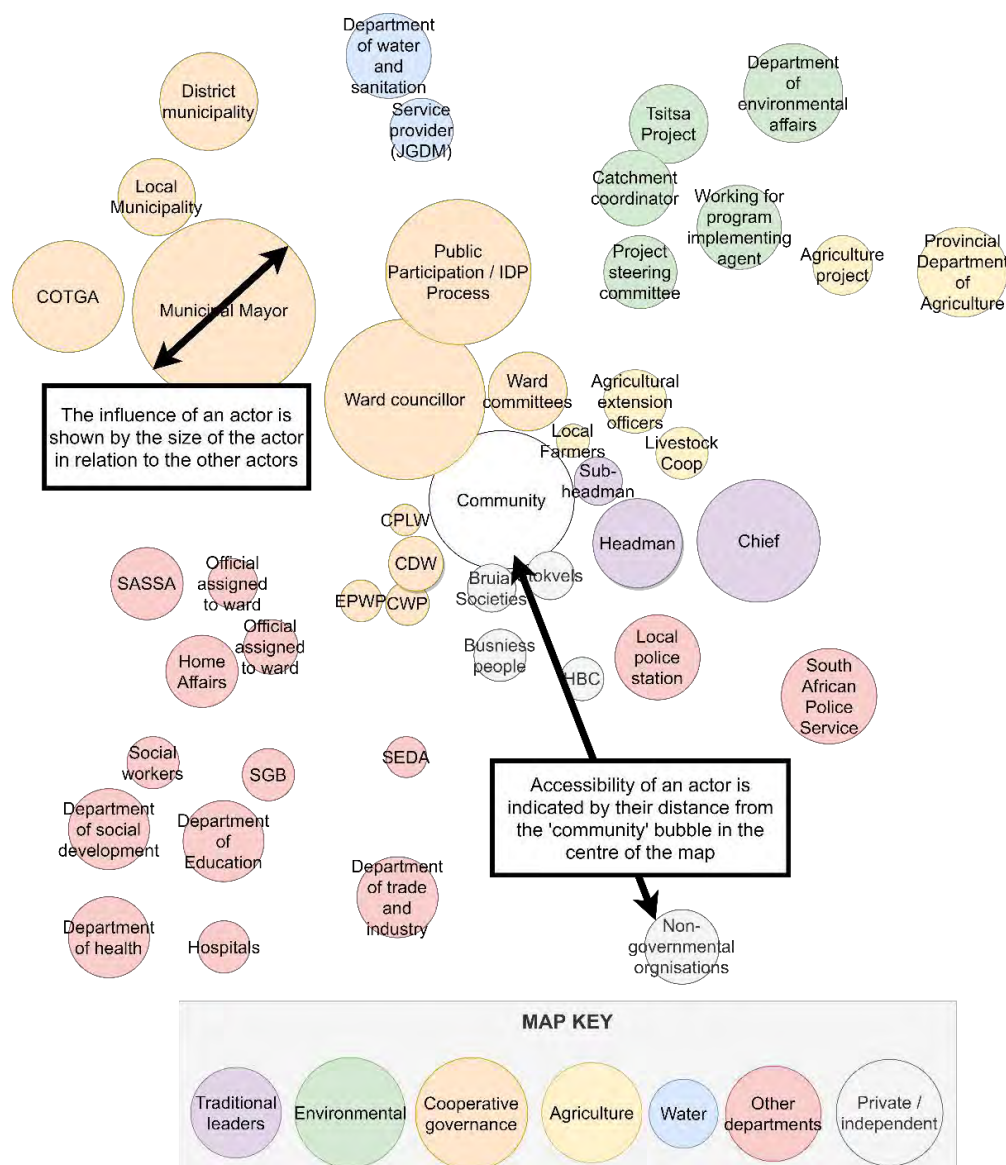


Figure 5.21. Influence and accessibility map as co-created with Key Informant #1.

Key Informant #1 is a community development worker (CDW) employed by the provincial Department of Cooperative Governance and Traditional Affairs, and who works closely with the local municipality. The map shows governance actors surrounding the 'community' at the centre. As described in the rectangles, the influence is indicated by bubble size, and the distance from the central community bubble indicates accessibility. (COGTA – Cooperative Governance and Traditional Affairs; CPLW – Community participation liaison worker; CWP – Community Works Programme; EPWP – Extended Public Works Programme; HBC – Home-based care; SASSA – South Africa Social Security Agency; SEDA – Small Enterprise Development Agency; SGB – School Governing Body). The map's inconsistencies (spelling and capitalisation) are because it is presented as it was elicited.

Mapping influence (or power) is difficult, as there are many different types of power, from everyday power to more fundamental forms of power (Section 3.3.1). Through the influence-and-accessibility mapping, decision-making and convening power were referred to regularly. Decision-making power refers to an actor's influence over practical decision-making. Convening power is an actor's power to bring actors together and facilitate communication. I assumed that the circle sizing as part of the mapping process would reflect the research participant's perspective, as influenced by a broader spectrum of power, including less easily communicable forms of power.

The general trend across the influence-and-accessibility maps was that the higher an actor is in the municipal or traditional leadership hierarchy, the more power (larger circle size) and less accessibility (further from rural communities) the actor has (Figure 5.21). These results are as expected: the higher up in an institutional hierarchy an actor is, the more power they have. Notably, CDWs emphasise the power held by local government actors (i.e., make their circles bigger) while the headmen accentuate the power of the traditional leaders. As seen in Figure 5.21, created with a CDW, the municipal actors are more prominent than their traditional leadership counterparts.

At the municipal level, the local municipality convenes the local municipal council, which consists of councillors and the municipal executive (Figure 5.15 in the Broader Story). Traditional leaders are nominally represented in the municipal council, but are in the minority, and thus hold little formal power in the council. Ward councillors convene ward committee meetings at the ward level, which consist of a ward councillor and ward committee representatives. Traditional councils, convened by headmen, have jurisdiction over comparable spatial levels to those of the ward committee meetings. In practice, the traditional council's decision-making power often exceeds what is formally designated, as I explore below.

In the areas under customary law, the formal rules-in-use do not fit the rules-in-form. Formally, the local government holds all of the decision-making power related to local-level service provision and development, while traditional leaders' powers are restricted to traditional affairs and land administration (Section 5.4.4). Informally, traditional leaders still hold some of the power they had pre-1994. Reasons given for the traditional leaders' ongoing influence on land and water governance included their historical role in governance, the regular physical presence of traditional leaders in the rural areas, and the lack of capacity in local government to fulfil their formal mandates in rural areas, which results in the traditional leaders filling in where they can. One example is water governance, which is a role that is supposed to be fulfilled by local government; however, in areas where there is no formal water provision, the traditional council becomes the default space to discuss local water issues, such as pollution and spring degradation.

The overlapping systems of traditional and democratic governance, and the flexibility in the system, enable some redundancy in which the shortfalls of one system are made up by the existence of the other. One consequence of the overlapping system is the ability of residents to be selective about which system they support and use. In some cases, the residents prefer the traditional leader, meaning that the municipal officials lose some of their power; in other cases, the opposite is true. Groups in a community can show more allegiance to one actor than to another. The choices made by community members can be influenced by individual personalities and personal affiliations, historical allegiances, or even demarcation (discussed in the next paragraph). Another factor influencing an actor's popularity is their length of time in office. Ward councillors might find it difficult to build rapport with communities over their five-year term, while CDWs and traditional leaders have permanent positions that allow them to build up social capital over extended periods.

In the former homelands, the mismatches or misalignments between traditional and democratic boundaries add an extra layer of complexity to the governance system. Ward boundaries are defined on the basis of the number of people, resulting in sparsely populated rural areas being divided into larger wards than urban wards. For example, Ward 3 is enormous (Figure 2.4), encompassing communities living under customary law in Upper Tsitsana, residents in informal settlements outside Nqanqarhu, and commercial farmers. These diverse communities, and the accessibility challenges (which I explore in Section 6.4.2), make the work of the ward councillors and the CDWs more complex, and reduce the quality of services. Another related issue is that sometimes a single traditional leadership area falls into multiple wards, or vice versa. The spatial mismatch can make accountability more complicated; for example, some headmen communicate with two or more ward councillors; and if a ward councillor is accustomed to working with one headman, they may neglect portions of their ward that fall under a different headman. In these cases, the overlapping systems can lead to neglected areas.

The influence-and-accessibility findings reinforce the understanding of the heterogeneity of the informal rules and their actual manifestations in the Catchment Story. Influence and accessibility carry through into the systemic analysis as themes influencing participation (Sections 6.4.2 and 6.4.7).

5.5.4. Catchment Story discussion

The Catchment Story findings explore connections between stories and clusters in the Catchment Story from the perspective of Catchment Story actors. I first explore the clustering of actors in the Catchment Story; after that, I discuss some factors influencing boundary spanning and system convening (Section 5.2.2).

Catchment Story clusters

The clustering in the Catchment Story (Figure 5.17) is consistent with the literature that suggests that land and water governance in South Africa often happens in sectoral silos (Denby et al., 2016; Weston & Goga, 2016). The consolidated network (Figure 5.17) suggests a dominance of bonding links in groups, with few bridging links between clusters (Section 5.5.1), rather than a balance between bonding and bridging links that could enable system-wide adaptability and resilience (Newman & Dale, 2005; Berardo, 2014).

The experiences of the Tsitsa Project's catchment coordinator (Key Informant #4) (Figure 5.20) provide insight into the clustering in the Catchment Story. Although the Tsitsa Project was given pilot project status, which gave it the flexibility to explore innovative ways of working (Section 2.2), it was still under DFFE in the Broader Story and embedded in the environmental cluster in the Catchment Story. The association with DFFE limited the Tsitsa Project's ability to play a convening role and to bring together actors from different clusters. Indeed, multiple efforts by the Tsitsa Project to create substantive collaborations between DWS and DFFE in the Broader and Catchment Stories largely failed (Section 2.2.1). Another example was the unsuccessful attempts to create bidirectional connections with other local actors, such as the representatives of DRDAR. The Tsitsa Project's experiences mirror other environmental actors' attempts to connect with the agricultural cluster in the Catchment Story, such as the DFFE implementing agents (Key Informant #7).

The clustering in the Catchment Story mirrors the institutional structures in the Broader Story. The difficulty of creating more participatory forms of governance requires increased integration between clusters. Boundary spanners and system convenors are two participatory governance roles that I identify as enabling integration between clusters. I explore these roles in the next two subsections.

Boundary spanning

Boundary spanning can support integrated land and water governance (Williams, 2002; Long et al., 2013; Coleman & Stern, 2018a) (Sections 3.2.3 & 5.2.2). By enabling interactions between groups, boundary spanners help to make resources available to support implementation and action at the local level (Sattler et al., 2016). Resources that are exchanged can include human, social, financial, or physical capital, but are often in the form of information sharing.

Some boundary spanners are deeply embedded in a specific story, while others move dynamically between stories. For example, while headmen have substantial interactions with the Catchment Story, they are deeply embedded in the Village Story, and the efficacy of their role is predicated on their substantial contextual knowledge of their community and of the surrounding landscape (Section 5.5.2). An example of a boundary spanner who moves dynamically between stories is the Tsitsa

Project's Catchment Coordinator, who works with environmental actors from all three stories, enabling a vertical flow of information between the Broader Story and the Village Story. While the Catchment Coordinator's knowledge of any specific story does not have the same depth as an actor living and working in that story, her substantial experiential knowledge of each story (the story's rules and the lived experience of the actors in the story) supports the creation of connections between stories.

Vertical boundary spanning (between stories) requires crossing different boundaries, and presents different challenges to those of spanning boundaries horizontally (between clusters in stories). The boundary spanner role goes beyond creating practical governance connections to translating social norms, values, and meaning between groups of actors that characterise the social systems in which governance institutions are embedded (Cleaver & Whaley, 2018). Actors in the same story typically live in the same type of space. However, they might have different interests or knowledge backgrounds that are the sources of the boundaries.

Textbox 13 | Similarities across boundaries

In December 2019, the Tsitsa Project hosted its annual science-management meeting. The science-management meeting was designed as a space for Tsitsa Project researchers to engage with the Department of Forestry, Fisheries and the Environment managers to create bidirectional connections between the groups.

The 2019 science-management meeting was of interest for two main reasons. First, it was convened when the Tsitsa Project was increasingly moving into implementation, which allowed for the meaningful inclusion of catchment-based employees and for the first substantial meeting that brought actors from all three governance stories into a single space. Second, it was conducted when there was substantial and growing trust across the science/management divide (Cockburn et al., 2018b).

At the beginning of the second day of the meeting, the ice-breaker activity involved each participant saying their name and background. While it was intended as a brief introduction, it turned into a one-and-a-half-hour session in which each participant spoke about their background. Some, notably the more senior department managers, opened up about their backgrounds – in many cases, rural and difficult. These instances, in which senior officials shared similar backgrounds to those of catchment-based employees, enabled connections between actors from different stories of governance. Acknowledging the human story behind each governance actor enabled interpersonal connections between the actors involved in the session.

This session exemplified Palmer et al.'s (2015, p.2) transdisciplinary principle: 'Be conscious that everyone involved in the process is a whole, multidimensional person, with the potential to engage with their whole self and many ways of knowing'.

The differences between the actors from different stories are particularly stark in unequal South Africa (Tapscott, 2017; Knight & Rogerson, 2019). The differences in lived experiences – and the intangible differences in values and attitudes that emerge from these experiences – can be even more influential

on collaborative processes than the tangible challenges created by institutional structures (Cockburn et al., 2018a). There are exceptions to the observed trend, however; and in Textbox 13 I give an example of the potential power of uncovering similarities in experience through storytelling between actors from different backgrounds.

Boundary spanning is an inherently tricky role that attempts to shift dominant ways of working from inside the existing system, which have often emerged in a governance system out of necessity rather than being designed from the start (Williams, 2002). In many cases there are inherent incompatibilities between the needs of one actor and the capabilities of another (Van Buuren et al., 2019); in such cases, expectations must be managed to increase the potential of future collaboration.

Convening land and water governance

My findings highlight the importance of convening power in participatory land and water governance processes (Section 5.5.3). My finding aligns with the recognition that land and water governance, which spans multiple levels and integrates diverse actors, requires system convenors who can bring people together and facilitate knowledge sharing and practical action (Svendsen & Laberge, 2005; Pereira et al., 2020). The emergence of more integrated forms of governance across multiple levels of governance will require more convening capacity as more decision-making points are created, which need to be coherent – or at least cognisant of a broader set of decisions being made (Newig & Fritsch, 2009; Sattler et al., 2016). Bringing relevant actors together to grapple with a specific problem requires strong leadership to hold contradictions together and to find ways forward in the face of daunting uncertainty (Wenger-Trayner & Wenger-Trayner, 2021). In the Catchment Story, I identify multiple convenors.

The local government convenes general development processes. The local municipality is supposed to convene all local planning and cooperative governance activities; however, the influence of political imperatives that drive a focus on service delivery (such as water supply, roads, and electricity) results in a limited view of the environment and of land and water resources – for example, the lack of interest and investment in the dysfunctional local environmental forum, which is supposed to convene a space for local environmental actors (Section 5.5.1). Furthermore, the formal mandate of local government concerning ‘the environment’ is limited to waste and pollution problems (Section 5.4.3), without recognising the importance of the environment for sustainable service provision.

The district municipality engages in a broader range of land and water governance activities than the local municipality. The consolidated network map shows the district municipality connected to land and water governance institutions – for example, the solid connection to DFFE through the district municipality’s natural resource management unit, which conducts restoration activities with funding

from DFFE. Another example of the district municipality's role in land and water governance is the presence of DFFE local government support at the district municipality, which convenes a district environmental forum that brings together actors with various interests. The district municipality is positioned between the Catchment Story and the Broader Story, putting it in the position to be a boundary spanner between the two stories and a convenor in the Catchment Story. The potential of the district municipality to play this role has recently been boosted by the initiation of the district development model (Section 5.4.4).

Traditional leaders also play a convening role in the Village Story, where local government is less accessible (Section 5.5.3), by linking community governance to the Catchment Story. Traditional leadership systems have been the dominant form of government across the African continent from time immemorial (Khunou, 2011). Despite the shifting role of traditional leaders in South Africa (Section 5.4.4), they continue to be at the centre of rural governance because of their close connection to the land. The ability of traditional leaders to play a convening role in local governance is limited by their lack of formal mandate and their low access to resources. However, it is enabled by a history of convening local governance and their persistent physical presence in rural villages, which means that they have substantial contextual knowledge and social capital (Section 5.5.2). The potential leverage held by actors with an extended physical presence and contextual knowledge is something that I explore through my thesis (Sections 6.4.2 & 8.5.1). The exact roles of the traditional leaders are elucidated in more detail as part of the Village Story.

Across South Africa, there has been a rise in civil society and non-governmental organisations fulfilling convening roles. This trend is evidence of the gap in the formal governance system – the lack of a local convenor to enable the sustainable and integrated management of land and water resources. The Tsitsa Project has convened work in the Tsitsa River Catchment and has partnered with actors such as Environmental & Rural Solutions (ERS) and the uMzimvubu Catchment Partnership (UCP), who also work in the uMzimvubu River catchment (<https://umzimvubu.org/about/>). The Umzimvubu Catchment Partnership is a water management, grazing management, and landscape restoration programme that started in 2013. The partnership is establishing the Maloti Thaba Tsa Metsi Protected Environment, a 48,500-hectare area in the South African Strategic Water Source Area (Nel et al., 2013; Mubangizi, 2019; Snorek et al., 2022). The Umzimvubu Catchment Partnership provides leadership and convening capabilities that could guide work in the Tsitsa River Catchment. Other examples of CSES convenors who have identified the same gap to which I am alluding are the following.

- Living Lands in the Berg and Breede River Catchments (<https://www.livinglands.com/>).
- Kruger to Canyons (<https://kruger2canyons.org/>) and the Association for Water and Rural Development (<http://award.org.za/>) in the transboundary Olifants River Catchment.

- The Institute for Natural Resources (INR) in the uThukela catchments (<https://www.inr.org.za/>).
- The Duzi-Umngeni Conservation Trust (DUCT), working in the uMsunduzi-Umngeni river systems (<https://www.duct.org.za/>).

The emergence of these actors from outside of formal government is consistent with the governance literature, which suggests that the creation of novel governance arrangements is commonly initiated by civil society organisations and by non-governmental actors that are not bound by rigid institutional constraints, and that can fill the gap between national knowledge and local experiential knowledge (Sattler et al., 2016).

These initiatives provide rich potential for convening capabilities. There is the potential that these agile projects would do pioneering work to inform the future government-led establishment of institutions. Because of the cyclical funding these private actors receive, there is the potential danger that they could step into a rural area and fill a gap for a short period, only to create a more significant gap when their project funding ends. This problem is recognised by funders who stipulate the need to institutionalise new governance processes and to work with the government to ensure continuity. However, achieving these stipulations in the broader context of institutional instability is part of the problem.

The Tsitsa Project provided some convening capacity: the positions of the Tsitsa Project's Catchment Coordinator and Integrated Planning Manager in the consolidated network (Section 5.5.2) show their vertical and horizontal connectivity. However, the Tsitsa Project was not able to provide sustained convening capacity. One difficulty was the project's position under DFFE, limiting its horizontal connectivity with other government departments and subsidiaries. Another potential problem was the lack of physical presence: the Tsitsa Project was not based in the TsRC, and might not have had the appropriate 'skin in the game' (Taleb, 2018) to play a sustained convening role.

The Catchment Story explores the interactions between stories and clusters, helping to elucidate the clustering and the participatory governance roles required for local-level participatory governance. Improving local-level participatory governance will require uncovering leverage points that support the work of boundary spanners and system convenors.

5.6. Village Story: findings and discussion

The Village Story findings (Textbox 14 & Figure 5.22) draw on data collected in three of the roughly 80 villages across the study area (Cockburn et al., 2018b). The findings, therefore, are not a comprehensive portrayal of land and water governance across the TsRC; instead, I have made generalisations based on the focus group outcomes while paying particular attention to similarities and contradictions between the villages. I first present the findings and then discuss them.

Textbox 14 | A narrative summary of the Village Story

The Village Story is about rural village life. There are programmes run by different actors from the Catchment and Broader Stories, but mostly the actors in the Village Story receive limited external support. There are fewer policies and guidelines, and informal social norms and customs often dominate interactions and activities. People live in and interact with the landscape in the Village Story daily. This story exists in a landscape where people take public transport or use shared vehicles. The services provided to these areas are intermittent for several reasons, and people must make backup plans. In the Village Story, engagements happen in isiXhosa and SeSotho, and terminology is not up to date with the formal governance frameworks and institutional arrangements. Although emails and cell phones are unreliable in Village Story, the actors live and work in one space, and are more often open to giving their time to chat. However, I am not suggesting that rural life is not busy or stressful.

I begin the Village Story by briefly introducing what land and water mean to people (Section 5.6.1) and then clarify the term ‘communal’ (Section 5.6.2). I then map the Village Story through four maps that contain social and ecological system elements (Sections 5.6.3 and 5.6.4) (Figure 5.22); these four maps summarise the ten focus group maps presented in Appendix D8. I then summarise the findings by presenting the actors who are considered most helpful to land and water governance (Section 5.6.5).

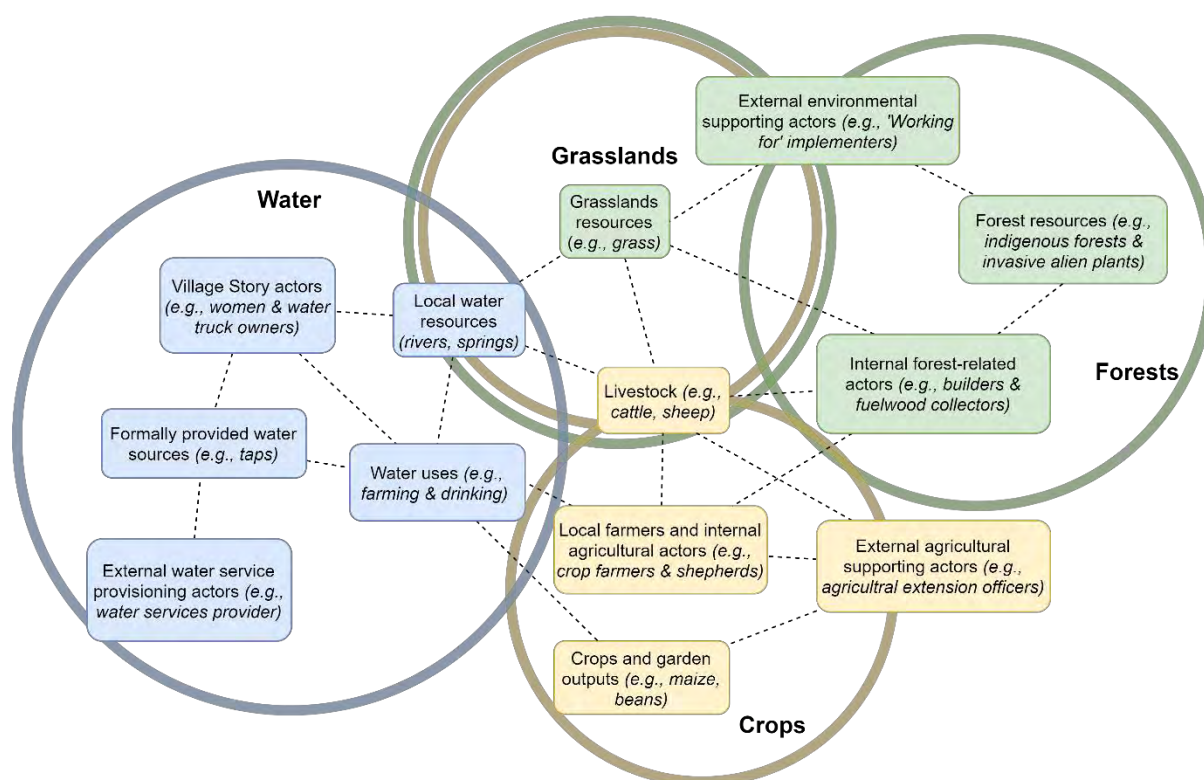


Figure 5.22. A high-level overview of the contents of the four Village Story maps.

The map shows elements in rectangles related to water (blue), environmental elements (green), and agricultural elements (yellow). Element rectangles give examples in *italics*. Elements are connected by bidirectional dotted lines, which indicate generic connectivity between elements. The four circles (labelled water, grasslands, forests, and crops) indicate how I have divided the Village Story into four diagrams. The grassland circle has green and yellow circles to indicate that agricultural and environmental actors interact with grasslands.

5.6.1. Introducing land and water in the Village Story

In the words of a group from a Learning Words workshop in Ntatyani village (Section 5.3.4), 'Water is life – to humans, animals and even insects. We get water from the sky; we get water that comes down as rain, and we get water as hailstorms and snow. Wild animal gets water from springs, rivers and wetlands. We, as humans, get it from springs and rivers that come from the rain. We go to the dams to do our laundry, swim and fish... We used water to irrigate our plants, cook our food, and take a bath... we need to save water as much as we can because it is important to all living things on this earth.'

In the words of another group, 'Land is life, we live in it.... We will build, we plant with tractors, with our hands and with cows. We build houses in the soil and grass grows from the soil – the same grass that we built a house with. We also plant vegetables and fruits; we also have livestock on this land – cows, sheep, chickens and goats and horses and even wild animals also stay in this land. We as people get an expiring date on this land and we get buried in the same land.'

Figure 5.23 is an example of a computer-generated Village Story map that describes the institutions involved in the Village Story, supporting the community members' livelihoods. An abridged excerpt from their presentation is given below the figure.

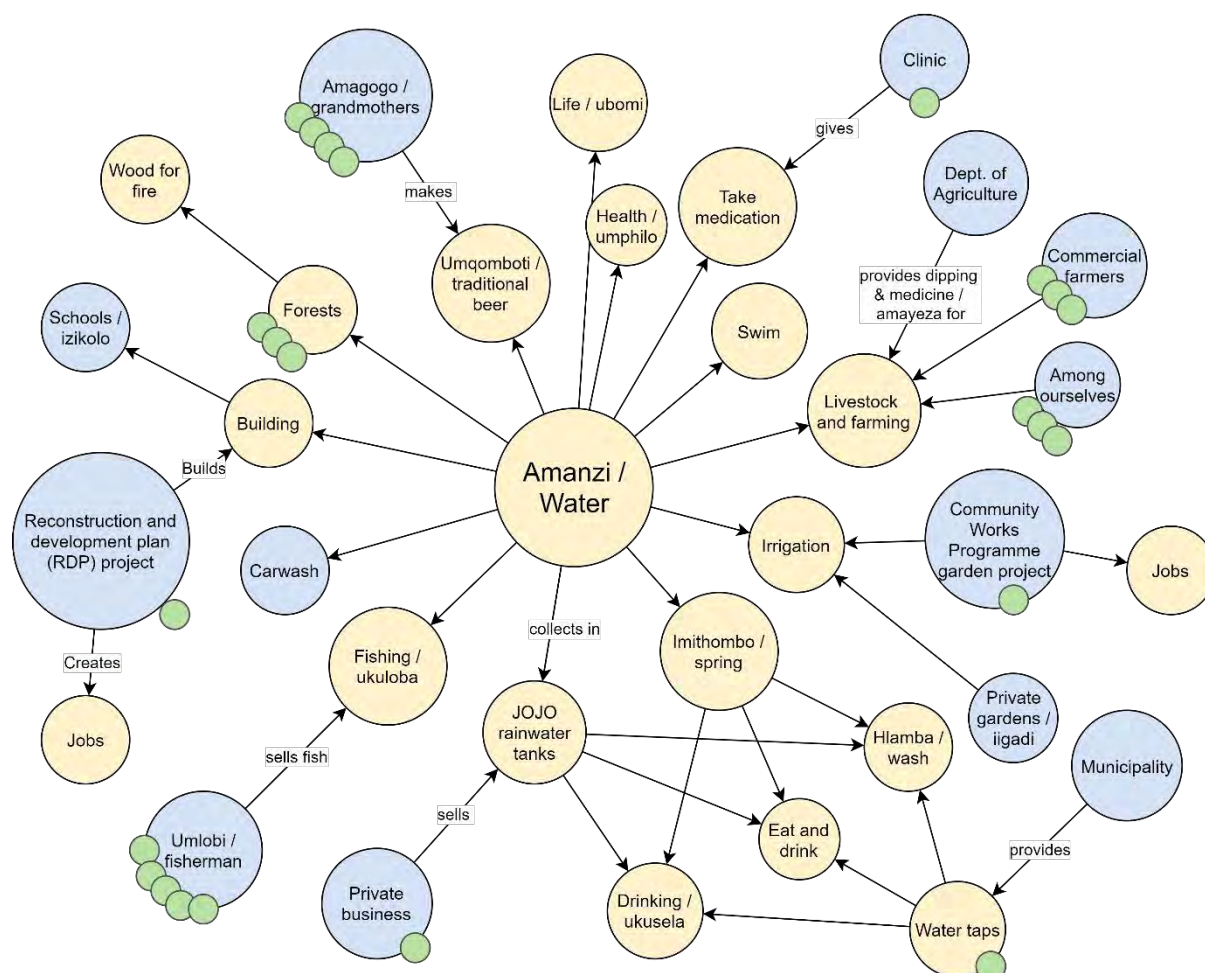


Figure 5.23. Water-related map in the Village Story, drawn by group three from Upper Sinxako Village. The non-human elements (yellow) are shown to come from the land, while the actors (blue) help this community to access or manage the non-human elements. Some of the links between actors and non-human elements are labelled to indicate the nature of the connection. System elements have green circles, which stand in place of the wooden tokens used during the hard copy mapping process. These tokens indicate a helpfulness rating. The actor labels are as they were on the hard copy maps with English translations when only the isiXhosa was given. Refer to Appendix D8 for the rest of the maps and transcriptions.

'The rain is our main focus, and we spoke about how the rain is helpful to us... The importance for water to the people who build houses, they cannot continue with the building process if they do not have water. Livestock is affected by the drought, and the government has not intervened to help... The traditional ceremonies that are performed need water... Livestock, in order for it to be healthy, it needs water which come from the river, so that the farmers can sell to one another privately or commercial

farming. The Community Works Programme[s] (CWP) that are employed in the gardens are helpful, but the vegetables that they plant they do not sell to the community... Houses that are built by the government and municipality use a lot of water...'

5.6.2. Ownership of and access to 'communal' land

The standard description of the former homelands as 'communal land' can be misleading (Bennett & Barrett, 2007) and, in the past, has been used to justify land dispossession through the warped understanding that black Africans do not have the concept of property ownership in their worldviews (Ngcukaitobi, 2021). The land is legally owned by the state and administered by traditional leaders. However, the term 'communal' is not accurate in describing the complexity of land and water access and ownership in the former homelands. A framework emerged through the focus group discussions, identifying three types of access: the family, the village, and open access (Figure 5.24). This simple framework provides a neat overview of how resources are shared. I also acknowledge that the framework is a simplification that does not capture the full complexity of land and water governance in the TsRC – never mind the diversity of governance regimes in 'communal areas' in South Africa.

'Family' refers to an extended family with access to land allocated by a traditional leader. Extended families include multiple generations. Crops and gardens, forests in the allocated land, and water collected in privately owned rainwater tanks are all resources for a family's exclusive use. 'Village' refers to resources available to families residing in a village. Rangelands and forests that are in an area designated to a village would be available for use by community members living in the village. I have placed rangelands slightly to the right to indicate the soft boundaries between villages across which livestock strays. Finally, 'open access' resources are open to all.

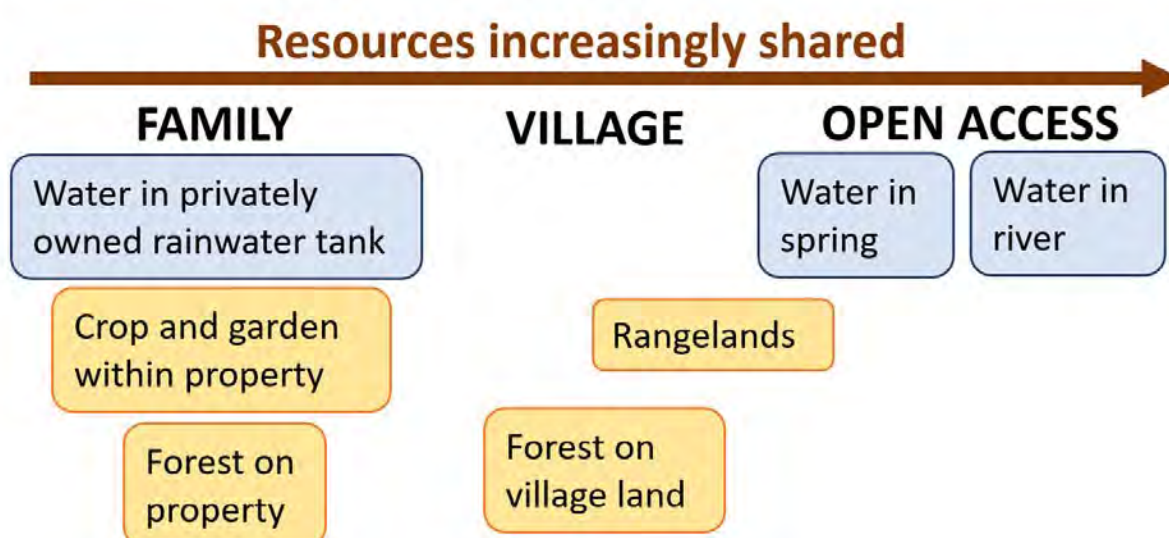


Figure 5.24. Three levels of communal ownership are family, village, and open access.

Mapping the Village Story reveals that the governance at the village level happens predominantly among community members – a point not fully introduced in the Broader or Catchment Stories. The involvement of community members in the Village Story was notable in all ten focus groups providing a wide range of services, such as livestock management and sales, ‘among ourselves’. Specific community actors that are mentioned are the *local tractor owner* who collects resources and helps to plough; *women* who fetch water, clean springs, and brew traditional beer; *shepherds* hired to look after animals; *the local truck owner* who delivers bricks and water; and *builders* who help to build houses. These community members repeatedly appear throughout the next two ‘findings’ sections.

5.6.3. Village Story water governance

Water in the Village Story comes from rain, which supplies water sources such as rainwater tanks, the Tsitsa River, springs, dams, and boreholes (Figure 5.25). Rainwater that is harvested and stored in rainwater tanks was the most referenced source of water for household use, as it is commonly kept clean and is prioritised for drinking water over spring and river water; six groups described how they buy rainwater tanks from hardware stores in urban centres. Four focus groups named the women responsible for fetching and carrying water from sources such as natural springs and rivers. Springs can supply invaluable water sources, with many running throughout the dry winters. Two groups also mentioned that springs are cleaned by the women who collect water, but few are well-protected, and many get polluted by livestock drinking from the springs.

Two groups from the same village said that they have access to a formal water supply through communal taps, while three groups specifically mentioned that they did not. As I explore in the discussion, the installation of taps does not always equate to safe and reliable water access (Section 5.6.6). Beyond the intermittent formal supply, local actors have access to water in various ways. One of the three research nodes has the river as a water source that is unmediated by a third party, and therefore residents (again, women) could walk to fetch water using buckets and drums. The other two villages provide water through private operators and individuals fetching water using various modes of transport. The local tractor owner, present in all three research nodes, is a crucial service provider who fetches water from rivers and sells the water directly to community members.

None of the three villages that participated in the focus groups has a formal institution or regular meeting to discuss water service provision or water resource management. Three focus groups from different villages stated that there are no rules or institutions for managing water; I understand these groups to imply that there are no formal rules dictating access to water, and no locally recognised group that is explicitly responsible for water management. Other groups said that local water-related problems are discussed with traditional leaders, who follow up with the municipality or the water services provider. One group stated that the ward committee representatives could support

communication with formal governance actors concerning a formal water supply. The differing opinions suggest variability between communities.

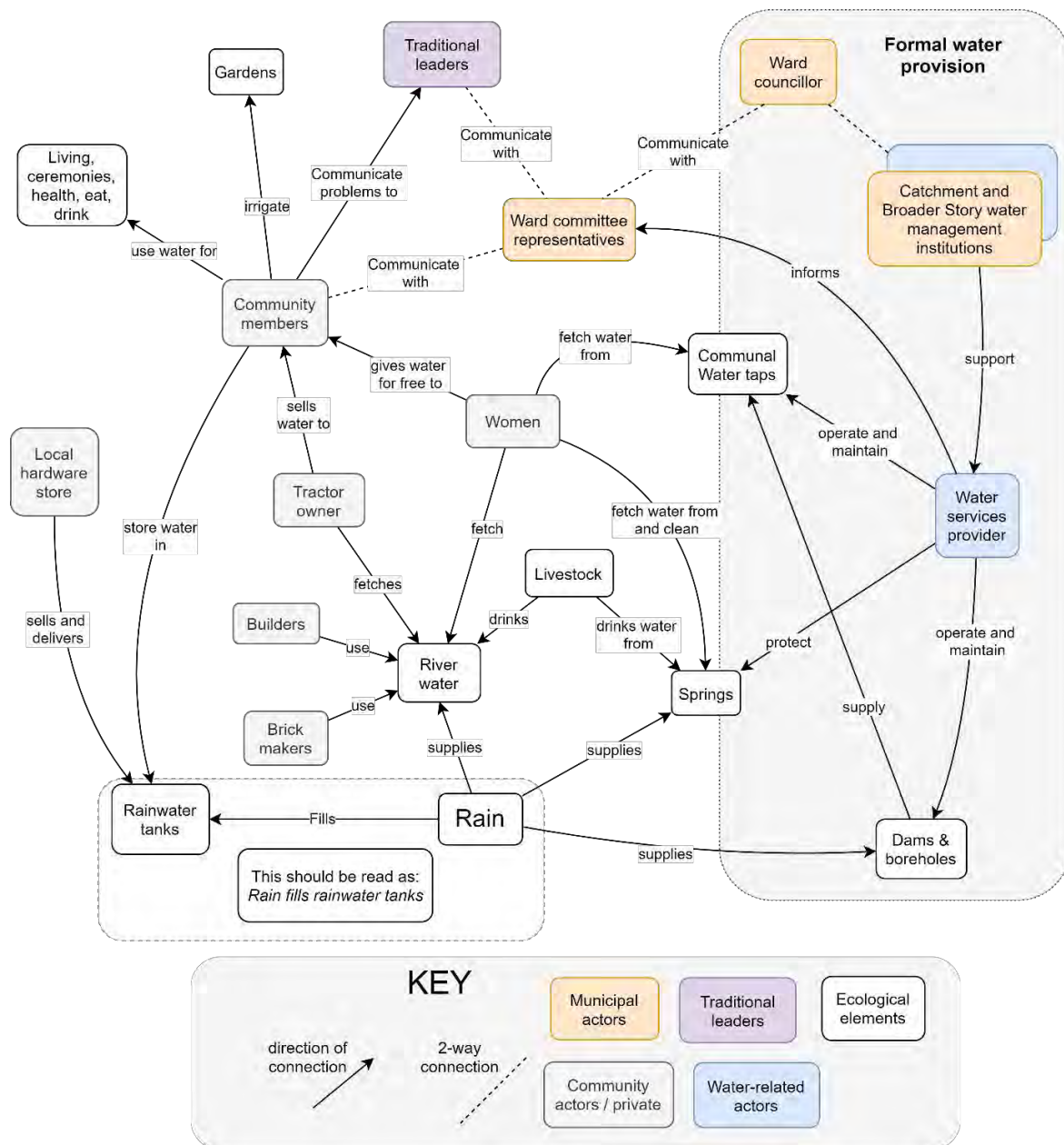


Figure 5.25: Map of water governance in the Village Story.

Water sources, such as rainwater tanks, rivers, and springs, provide community members with water for household use, gardening, and irrigation. Some areas have formal water service provision (Section 5.4.2).

5.6.4. Village Story land governance

I have divided the Village Story of land governance into three diagrams: grasslands and livestock (Figure 5.26), forests (Figure 5.27), and gardens and crops (Figure 5.28).

Grasslands and livestock

All of the focus groups mentioned livestock ownership, such as cattle, sheep, and goats. Communities buy and sell livestock, with most of the livestock trade happening within a community. Another source of income for livestock owners is wool sales through shearing sheds and farming cooperatives. Shearing shed activities are organised by traditional leaders, with support from the provincial DRDAR. Shearing sheds provide a way for livestock owners to sell their wool bulk to companies that provide wool-brokering services. BKB is one such wool broker that five focus groups mentioned. Livestock owners commonly hire shepherds, who are other community members, to look after their animals and to ensure that the livestock does not get lost. One focus group also mentioned that nearby commercial farmers (Section 5.4.3) provide work such as shepherding and sheep shearing.

Livestock management is dynamically related to maintaining healthy grasslands (Figure 5.26). Grassland quality and soil erosion are dynamically related, with the improved health and quality of grasslands being influenced by the quality of soils; poor grassland health leads to soil erosion. Poor livestock management degrades grassland health, which has a detrimental impact on soil stability. Two focus groups mentioned the Tsitsa Project and *Vetiver* grass nurseries (Section 5.5.1).

Traditional leaders are involved in all land-related governance activities in the Village Story, such as fire regime management and combating livestock theft. Stock theft is a significant issue for livestock owners and traditional leaders in the catchment. The prevalence of livestock theft, found across the communal tenure areas in the Eastern Cape (Ainslie et al., 2002), is a substantial hindrance to the sustainable management of livestock (JGDM, 2019b). Traditional leaders are involved in preventing stock theft: they assist livestock owners in certifying the livestock under their jurisdiction so that police and the DRDAR can assist them in the case of stock theft. In the Village Story, actors from the provincial DRDAR office in Nqanqarhu work with livestock and crops. The local DRDAR office, through its agricultural extension officers (as they still referred to despite officially having the title ‘agricultural advisors’) and health technicians, also assists livestock owners through animal health campaigns. From the Catchment Story findings, these extension officers work is highly specialised and do not engage in cross-cluster collaborations (Section 5.5.1). However, the village story findings have revealed them to be highly valued by community members for their role in supporting livestock owners and subsistence farmers.

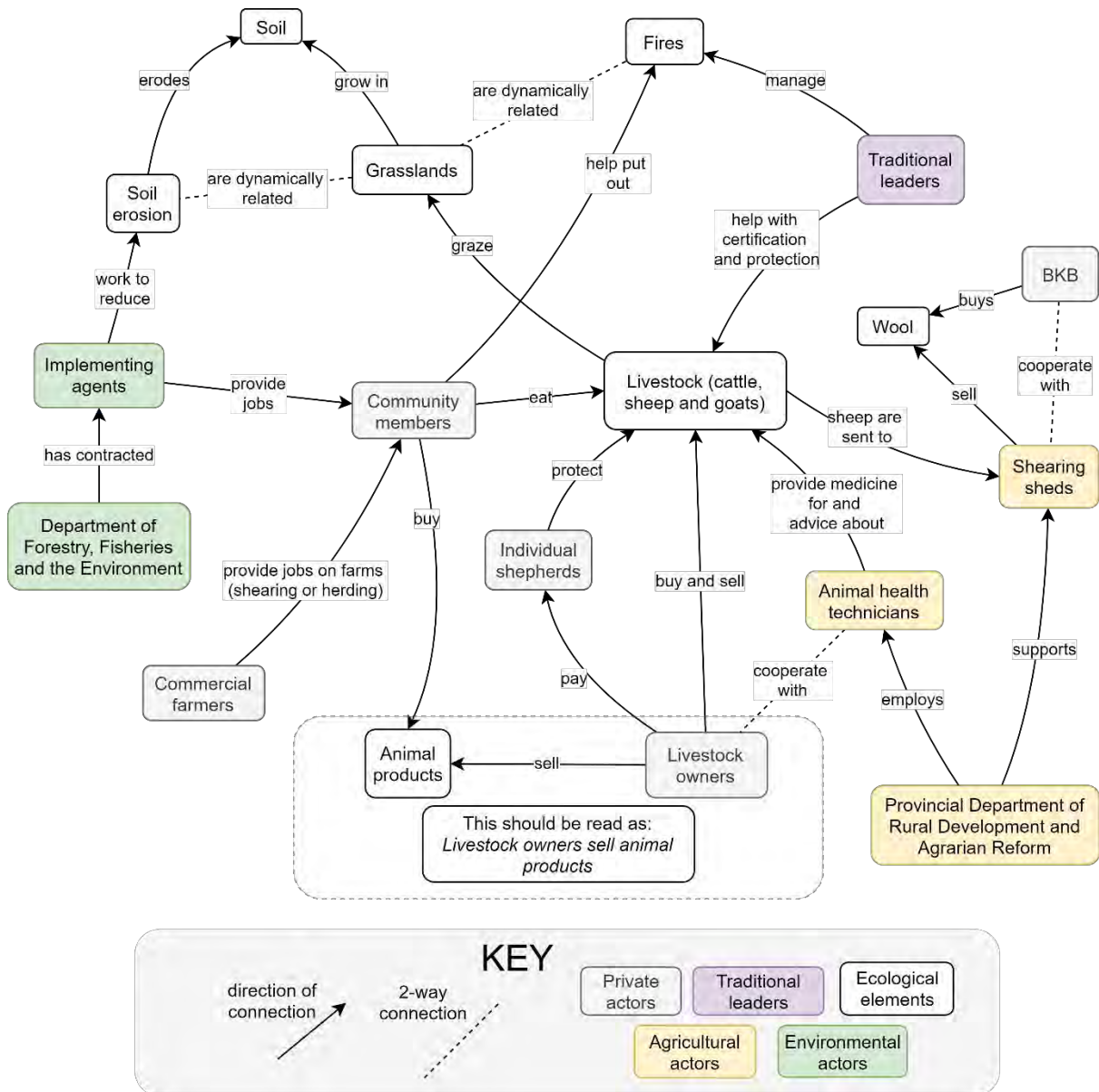


Figure 5.26: Map of grassland governance in the Village Story.

The health of livestock from which Village Story actors receive various benefits is dependent on the health of grasslands. Environmental actors support the conservation of grasslands, while agricultural actors support livestock health beneficiation. Traditional leaders support livestock certification and fire management.

Forests

Fuelwood is collected from both indigenous forests and IAPs (Figure 5.27). IAPs are invading Indigenous forests and the surrounding landscape in the TsRC. As part of a national 'Working for Water' programme, teams of local people are employed by DFFE implementing agents in the upper part of the TsRC to remove high water-consuming IAPs, such as wattle (the Australian *Acacia* species, known as *Vachellia* in RSA), to increase runoff and facilitate the restoration of the catchment area. More extensive invasive forests also negatively impact biodiversity and reduce grazing as they

encroach on grasslands. The problem is that they are considered valuable fuel resources and that they are used for building.

Focus groups from all three villages referred to a local tractor owner who collects fuelwood from forests and sells it to community members, particularly those who live far from forests. One community member with a dense alien invasive forest on the land allocated to him said that people pay him if they would like to take wood from his land, as it is close to where people live.

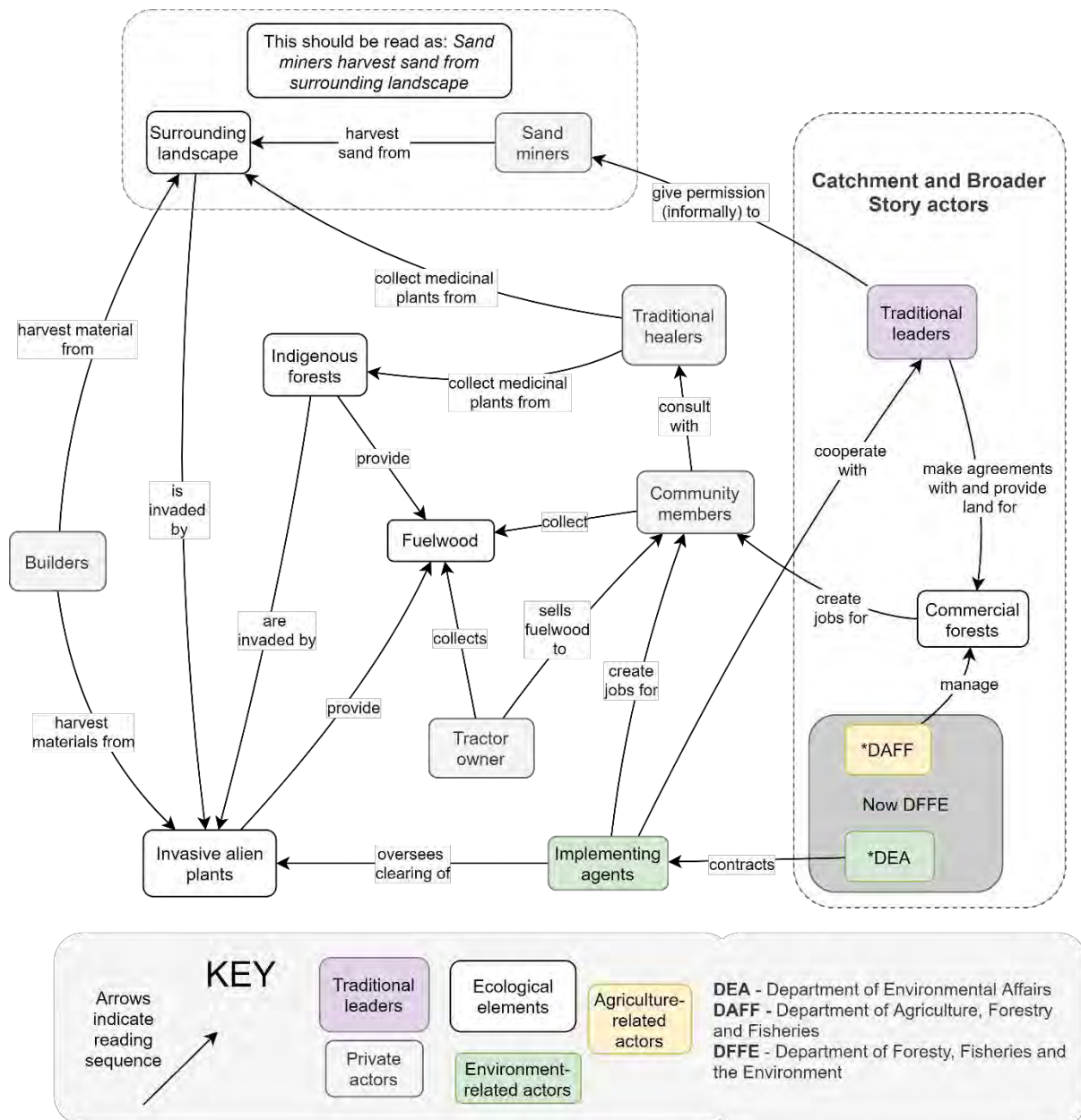


Figure 5.27: Map of forest governance in the Village Story.

Invasive and indigenous forests in the surrounding landscape provide various resources such as fuelwood and building materials for Village Story governance actors. Traditional leaders and DFFE are formal actors involved in supporting forest-related activities.

Traditional leaders play a leadership role by making agreements with Catchment and Broader Story actors who want to use the community's land resources. In one village, traditional leaders made agreements to enable the national government's forestry department to use the land for forestry plantations in exchange for job creation initiatives. However, these agreements can go against what people desire (Section 5.4.4). Traditional leaders also make agreements with private businesses, such as sand miners who extract sand from riverbanks to sell as building material – agreements that seem to take place without the appropriate environmental impact assessments and certification from the democratic governance system.

Crops and gardens

The final Village Story map relates to crops and gardens grown by community members (Figure 5.27). Traditional leaders are responsible for assigning plots to families – the primary role of traditional leaders, as indicated by six of the ten focus groups. While four groups stated that it is the role of the 'chief' (as the senior traditional leader is called in the Broader and Catchment stories) to assign land, one group stated that it is the headman's role and another that it is the king's role.

The farming management approaches used by community members vary considerably, and sit on a spectrum from *doing everything independently* (buying materials, plough, sowing seed, maintaining, harvesting) to *paying for a local agricultural business to do the work*. The approach depends on the financial resources available to the family. Three focus groups mentioned using oxen and donkeys to plough, while another five mentioned paying a local tractor owner to plough for them. Two groups mentioned a private business that does the ploughing and planting, with the rest of the work done independently.

Provincial DRDAR is also involved in supporting subsistence farmers through subsidised seeds and fertilisers. Agricultural extension officers are employed by DRDAR to support subsistence farmers. Subsistence farmers also buy supplies from farming cooperatives in urban centres. Many households in the Village Story produce food for subsistence without intending to sell it; however, when there is excess, it is sold to the surrounding community. One farmer stated that he sells to the supermarket in town.

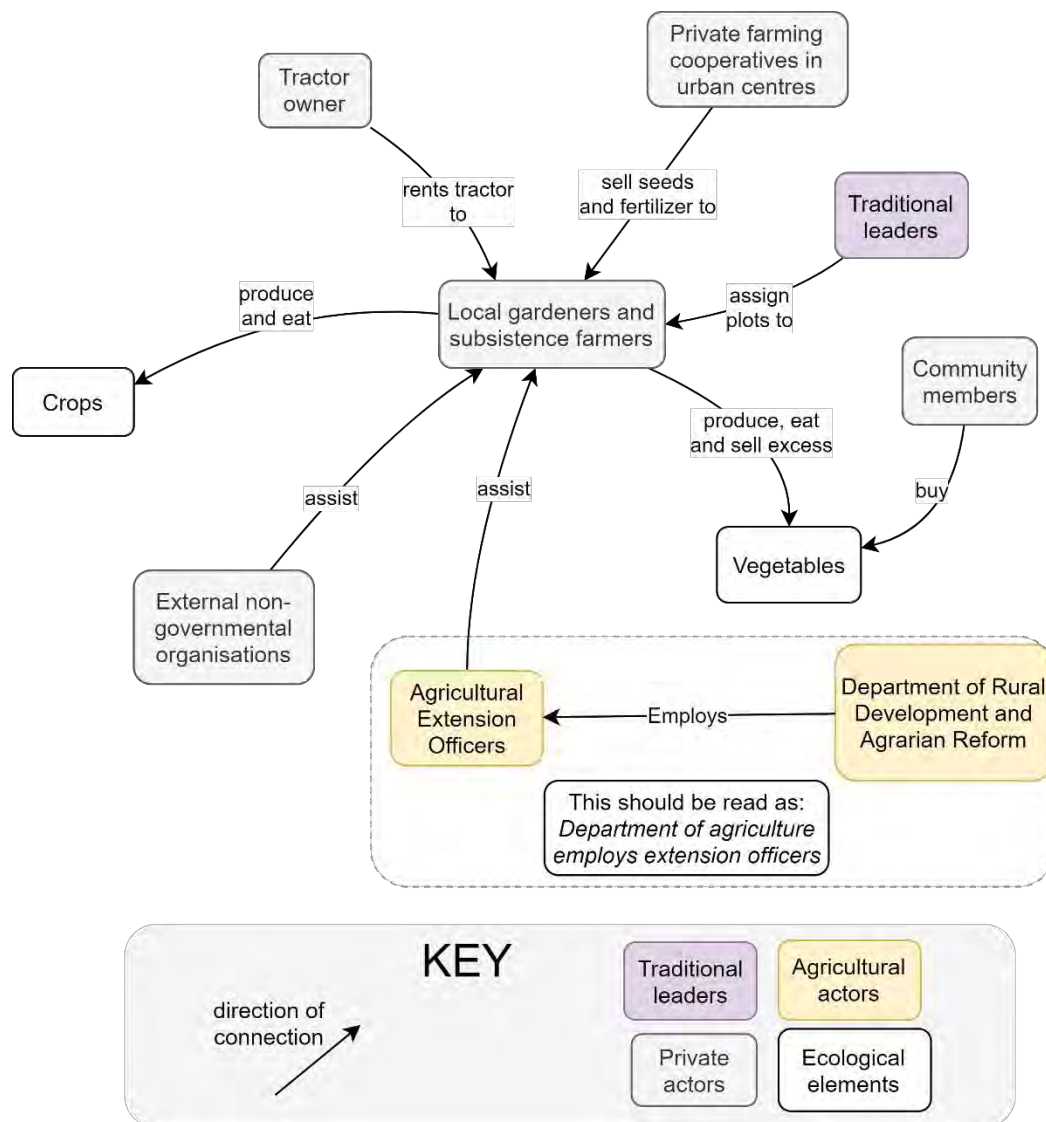


Figure 5.28. Village Story map of actors supporting subsistence farmers and gardeners. Local gardeners and subsistence farmers provide food for themselves and their communities. There is a range of governance actors who support local farmers. These include a tractor owner, traditional leaders, non-governmental organisations, and agricultural extension officers.

A community garden in one village is supported by the Community Works Programme (CWP) under COGTA. The focus groups had conflicting views about the benefits of the CWP programme, with one group mentioning the positive employment aspect and another suggesting that the CWP workers keep all the products and benefits for themselves without sharing them with the rest of the community.

The next section concludes the Village Story findings by presenting the helpfulness ratings given to social elements in the Village Story mapping.

5.6.5. Helpful actors

I identified the actors who were mentioned multiple times and given high helpfulness ratings during the Village Story mapping (Table 5.6). The roles of these actors, as described by the focus groups, are

presented below. The Catchment and Broader Stories can be difficult to understand from the perspective of actors in the Village Story. Part of the challenge of telling the Village Story was the high variability in names used to describe the Broader and Catchment Story actors. For example, the provincial DRDAR was referred to as the DAFF (the national DALRRD was previously the Department of Agriculture, Forestry and Fisheries), or as the Department of Agriculture, or just as 'Agriculture'. The differences in reference to government departments are understandable, given the regular reshuffling and renaming of government departments (Section 5.4.1 in the Broader Story).

Table 5.6. Number of mentions and helpfulness ratings of the Village Story actors.

The table shows the actor's name, the service or help provided by the element, the number of groups (out of 10) who mentioned the specific element, and the cumulative helpfulness rating. The focus groups rated elements in their maps on their helpfulness. These helpfulness ratings were added across the groups to give a cumulative helpfulness rating. The table shows the social and ecological elements mentioned by four focus groups, indicating their presence in more than one village.

Social or ecological system element	Service or help provided	Mentions (out of 10)	Helpfulness rating
Community members	Putting out fires, livestock sales, jobs creation, fuelwood collection, brick making, brewing traditional beer.	10	18
Department of Agriculture & agricultural extension officers	Crops support (seeds and fertiliser), livestock support (dipping and medicine).	8	11
Traditional leaders (king, chief, or headman)	Fire management, conflict resolution, plot & grave designation, dipping coordination.	6	5
Municipality	Water taps, roads, jobs.	6	2
Department of Environmental Affairs & implementing agents	Erosion control, <i>Vetiver</i> nurseries, alien clearing, employment.	5	12
Tractor owner	Tractor hiring, ploughing fields, selling water, selling wood.	5	5
Eskom	Supplying electricity.	5	2
Truck owner	Deliver water, deliver bricks.	5	-
BKB	Wool brokerage.	5	-
Shepherds	Look after animals.	5	-
Women	Fetch water and clean springs.	5	-
Department of Basic Education & schools	Jobs, nutrition, education.	4	7
South African Social Services Agency (SASSA)	Dispensing of pensions and social grants.	4	4
Hardware stores	Bricks and building material, rainwater tanks.	4	2
Builders	Building houses.	4	-

All ten focus groups mentioned the ‘community’ as a general group (10/10) and gave it the highest helpfulness rating (Table 5.6). More specific community member roles include the local tractor owner (5/10), women who fetch water and clean springs (5/10), shepherds (5/10), the local truck owner (5/10), and builders (4/10). My finding that community members view themselves as the most helpful suggests that there is a perception of a community that works together in the Village Story. Comments such as ‘They [formal water providers] are not here’, ‘Water is not managed’, and ‘There are no departments helping us’ also hint at the perception that community members feel neglected and have to find solutions for their problems outside of formal government structures.

The provincial DRDAR office supports both crop farming and livestock management (8/10), the value of which is indicated by the high helpfulness rating. Traditional leaders were the next most mentioned actor (6/10). Most groups referred to ‘the chief’ (the senior traditional leader), while one group referred to ‘the headman’ and another to ‘the king’. There was no clear distinction between the responsibilities of the three roles (headman, chief, king), including assigning plots of land, managing conflict, and coordinating specific activities such as livestock dipping and fire management.

Another government department that ranked highly, with a helpfulness rating of 12, was DFFE (referred to as the ‘Department of Environmental Affairs’ or just ‘Environmental Affairs’) (5/10). The high ratings given to DFFE are related to the fact that the TsRC is an area in which DFFE has invested substantially through the Tsitsa Project and the ‘Working for’ programmes (Section 5.4.3).

There was little mention of the water governance actors from the Broader and Catchment Stories. While some groups gave the municipality credit for a wide range of service delivery, such as roads and taps, others gave credit to specific government departments. The reality is that service provision involves government departments, local subsidiaries linked to the municipality, and private contractors. While the municipality was often mentioned for its role in service provision (6/10), it received a relatively low helpfulness rating of two – it was given a rating by only one group. Municipally related actors such as the Ward Councillor and the CDW were each mentioned once.

Other government entities that were mentioned include Eskom (5/10), the Department of Basic Education (4/10), and the South Africa Social Security Agency (SASSA) (4/10). The work of these three actors impacts land and water governance. For example, the provision of electricity impacts the use of forests, and social security impacts people’s use of and interaction with land and water resources. Concerning private companies, the hardware stores (5/10) and BKB (5/10) were both mentioned regularly.

5.6.6. *Village Story discussion*

The Village Story findings represent a local perspective on land and water governance – the ecological elements with which people engage daily. I first discuss four ecological elements and their potential to act as nexus elements around which actors could collaborate. After that, I discuss the degree to which the Village Story is characterised by independence.

Nexus elements

Collaborative and participatory efforts in the real world often coalesce around specific ecological stocks or processes, such as rangelands (De Villiers et al., 2014; Ichinkhorloo & Yeh, 2016; Umzimvubu Catchment Partnership et al., 2016) or water resources (Marais & Wannenburgh, 2008; Pollard & Du Toit, 2008; Weaver et al., 2017). Therefore, studying a land and water governance regime requires moving between understanding the whole system and the particular units in the system. *Water sources, soil erosion, livestock, and IAPs* are four key ecological elements that are valuable to multiple actors at multiple levels, making them more likely to be the subject of conflict. Despite the potential for conflict, there are examples in the TsRC and in South African landscapes more broadly that suggest these ecological elements' potential to be collaboration sites.

Key ecological element 1: Water by its very nature does not keep to socially constructed boundaries.

Water flows through the landscape, passing from the jurisdiction of one government department into that of another (Figure 5.29). Thus water management involves a range of government departments and other actors: DFFE on the slope, DWS in the aquifer and spring, a family in the homestead, the Department of Public Works and Infrastructure on the roads, DWS again in the river, and DFFE in an erosion gully (or 'donga'). Despite the reliance of residents in the Village Story on local resources to supplement formal provision, there is increasing degradation from erosion, livestock trampling, and pollution (Van der Waal, 2017; Libala et al., 2022).

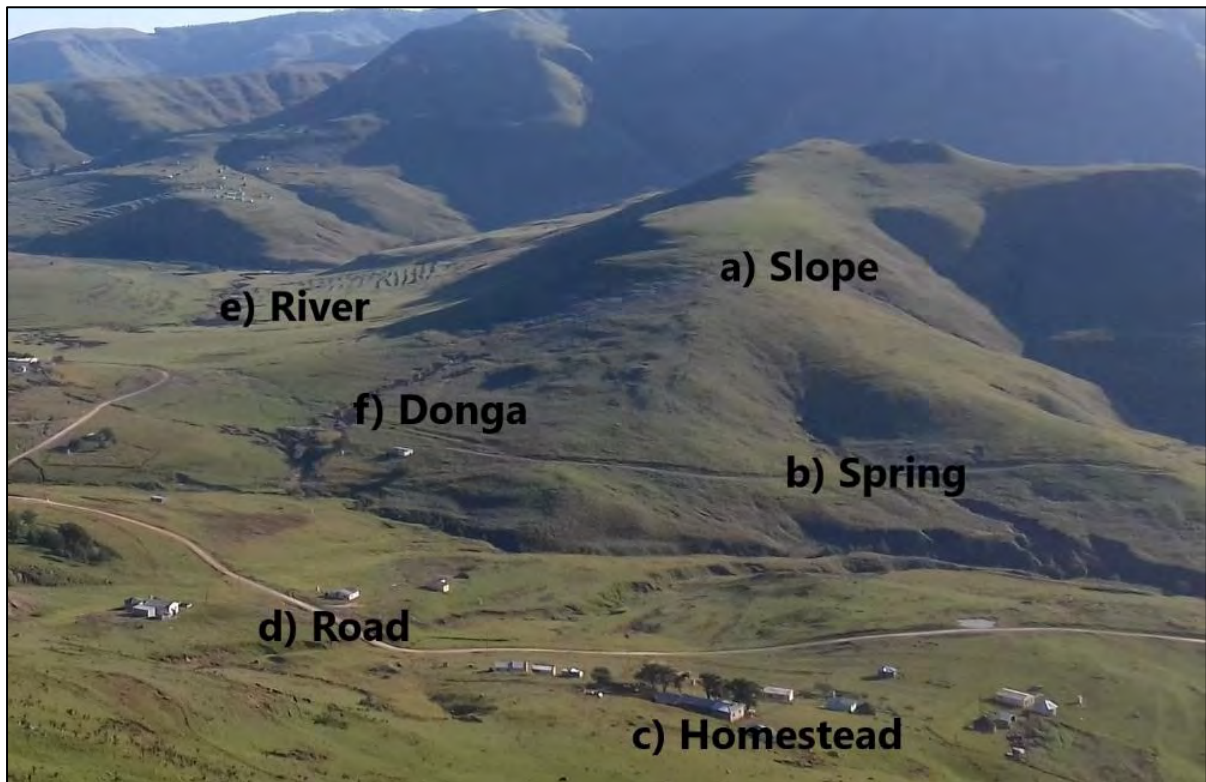


Figure 5.29: Water's institutional journey through the landscape.

Rain falls onto the slope (a) where the Department of Forestry, Fisheries and the Environment (DFFE) is interested in slowing it down to increase infiltration and reduce soil erosion. Once the water has infiltrated into an aquifer, it is the responsibility of the Department of Water and Sanitation (DWS) to pump it using a borehole pump or to ensure that the groundwater resurfaces at a protected spring (b). If the water runs onto a homestead (c), then it is the house owner's concern to ensure that their house is safe. If the water runs onto the road, it becomes the responsibility of the Department of Public Works to remove it without damaging the road (d). Once on the road, water is channelled through a culvert into a donga (or gully). In the donga, water once again becomes the responsibility of DFFE to control soil erosion. Thereafter, water flows into a river to become the responsibility of DWS once again.

Key ecological element 2: High levels of *land degradation, particularly soil erosion*, are a significant characteristic of the TsRC. Soil erosion harms grasslands and water resources, thus threatening the livelihoods of rural residents. Infrastructure such as individual homesteads, roads, and graveyards are also threatened by the growing erosion gullies (Figure 5.30) (Van der Waal, 2017). The negative impact of soil erosion on water resources drove the communication between DWS and DFFE and led to the emergence of the Tsitsa Project (Section 2.2.1).



Figure 5.30. A house threatened by an erosion gully. Christopher Matsoso, a community liaison officer for the Tsitsa Project, took the photo in February 2020.

Key ecological element 3: Livestock are valuable, both culturally and economically, and have the potential to be used as landscape management tools for improving the health of grasslands and other interdependent ecosystems. People living in the former Transkei have a range of reasons for keeping livestock, including as a store of wealth; to pay bridal prices; for milk and meat; as draught power for ploughing; for ritual slaughter; and for manure production (Ainslie et al., 2002). Studies in the TsRC have found income generation, food production, and ceremonial use to be the primary uses (Herd-Hoare, 2015; Libala et al., 2022). Despite the high value placed on livestock, a lack of livestock management on communal rangelands in the TsRC contributes to landscape degradation, ultimately threatening livestock production (Herd-Hoare, 2015; Van der Waal, 2017; Itzkin et al., 2021).

Key ecological element 4: Alien invasive plants have a variety of negative impacts on the indigenous ecosystems; however, they are useful in the Village Story. Species of IAPs use large volumes of water (Le Maitre et al., 2002), invade indigenous forests and grassland ecosystems, and contribute to land degradation (Van der Waal et al., 2018; Itzkin et al., 2021). These negative ecosystem impacts have made their control and management a national priority (Marais & Wannenburgh, 2008; Turpie et al., 2008), hence the necessity of the 'Working for Water' programme (Section 5.5.1). One complication is that the use of IAPs (Figure 5.27) is consistent across the TsRC (Herd-Hoare, 2015; Van Tol et al., 2018), and is mirrored in other rural parts of South Africa (Shackleton & Shackleton, 2006; Cocks et al., 2012). Collaborative management approaches must support local use, while managing vital areas such as riparian zones and invaded grasslands to increase livelihood opportunities (Van der Waal et al., 2018; van Wilgen et al., 2022). One innovative approach has been to use IAPs for the small-scale generation of charcoal, thereby linking the aims of DFFE with those of local entrepreneurs (McCarthy, under review; Theron et al., 2012).

The discussion about nexus elements suggests that they all offer different leverage points to enable boundary crossing. Ecological elements, which are meaningful to multiple actors, could be a tangible stock or process around which actors could work together. Some authors suggest that the sustainable governance of CSESs requires a patchwork of defined collaboration domains that are centred on tangible stocks and processes that overlap and intersect (Cockburn et al., 2019). A patchwork approach acknowledges the potential of emergent collaboration at larger scales through small-scale collective action (Patterson, 2017). A patchwork approach is compatible with institutional bricolage (Section 3.2.3), highlighting the need to balance formal and informal institutions, as governance processes are context-dependent and heterogeneous (Cleaver, 2012).

Village Story semi-autonomy

The Village Story findings suggest that community actors work collaboratively to provide many land- and water-based services with limited external support from Catchment and Broader Story actors. The focus groups rated community members as the most helpful, and traditional leaders (often considered a community member) as the third most helpful (Table 5.6). It is unclear to what degree the community members' perception of interdependence within the Village Story is a result of their biases that lead them to overstate their contribution – similar to the biases in the influence and accessibility mapping, where headmen and CDWs all emphasised the influence of their respective institutions (Section 5.5.3). The focus groups might have overstated their mutual helpfulness; however, there is evidence from the former Transkei that communities supplement formal service provision through village-level collaboration and resource use.

Water service provision is a clear example of where Village Story actors work together in an attempt to make up for the government shortfall. The Village Story mapping suggests that rural communities are not reliant on formal water provision via a service provider – findings that are consistent with other research in the TsRC and in other rural communities in South Africa. In their survey of five administrative areas in the lower TsRC, Van Tol et al. (2018) found that only 43% of households had access to communal water taps. This finding aligns with the Rapid Eastern Cape Provincial Assessment of Service Delivery and Socio-Economic Survey, conducted by FHISER & DRA (2006), which found that 66% of respondents did not have access to adequate water provision as stipulated by the benchmarks in the Reconstruction and Development Plan (Westaway, 2012). Rural communities in the TsRC have found ways to provide some supplementary services, such as water carting from freshwater sources and rainwater tanks (Section 5.6.3). The level of water service provision is not satisfactory to the residents, does not meet South African regulatory standards, and is likely inhibiting more water-intensive development initiatives. However, the ability of rural communities to support their livelihoods without a formal water supply indicates a level of agency, resilience, and connection to the

surrounding ecosystems. Village Story water management is also an example of the potential efficacy of a patchwork approach (Section 5.6.6) in challenging, resource-constrained environments.

Through crop farming and livestock production, local food production is interwoven with local culture, and is seen as a way to escape poverty and enable development (Trefry et al., 2014). The focus groups stated that most livestock sales and trading happened with the Village Story (Figure 5.27), indicating intra-story connectivity. However, there is some inter-story connectivity, as the local DRDAR office received the second-highest helpfulness rating (Table 5.6).

Local food production (related to both crops and livestock) has been decreasing in recent times because of other livelihood options such as social grants and remittances (Section 2.1.2), as well as factors such as climate change, rural depopulation, and increasing poverty in the former homelands (Makiwane & Chimere-Dan, 2010; Westaway, 2012). While remittances have been declining since the 1980s, the social grant system has been increasing post-1994 (Shackleton & Luckert, 2015). The social grant system is intended to facilitate and enable economic activity; but the reality is that this has not come to pass (Sinyolo et al., 2016), and it might have actually decreased locally-produced food (Rowntree et al., 2019). While some international research has shown that food aid and social welfare to rural residents disincentivises cultivation and agricultural activity (Sharaunga & Wale, 2013), the evidence is inconclusive in South Africa (Sinyolo et al., 2016). Social grants seem to be a safety net for low-income families, as on their own they are insufficient to rely on (Shackleton & Shackleton, 2006).

The small number of mentions of specific municipal actors suggest that the municipality is irrelevant or not helpful. Municipalities are the lowest level of formal governance in a complex governance system that seems opaque and difficult to access from the perspective of the Village Story. Hostility towards the municipality might arise because it is 'at the coalface of service provision' (Mubangizi, 2019, p.555). The traditional leader's role seems to be more transparent, as it often involves more tangible convening and conflict resolution in the Village Story.

The maps created as part of the Village Story are a counterpoint to the Broader and Catchment Stories, which represent the perspectives of formal governance actors. The prevalence of local livelihoods, which have persevered with evidently intermittent external support, indicates the existing governance capacity in the Village Story. The findings support the call for participatory forms of governance that do not view communities as passive recipients of services, but as active participants (Hickey & Mohan, 2004; Palmer et al., 2022).

5.7. Synthesis discussion and conclusion

In this chapter I achieve Objective One by mapping the L&WGov system in the TsRC. I now deepen my responses to the four research questions under Objective One through a synthesis discussion and conclusion. I also elucidate the emergent methodological insights related to the tri-mode method.

5.7.1. *Inter- and intra-story connectivity*

The first three research questions address the content of the findings, which can be summarised as: ‘What are (Q1a) *the institutions*, (Q1b) *the elements*, and (Q1c) *the connections* that make up the TsRC L&WGov system, with a particular focus on participatory governance?’ The findings and section-specific discussions respond to Q1a and Q1b. In this synthesis discussion, I deepen my response to Q1c. I begin by tracing the fracturing across multiple levels in water governance in the TsRC. I then discuss the findings concerning the dimensions of connectivity outlined in the conceptual background (Section 5.2.3).

Disconnection at multiple levels (using water governance as an example)

Fractures and failures exist throughout the land and water governance system under investigation, from Broader Story instability and ineffective policy implementation down to the overlaps in mandates and conflicts in the Catchment and Village Stories. Indeed, the negative impacts of vertical and horizontal silos throughout the Broader Story are well-recognised by the South African government – as evidenced by the initiation of the District Development Model (Section 5.4.4). Based on the common land and water governance themes, I focus on water governance.

Water governance in the Broader Story is characterised by multiple disjunctions that are linked to changes in governance arrangements and the fracturing of the envisioned water governance institutions (Section 5.4.2). Although the NWA of 1998 describes a governance system that conceptualises water resource management and water service provision as an integrated system, in practice distinct divides separate these two water governance functions. Formal acknowledgement of the disjunctions is evidenced in the national cabinet reshuffling (Figure 5.10) and the ongoing grappling with proposals for new water legislation that combines the NWA of 1998 and the WSA of 1997 (PMG, 2014; DWS, 2018). Notwithstanding the reliance of water service provision on the existence of adequate water resources, integrated water resource management in the Catchment Story is inhibited by the impetus (which follows the political drivers to overcome historical neglect in the short term) to focus on water service delivery over resource management (Section 5.4.2).

Regarding water resource management, the ambitious plans for multiple nested institutions for water resource management that fit ecologically onto river catchments have not yet been realised (Section 5.4.2). At the regional level, the CMA is classified as a proto-CMA with no connection to local-level

governance actors, despite the area's importance as a nationally recognised strategic water source area (Section 2.1.1). In the Catchment Story, the CMF has not materialised, and the result is that, in effect, no formal water resource management is driven by national or provincial DWS (Section 5.4.2). In the Village Story, discussions about water resource management are informal and ad hoc, convened by traditional leaders who do not have formal authority over water and no Catchment or Broader Story actors with whom to connect. Despite widespread reliance on water sources such as springs and rivers, many valuable sources are being negatively impacted by land degradation (Huchzermeyer et al., 2019a) and polluted by people and livestock (Libala et al., 2020).

Concerning water service provision, DWS in the Broader Story has hierarchical connections with the water services provider in the Catchment Story through the water services authority (Section 5.4.2). There is weak connectivity between the water service provider in the Catchment Story and the actors in the Village Story. Mapping water governance in the Village Story (Section 5.6.3) suggests that rural communities are essentially without formal water resource management or regular and reliable water service provision that could promote sustainable rural livelihoods. Furthermore, urban areas are preferentially serviced, and providing water to vast rural areas is daunting (JGDM, 2019a). Given that the water service provider is struggling to maintain existing infrastructure to provide water to urban areas (JGDM, 2019a), the trend in rural areas is not set to change soon. One result of the weak influence of formal governance actors in the Village Story is the emergence of a network of local businesses and community members working together to meet baseline water use needs. Informal institutions, such as water carting and the purchasing of rainwater tanks, continue to fill a water governance gap in the Village Story (Section 5.6.3).

The fractures and failures at multiple levels of governance in the TsRC are linked to broader concerns about water security in South Africa (Muller et al., 2009; Förster et al., 2017; Meissner et al., 2018) and increasing failures in South Africa to meet acceptable norms and standards (DWS, 2022a). In fact, the ability of local governments to fulfil their constitutional mandate for local water provision is deteriorating to such an extent that DWS is proposing institutional reforms to strengthen the role of the national and provincial government in the local tier (DWS, 2022c).

The inter-story disconnections described in this section mirror the intra-story disconnections between clusters already described in story-specific discussions (Section 5.5.4). These disconnections hampered local-level collaborative work undertaken by the Tsitsa Project (Section 5.5.2). For the first years of the Tsitsa Project, participatory governance development focused on using the CMF structure associated with DWS to facilitate local-level catchment management. The connections between the restoration work driven by DFFE and the Tsitsa Project and the CMF structure and purpose are clear. Water is an ecological element that sits at multiple boundary points; therefore, water management

intrinsically includes the environment when it includes the catchment. Unfortunately, these collaborative efforts failed. The nation-wide problems with CMF establishment were a barrier to this collaborative effort (Section 5.4.2). However, the difficulty of supporting the emergence of this innovative local forum, even in the pilot project format, is indicative of the disconnections between government departments.

Dimensions of connectivity and early leverage points

The conceptual background (Section 5.2.3) introduced two dimensions of connectivity. The first dimension differentiates between *bonding links* in a story or cluster and *bridging links* between stories or clusters (Bodin & Crona, 2009). Theories of network governance suggest that enabling resilience in clusters and adaptive capacity across multiple clusters requires finding a balance between bridging and bonding links; too many bonding links can lead to internal corruption and limit idea sharing, while too many bridging links can lead to fracturing and incoherence in groups, thus inhibiting action (Newman & Dale, 2005). The second dimension of connectivity differentiates between unidirectional and bidirectional connections (Binder et al., 2013). While governance systems inevitably include both unidirectional and bidirectional connections, participatory governance regimes have a high proportion of bidirectional connections that support two-way communication and accountability (Schneider, 1999; Krishnaswamy, 2012; Hassenforder et al., 2020).

On top of the boundaries between stories described in the previous subsection, the intra-story clustering suggests a dominance of bonding links in the system of interest. The clustering is particularly evident in the consolidated network map in the Catchment Story (Sections 5.5.1 & 5.5.2). Excessive clustering can create fracturing in a governance network, discourage experimentation, and decrease the potential of trust between groups (Newman & Dale, 2005). Boundary spanners (Section 3.2.3 & 5.2.2) can create bridging links between clusters and support increased access to actors with novel information and resources.

The findings also suggest a dominance of top-down, unidirectional connections. For example, service provision programmes that are provided to communities in the Village Story are generally conducted with only tokenistic levels of participation (Sections 5.5.1 and 5.6.4). Village Story residents are also largely dependent on external sources of income, such as social grants from the national government and remittances from family members living and working in other parts of the country. Furthermore, in the Catchment Story, local governance actors depend on unidirectional connections from the Broader Story (Section 5.5). Creating meaningful bidirectional connections between stories requires overcoming vertical power imbalances.

I have introduced system convenors (Section 5.2.2) who have the necessary personal capacity and can create vertical bidirectional links to access external resources. The widespread failure of local-level forums that are supposed to be citizen-led, such as the CMF and the local environmental forum, might reflect ill-conceptualised institutions. However, I would agree with those who suggest that these local-level forums that bring diverse actors together require substantial human and financial resources, highlighting the vital role of local organisations with expertise and access to resources (Weston & Goga, 2016; Wyatt et al., 2018). These institutions seem to require the buy-in of strong institutional actors.

In the TsRC, the local municipality plays a convening role in local government; however, the focus of local government remains on service delivery rather than more holistic land and water management, and thus their role in participatory land and water governance is limited (Section 5.4.2). Traditional leaders play a convening role in the Village Story; however, their efficacy is hindered by a lack of capacity and legitimacy in the democratic governance system. The informality of the traditional leader's role can lead to poor accountability. There are multiple cases in the TsRC (Section 5.6.4) and in other homelands where the position has been used for personal gain or to the detriment of the environment (Section 5.4.4). In the TsRC, there has not yet been the emergence of an embedded convenor with a social and ecological focus of the kind that has emerged in other catchments across South Africa (Section 5.5.4). I explore the limitations of local government capacity as part of the systemic analysis in Chapter Six (Section 6.4.4).

The identification of participatory governance roles points to potential leverage points. For example, generating boundary-spanning skills could support governance network restructuring to include more bridging links. Another possible leverage point could be to support and legitimise local actors with the capacity to convene and thus to overcome the pervasive power imbalances. I also identify objects at boundary points, such as water and livestock (Section 5.2.2), that could be used as boundary points where individuals could collaborate and where institutional arrangements could support such collaboration. For example, rural residents in the Village Story have had to continue finding ways to provide water for their needs without support from external actors (Section 5.6.3), thereby contributing to the patchwork of governance actors working across a patchwork of overlapping governance domains.

I acknowledge that this synthetic discussion of connectivity may come across as mechanistic – of course human connections are far more complex than I am able to describe here in synthesis. Other dimensions of connectivity, such as quality and durability in relation to trust and understanding are also important, and I will analyse these aspects more thoroughly as part of the systemic analysis in Chapter Six.

5.7.2. *Tri-mode mapping method*

The tri-mode method (Section 5.3) and conceptual framing (Section 5.2) were emergent outcomes from the evolving mapping methodology. Both the conceptual framing and the tri-mode method were essential tools to support the multilevel governance analysis. I first discuss the strengths, limitations, and potential future applications of my mapping approach, and then discuss the theoretical principles that underpin the method.

Methodological innovations and limitations

The fundamental recognition of multiple stories of governance shaped my analysis of the TsRC L&WGov system, prompted the innovative tri-mode method, and dictated the structure of this chapter. Furthermore, the conceptual background supported the integration of findings across the three stories by providing a common set of concepts. Indeed, a challenge in much transdisciplinary research, which often incorporates multiple methods stemming from diverse methodological positions, is the integration of data (Jahn et al., 2012).

The application of the tri-mode method was embedded in a transdisciplinary methodology in the Tsitsa Project, and enabled extended fieldwork with real experiences in all three stories. The tri-mode method enabled engagement with all three stories and with the actors' perspectives. Multi-method approaches are beneficial when grappling with wicked problems that are embedded in complex systems (Mingers & Brocklesby, 1997; Tengo et al., 2014; Roux et al., 2017). There are substantial overlaps and interactions between the three stories; thus the methods provided overlapping perspectives. For example, mapping the Village Story, which included the actors from the Catchment Story who work in the Village Story, enabled me to gain an alternative perspective of the Catchment Story actors from the one gained from interviews with the Catchment Story actors themselves. The overlapping findings allow for comparison and triangulation from multiple methods in order to build a cohesive theory (Barbour & Morgan, 2017; Yin, 2017).

My sampling of research participants was shaped by the Tsitsa Project's existing relationships in the context, which enabled me to gain access to and legitimacy in governance spaces; however, it also created biases in my investigation. The biases most prominently affected my mapping of the Catchment Story. Given the clustered nature of the actors in the Catchment Story (Section 5.5.1), my sample had an over-representation of environmentally related actors and an under-representation of actors from water and agriculture. However, in the case of the water governance actors in the Catchment Story, my findings in the Village Story and the Broader Story suggest that, despite my sampling bias towards environmental actors, there is a lack of water governance actors in the Catchment Story.

The iterative method enabled the context to inform the research methods. For example, rapid in-field analyses enabled me to incorporate emerging themes into data collection. The use of a versatile actor network mapping tool, Net-Map, supported using different variables in the mapping process. Net-Map is a transdisciplinary tool that has been used in a variety of contexts for collaboratively mapping governance systems to build shared understandings and to plan together (Schiffer & Hauck, 2010; Hauck et al., 2015). The contexts include biodiversity knowledge flows in Europe, actors' influence on the Blue Nile in Ethiopia, stakeholder engagement in a Southeast Asian mountain range (Hauck et al., 2015), crane conservation in the Republic of Korea (Jin et al., 2021), and a knowledge network in a food system in South Africa (Metelerkamp & Schiffer, 2020). My use of Net-Map adds to these applications by incorporating emergent research themes into the mapping process, thereby orientating the mapping towards participatory governance and making the process more appropriate in the context. For example, the emergence of accessibility as a key theme supported the design of the influence and accessibility mapping, which I discuss in the next paragraph. Another example was the use of *helpfulness*, rather than power, in the Village Story mapping, which reframed the mapping to support more explicitly the elicitation of community opinions. I was explicit about wanting to know how helpful social and ecological elements are to the people who live in rural areas.

One innovation was mapping influence and accessibility when investigating the relationship between democratic and traditional governance actors in the Catchment Story (Section 5.3.3). There is a plethora of research into the dynamics of a system of traditional governance in the broader South African democracy (Khunou, 2009; Koelble & Li Puma, 2011; Mathonsi & Sithole, 2017; Tlou, 2020), particularly about access to and ownership of land and water resources (Claassens & Cousins, 2008; Kapfudzaruwa & Sowman, 2009; Bennett et al., 2013; Findlay & Twine, 2018; Mhlekude, 2021). While I have come across numerous authors who map influence or power with other variables, such as group size or access to resources (Mayers & Vermeulen, 2005; Schiffer & Waale, 2008), the combination of influence and accessibility seems to provide a novel innovation to support research into participatory governance.

The decision to focus the influence and accessibility mapping specifically on traditional–democratic interactions was driven partially by the desire to test the method on a small sample, and partially by the fact that the overlap between traditional and democratic systems of governance is a significant governance characteristic of the TsRC (Section 2.1.2). Comparing the influence and accessibility of all land and water government department representatives would be difficult, given that they all work on distinct aspects of land and water governance. A limitation of the narrowed scope of the influence and accessibility mapping was that I could not integrate the findings into the consolidated actor network maps, and thus the influence and accessibility mapping results are presented separately

(Section 5.5.3). This limitation is an example of the difficulty of integrating data from different scales and levels of governance.

While the scope of the influence and accessibility mapping was small, it did illuminate the local power dynamics, and I presented an initial analysis of these findings in a poster entitled *Tapping into governance: institutions for participation in land and water governance – a case study on communally owned land in the Eastern Cape of South Africa* at the Society for Ecological Restoration Conference in September 2019. Given the widespread interest in power balances in participatory and polycentric governance (Morrison et al., 2019; Turnhout et al., 2020), as well as the common occurrence of accessibility as a factor influencing participation (Rowe & Frewer, 2000; Bryson et al., 2012; Hassenforder et al., 2015a), mapping influence and accessibility may hold promise for revealing participatory governance dynamics. As with any investigation of power, these interviews were sometimes difficult, and raised questions and areas for future research. The pairing of influence and accessibility is interesting in the case of traditional and democratic governance in rural areas. For example, while most of the formal influence has been given to local government institutions, they often remain inaccessible, and as a result, the accessible traditional leaders tend to hold on to more influence than they are formally allocated (Section 5.5.3). Future research, conducting influence and accessibility mapping across multiple former homelands, might reveal differences that could improve our understanding of the relationship between the two governance systems, which in turn might impact how external actors engage in the different homelands. For such a study, I would suggest selecting specific governance realms over which to discuss power to create consistency across multiple case studies – for example, Village Story water resource management. However, given the variety of cultural groups living in South Africa's former homelands, methodological adaptability would be paramount, as conceptions of power and expectations of accessibility would differ, and unearthing these nuances would be vital in producing rigorous comparable findings.

My investigation of the Catchment Story and the Village Story involved learning-centred data collection processes characterised by the co-creation of data and mirroring back (Engeström, 2010). The use of learning-centred approaches requires tailoring the method to the research's specific context and limitations. For example, in the Village Story, I used the Learning Words process as a foundation to build shared understandings of land and water before mapping the institutions. The Learning Words process was crucial as an introductory process for promoting epistemic justice in the participatory Village Story mapping processes (Palmer et al., 2022). This slow but inclusive approach was necessary to ensure that the understanding of local institutions built on local understandings of land and water system elements (Section 5.6.1). In these ways, I adopted the role of the 'slow and

care-full scholar' (*sensu* Temper et al., 2019) to highlight local voices and to avoid dehumanising the 'community'.

My tri-mode method revealed insights that might support future investigations of heterogeneous multilevel governance systems. The next section discusses the underlying principles that emerged through the mapping process and the tensions that these principles bring to the surface.

Mapping principles and tensions

Aligica (2006, p.84) lays out a theoretical framework for institutional and stakeholder mapping to support policy analysis and institutional change, suggesting that, for a map to have real value in decision-making, it '(a) emphasizes social actors rather than disembodied properties of those actors, (b) gives a special attention to the interpersonal relations, roles and processes, (c) focus more on the analysis and interpretation of institutions, situations and events and less on general laws, regularities or variables and (d) finally takes seriously into account social change and tries to capture the dynamics of change in real historical time.' Governance mapping must, therefore, look beyond actors and support deeper understandings of evolving institutions, which can be understood as social technologies that are inescapable and highly significant in mediating human actions through the affordances they provide (Ison, 2023). Aligica's (2006) framework has guided governance mapping processes in a range of natural resource management and conservation contexts, such as Ethiopia and Tanzania (Gebrehiwot et al., 2021; George et al., 2021) and Indonesia and China (Tresiana & Duadji, 2021; He et al., 2022), and has been used to support and evaluate environmental management projects and in analyses of related policy (Dougill et al., 2017; Gebrehiwot et al., 2021; Ben-Othmen & Kavouras, 2022; He et al., 2022). Aligica's (2006) emphasis on the value of governance mapping in decision-making aligns with my transdisciplinary methodology (Section 4.1). I build on Aligica's (2006) framework and discuss my transdisciplinary mapping by drawing on the tensions and continua introduced in Section 4.2 (Table 5.7).

Table 5.7. My governance mapping principles and opposing principles.

Transdisciplinary mapping principles	Opposing principle
Consider actors (individual and organisational) to be social entities embedded in networks.	Consider individual actors to have agency and the ability to exert influence on governance.
Focus on specific roles and relationships in a context.	Focus on general trends and broader governance dynamics
Focus on informal institutions that emerge through self-organisation.	Focus on formal institutions designed by recognisable governance actors for specific purposes.
Engage with messy institutions and problems.	Develop clean work for coherence and integration.
Collaborate and involve multiple perspectives.	Explore and learn as an individual.

Aligica's (2006) focus on relationality is timely, given the relational turn in CSES and sustainability research (Cockburn et al., 2020; West et al., 2020). Methods such as stakeholder mapping techniques have long been used to explore complex multi-stakeholder challenges (Reed et al., 2009), and are becoming more systemic by drawing on network analyses that focus on connections and relationships rather than just actor attributes and 'stakes' (Bodin & Crona, 2009; Groce et al., 2019). Focusing on relationality follows from taking a systemic perspective (Section 4.1.2). While relationality points to 'the spaces in between', individual actor characteristics are also influential. Thus a nuanced method explores both in the search for a balance that enables a clear elucidation of often implicit and opaque governance systems (Aligica, 2006). As introduced in the previous subsection, I drew on Net-Map, which was designed to walk the middle ground between stakeholder analyses that focus on individual actor attributes and social network analysis type investigations that analyse the connectivity and structure of networks (Schiffer & Hauck, 2010; Hauck et al., 2015).

Building on the first principle of relationality, Aligica's (2006) highlights interpersonal relations, roles, and processes, suggesting that governance mapping is a tool for exploring the current and the future potential roles of actors in a governance system. I identify boundary spanners, system convenors, and nexus elements as key governance roles in participatory governance (Section 5.2.2). A role is a pattern of behaviour that is socially recognised and therefore places an individual's actions in a social context. In sociology, the term 'role' distinguishes between a particular individual (which might change) and a more enduring role played in a governance system (Lorrain & White, 1971). Identifying boundary spanning and system convening supported the research focus on participatory governance.

The third principle foregrounds analysis and interpretation (Aligica, 2006) and the existence of both formal rules and informal rules (Textbox 3). A nuanced map of governance should give adequate attention to both formal and informal rules, as well as to the interactions between them (Ostrom,

2011; Cleaver, 2012). It should also include grappling with the inherent contradictions that arise from the dynamic and self-organising qualities of informal rules that play out in complex systems and the rigid characteristics of formal rules that are designed to reduce complexity and avoid risk (Van Buuren et al., 2019). To accommodate the tension between formal and informal, I applied three overlapping governance mapping methods to create a nuanced map of governance. Formal laws can be mapped using formal documentation, while mapping operational manifestations (Clifford-Holmes et al., 2016) requires primary data collection through direct engagement.

Engaging with rural communities to map informal institutions requires time and energy to navigate the multiple boundaries between the scientific approaches and more experiential ways of knowing (Fox & Cundill, 2018; Hill et al., 2020). Advancing methods that illuminate indigenous and local forms of knowledge is crucial to finding coherence between formal and informal institutions (Williams et al., 2020), especially in areas where indigenous and customary laws fundamentally inform land and water governance systems.

The final principle is to grapple with social change and to capture the dynamic nature of real historical time (Aligica, 2006), which is the most unambiguous indication of the necessity for engaged mapping that substantively grapples with the history of a governance system and engages with the problem context in real time. Beyond merely taking social change into account, proponents of transdisciplinary methodologies suggest that the real world should not merely be a unit of analysis, but should fundamentally shape the concepts and methods. Following an evolving transdisciplinary approach (Wickson et al., 2006), the tri-mode method emerged from an iterative interaction with theory and practice. My engagement in the context, beyond the discrete mapping methods, enabled the emergence of a framework and supporting methods that respond to and reflect the research context. Furthermore, transdisciplinary research requires engaging with and attempting to support desirable change in a system that aligns with a normative framework (Section 4.1.1). My role in the Tsitsa Project allowed for the direct application of the findings and evolving methods. For example, I applied a governance mapping method in one of the Tsitsa Project's catchment-based employee capacity development activities (Appendix D9). The exercise was framed around the second phase of the governance capability pathway (Textbox 4), and therefore explored *where to listen and speak* in local governance and to support the co-creation of governance networks between researchers, employees, and monitors. The purpose of the exercise was to create governance maps to support strategic efforts to increase the monitor's connections in local governance. This application exemplifies the practical value of mapping methods that can be adapted to suit specific contexts and purposes while providing learning-centred tools for stakeholders to learn about a problem context together. Therefore,

mapping governance in the context of transdisciplinary research can become a governance process in and of itself (Van Buuren et al., 2019).

The five tensions introduced at the beginning of this subsection suggest a landscape of governance mapping methodologies (Figure 5.31), the awareness of which could support researcher reflection on and awareness of potentially implicit framings. Methodologies searching for leverage points in specific contexts will require a more engaged and socially embedded mapping process that accounts for nuance and that can inform context-specific interventions that are enacted by individuals, so that they can take complexity into account and adaptively implement interventions that are informed by governance mapping. Methodologies used to identify leverage points at broader levels would require a focus on formal institutions and general trends that necessarily miss local levels' nuances. Between these two extremes, there is the potential to find a balanced approach that can explore multiple levels in search of high leverage points. Finding a balance between the various tensions makes it possible to design a method that sits within these dialectic tensions (Figure 5.31). Furthermore, I contend that, even in an analysis that sits on one end of the spectrum (as mine does), there is value in being alert to the broader landscape of potential interventions.

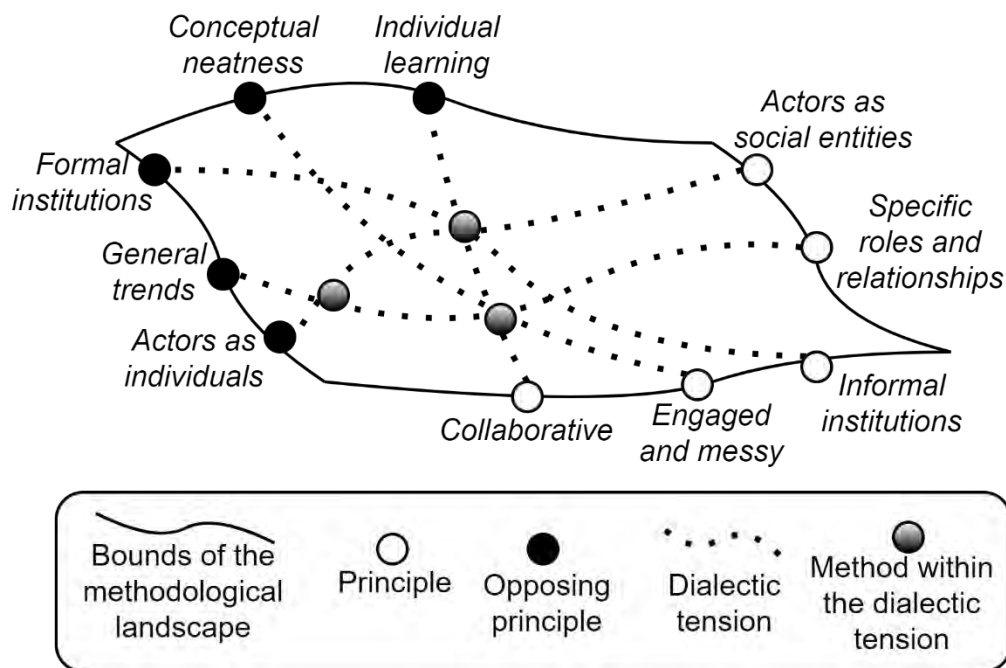


Figure 5.31. Landscape of governance mapping methodologies.

The solid lines indicate the bounds of the landscape according to the identified principles. These bounds could be expanded if other principles and dialectic tensions were considered. The methodological landscape can support the design of governance mapping that is fully cognisant of the diversity of available methods.

5.7.3. Conclusion

The fourth research question links Objective One back to the central research aim by asking, *At what governance level should the systemic analysis focus on identifying leverage points to enable local-level participatory land and water governance?* I acknowledge that there is no single level at which to interventions should be designed to enable collaborative governance across multiple levels (Sattler et al., 2016), and that looking at both high-level and local governance interventions would be necessary to fill the gaps (Castro-Arce & Vanclay, 2020). However, my findings suggest that local-level participatory governance would require co-design of interventions at the local level – specifically, the interaction between the Village Story and the Catchment Story. These findings align with the research agendas that promote place-based in-depth research that informs broader practice (Lam et al., 2020a; Cockburn, 2021; Snorek et al., 2022).

There have been numerous high-level interventions to transform land and water governance in South Africa post-1994. Unfortunately, the TsRC exemplifies observations made about the development of CMFs and CMAs in another catchment in South Africa, that the trickle-down effects of high-level institutional reforms are not guaranteed (Denby et al., 2016). Enabling legislation is one key aspect of multilevel institutional change; however, governance systems are required to work substantively at each level. My research findings suggest that the impacts of high-level institutional reform are not being effectively implemented down through the stories of governance. Therefore, enabling participatory governance in the rural TsRC would require co-design of interventions with actors embedded in the lower levels, which account for formal and informal rules that are context-specific. Grappling with the operational manifestations requires interventions at the local level, which can be piloted and studied to inform larger-scale reform and ultimately bridge the gap between the actual and the desired manifestations of governance. Persistent local-level problems and the emergence of system convenors across South Africa suggest that there are windows of opportunity to build resilient local institutions for collaboration as part of a broader systemic transformation.

One valid concern is that local-level interventions do not directly create broader systemic change and are, therefore, doomed to be undermined by problems within the broader system. In some respects, this is true as pioneering interventions and novel governance arrangements seeking to create transformations will inevitably face challenges and go through cycles of collapse and renewal while making incremental progress (Section 3.5). I am not suggesting that the local-level is the only level at which to focus; however, it is often under studied and disregarded as a place from which to learn lessons that might catalyse broader systemic change.

In this chapter I map land and water governance in the TsRC to describe the opaque governance system and implicit dynamics, and support the identification of leverage points to enable participatory

governance. If pulling levers, even accurate and substantive ones, in the broader Story does not influence local participatory governance, then the question emerges, *What are the leverage points at the local level?* The next chapter provides a systemic analysis of participation between the Catchment and Village Stories. The 'story' mapping in Chapter Five acknowledges the context-specific nature of the findings as well as the limitations based on available perspectives (Section 5.2.1). In Chapter Six I continue to use the three-story framework to position actor perspectives and to deepen my analysis of specific narratives that emerged from within the stories of governance.

CHAPTER SIX | A systemic analysis of meaningful participation in land and water governance

My systemic analysis of participatory governance in this chapter contributes to the central research aim achieved in Chapter Seven: to identify leverage points that support the emergence of participatory governance in the TsRC L&WGov system (Section 1.4). Before detailing the objective of this chapter and the supporting research questions (Section 6.2), I introduce the core systems concepts that informed the research design (Section 6.1). Thereafter, Chapter Six includes a description of the multiple methods (Section 6.3), the findings of the systemic analysis and emergent synthetic findings (Section 6.4), a discussion of the findings with the literature (Section 6.5), and a conclusion (Section 6.6).

6.1. Conceptual introduction for the systemic analysis

My research forms part of the transdisciplinary Tsitsa Project (Section 2.2), which aimed to promote social-ecological justice in the Tsitsa River Catchment (TsRC). I view the TsRC as a complex social-ecological system (CSES) characterised by non-linearity and emergence, which cannot be effectively managed through conventional command-and-control strategies (Holling & Meffe, 1996; Weber & Khademian, 2008). The governance of CSESs often faces the challenge of wicked problems that are unstructured and fluid and, therefore, can only be ‘opened’ or ‘loosened’ rather than ‘solved’, as progress is incremental (Weber & Khademian, 2008; Defries & Nagendra, 2017). Unfortunately, policy and implementation often focus on short-term solutions, ignoring unintended consequences and non-linearity (Meadows, 1999; Stroh, 2015; Naylor et al., 2019). Thinking systemically in the field of CSES governance has been proposed as an approach to identifying and grappling with system structure and recurring systemic patterns to enable desirable long-term transformations (Nguyen & Bosch, 2013; Abson et al., 2017).

Decision-making and action in conventional management approaches are often based on linear, event-focused thinking (*What happened, and how can we react?*), which provides little predictive or explanatory value (Meadows, 2009). Linear thinking also focuses on the change seen in a single variable. Changes in variables can be understood as patterns of behaviour over time (Richmond, 1993; Meadows, 2009). Identifying patterns of behaviour can provide context for an event, enable insights into how an event occurred, and help to anticipate future events. Changes in variables occur through

interactions with other variables – that is, causal links. Exploring the interconnectivity of variables leads to the revelation of feedback loops, which consist of circular chains of causality (De Gooyert, 2019). I introduce system components (such as causal links and feedback loops) in more detail as part of the method (Section 6.3).

Studying the combinations of behaviour patterns of interconnected variables can give insight into the structure of a system (Stroh, 2015). System structures are deep, underlying patterns of behaviour and arrangements of variables that dictate system functioning (Meadows, 1999; Senge, 2006; Jackson, 2019a). System structures interact with people's world views and mental models – mental models being sets of assumptions and observations gained from experience that we use to make sense of the world and to decide on actions (Forrester, 2009; Carley & Palmquist, 1992; Lynam & Brown, 2012). Identifying influential mental models and structures enables a systems thinker to grapple with *why behaviours reoccur over time*, and therefore help to identify where to intervene to enable desirable change (Meadows, 2009).

Enabling just and sustainable transitions (Swilling & Annecke, 2012) requires adjusting from a focus on isolated events to the identification of systemic patterns, to the elucidation of systemic structures, and eventually to grappling with the paradigms that shape system functioning – the actual high leverage points in a system (Kim, 1994; Meadows, 1999; Ives et al., 2018; Chan et al., 2020). The relationship between events, patterns, and structures is often represented as an iceberg, with the events being 'the tip of the iceberg' that we tend to see while ignoring the large systemic structures that dictate system functioning (Figure 6.1).

6.2. Objective Two and research questions

My second research objective is *to conduct a systemic analysis of participatory governance in the TsRC L&WGov system*. I use three research questions to structure my analysis (Figure 6.1).

- a. **Variables:** *What variables influence meaningful participatory governance in the TsRC L&WGov system?*
- b. **Patterns and trends:** *What patterns emerge from the interactions between participatory governance variables in the TsRC L&WGov system?*
- c. **Structures and mental models:** *Why do the dominant patterns of interaction between participatory governance variables in the TsRC L&WGov system recur?*

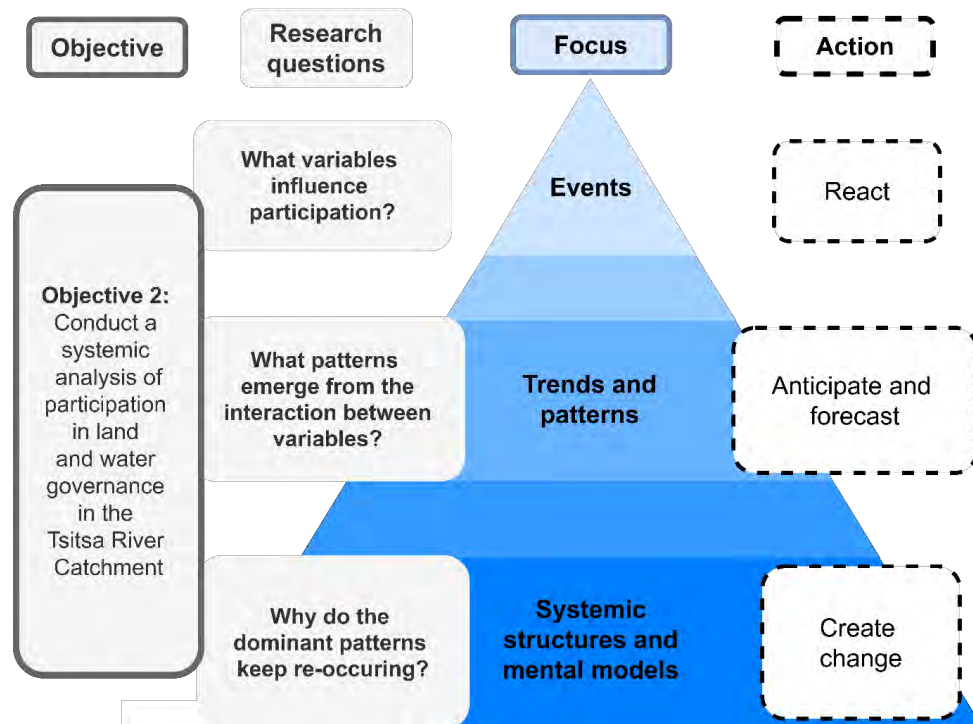


Figure 6.1. Objective Two and three research questions overlaid on the iceberg metaphor. Events are the tip of the iceberg, the part of the system that we can see. Trends, patterns, and systemic structures lie under the surface, but are more influential. Objective Two is to conduct a systemic analysis that consists of three questions relating to (1) variables, (2) the patterns emerging from interactions between them, and (3) the mental models and systemic structures in which these variables and interactions are embedded. Moving from analyses of variables that provide an opportunity to react to patterns and trends that support forecasting and anticipation, and ultimately to systemic structures, allows for the identification of more systemic solutions that could create change. The diagram was informed by Kim (2000) and Stroh (2015).

Chapter Six builds on Chapter Five, in which I map the social and ecological governance elements and their interactions in the TsRC L&WGov system. Social elements include institutions and actors, while ecological elements include resources such as land and water (Section 5.2). Chapter Five maps three realms of governance, to which I refer as the three stories of governance – Broader Story, Catchment Story, and Village Story (Section 5.2.1). The Broader Story involves the national- and provincial-level actors, such as the national Department of Forestry, Fisheries and the Environment (DFFE), and defines the formal rules for governing land and water – what *should* be happening (Section 5.4). The Catchment Story involves local governance actors, such as the municipality, and representatives of provincial government departments, such as implementing agents. The established institutions in the Catchment Story interact with people and the landscape to implement land and water governance, such as ecosystem restoration, livestock management, and water service provision (Section 5.5). The Village Story involves community members and leaders who engage in livelihood activities that directly impact ecological elements such as rivers and grasslands (Section 5.6). I continue to refer to the three stories of governance throughout Chapter Six.

Bounding systemic analyses of CSESs tend to focus on a particular problem – for example, drought (Rhoades et al., 2014) or soil salinity (Inam et al., 2015) – in a specific region. My analysis explores participation between and in all three governance stories: my focus is on ‘participation’ rather than on any specific biophysical problem around which people contest or cooperate. The peculiar bounding of my analysis means that I interviewed a diverse range of actors who might not have any direct contact with or any substantive interest in one another’s work, and observed governance settings that might be only loosely related. The unconventional bounding means that I could not draw on some of the tools that are commonly used for the integration of perspectives, such as group model building (Bérard, 2010; Rouwette et al., 2014; Inam et al., 2015) and the consolidation and integration of data into large, complex diagrams (Ryan et al., 2019; Perrone et al., 2020). How the bounding shaped my analysis is evident in the methods (Section 6.3), and is considered in the discussion (Section 6.5.5).

I have already given a general framing of meaningful participatory governance (Section 3.3.2), which emphasises the relational and contextual aspects of participatory interactions that make them understandable and significant to participants as well as coherent in a broader, multilevel governance system. I had to consider *what is* (trends, patterns, structures) in this specific context, as well as *what could be* (some ideal version of meaningful participatory governance). Therefore, as part of this systemic analysis, I create a more context-specific framing of ideal meaningful participation that can support the practical design and evaluation of participatory processes (Section 6.4.8).

6.3. Methods

The methods presented here are embedded in an action research and single case study approach (Section 4.3.1), which is nested in an overarching transdisciplinary and systemic methodology (Section 4.1). My methodology is characterised as an iterative engagement with and between the context (Chapter Two) and my conceptual framing (Chapter Three); indeed, ‘theory can be, and is, used by practitioners to guide what they do’ (Burchill & Kim, 1993, p.3). The research participant and observation site sampling align with the overarching methodology, and support the generation of findings relevant to the system under investigation (Section 4.5).

6.3.1. Multi-method overview

I use multiple methods to grapple with the richness of the real world (Mingers & Brocklesby, 1997) in my qualitative systemic analysis (Figure 6.2). My analysis draws primarily on system dynamics, defined as ‘a way of modelling people’s perceptions of real-world systems based especially on causal relationships and feedback’ (Mingers & Rosenhead, 2004, p.532). Systemic analyses, such as system dynamics, typically draw on a range of qualitative and quantitative data sets, including interview data

and observation-based data gathered through ethnographic methods (Sterman, 2002; Luna-Reyes & Andersen, 2003).

A situation of concern in which participatory governance is an issue can be inquired into using a soft system method to build and develop models as epistemic devices to understand and change the situation of concern - elucidating what is systemically desirable and culturally feasible (Checkland, 1993; Kolkman et al., 2005). My approach draws on the qualitative theory-building strategy within system dynamics (also referred to as 'the inductive systems diagram' methodology by Burchill & Kim, [1993]) in which a theory is built and explored through an iterative interaction between existing theory and collected primary data (De Gooyert, 2019). Numerous examples of qualitative system dynamics build theories that draw on ethnography and case study research approaches (Perlow et al., 2002; Azoulay et al., 2010; Van Oorschot et al., 2013), and are thus coherent with my research approach (Section 4.3). 'Modelling in the muddled middle' is a complementary approach that combines system dynamics and ethnographic and institutional analyses to navigate the complexity of water governance (Clifford-Holmes et al., 2018). 'Modelling in the muddled middle' was designed to explore the messy space between *what should happen according to policy* and *what actually happens*, and is exemplified by a 'conscious choice to engage with stakeholders in the messy reality they face and to employ modelling tools and research methods in seeking to understand (and where possible, address) their issues' (Clifford-Holmes, et al., 2017, p.219).

Multiple methods support multiple points of triangulation (Section 4.5). I combine a systems diagram-based analysis of actor mental models with a narrative-based thematic analysis of observational data (detailed in the sections that follow) to gain multiple perspectives of a complex problem (Mingers & Brocklesby, 1997) (Figure 6.2). Both systems diagrams and narratives can support communicating qualitative data, making sense of complex situations, and exploring causality (Bolton, 2006; Ison, 2017; Dhirasasna & Sahin, 2019; Toledano & Anderson, 2020; Carnohan et al., 2021). While I strive to generate explanatory power through an exploration of causality, the method must be understood in the context of complexity, which highlights the need for modest claims and a recognition of our incomplete knowledge of the world (Audouin et al., 2013; Cilliers et al., 2013) (Section 4.1.1).

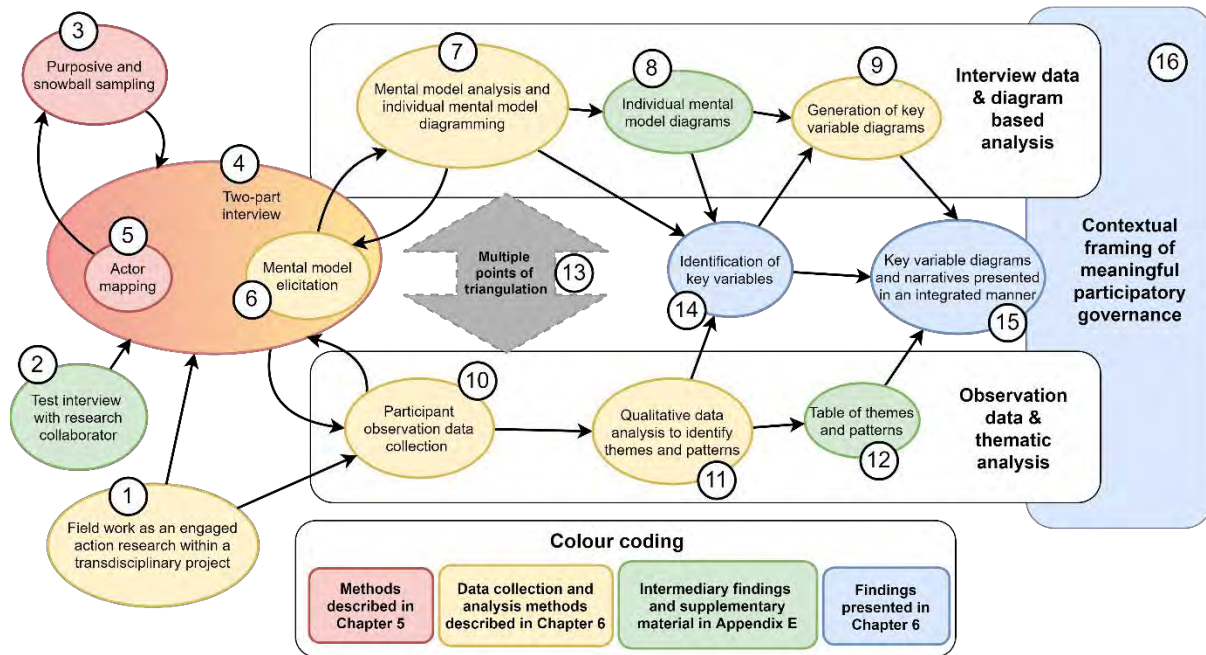


Figure 6.2. Flow diagram of the multi-method systemic analysis in the achievement of Objective Two. The methods in yellow ovals were used to produce the green findings in Appendix E and the blue results in Chapter Six. Solid arrows between ovals indicate sequencing, while dotted lines indicate cross-checking at various research phases. Red ovals indicate related methods that were conducted as part of Chapter Five. The numbers 1 to 16 assist with the text's description, and are not in chronological order.

I give an overview of the method below according to the numbering used in Figure 6.2. The numbering supports the explanation, and does not imply chronological sequencing.

1. I collected data during my *fieldwork as an action researcher* (Section 4.4 and Appendix A1).
2. I tested the *interview method* with a researcher collaborator.
3. *Purposive sampling* was used to select participants. I split participants into 'key informants' and 'interviewees' to differentiate between the depth of interaction (Section 5.3.3).
4. I conducted a series of *two-part interviews*, including actor mapping and mental model elicitation. See Appendix C1 for the full interview protocol and Appendix D3 for a record of interactions with interview participants.
5. I *mapped actors* as part of achieving research Objective One (Section 5.1).
6. I elicited *mental models* through in-depth interviews.
7. In-field *diagram-based analysis* informed subsequent mental model elicitation.
8. I present the *diagram-based mental models* in Appendix E1.
9. I then consolidated mental models into *key variable diagrams*, which explore key variables that emerged as well-connected variables within the individual mental models.
10. I collected *observation data* during 'in-residence' fieldwork between February 2019 and February 2020, recorded them in field notes, and submitted them as reports to Tsitsa Project.

11. I then analysed the observation data through a *thematic analysis*.
12. An outcome of the *qualitative data analysis* was a table of themes and patterns (Appendix E4), which supported the identification of *narratives*.
13. As discussed above, the multi-method approach included multiple *points of triangulation* between the two methods.
14. I consolidated *key variables* based on the diagram-based analysis and thematic analysis. Please note that the onset of the COVID-19 pandemic made it impossible for me to conduct any post-analysis verification of the diagrams with participants.
15. I compiled an *integrated set of results*, and present them in this chapter.
16. Based on the primary data, I re-framed meaningful participatory governance in the context.

In the sections that follow, I present both the interview data collection and diagram-based analysis (#6 – #9) (Section 6.3.2) and the observation data collection and the thematic analysis (#10 – #12) (Section 6.3.3), and provide a brief account of how I have framed meaningful participatory governance (#16) (Section 6.3.4).

6.3.2. Interview data collection and system diagram analysis

This section has four sections. The first three sections describe (1) mental models and the elicitation methods, (2) causal loop diagrams and individual mental model diagrams, and (3) key variable diagramming (Figure 6.3). The fourth section describes the elucidation of balancing effects within the key variable diagrams.

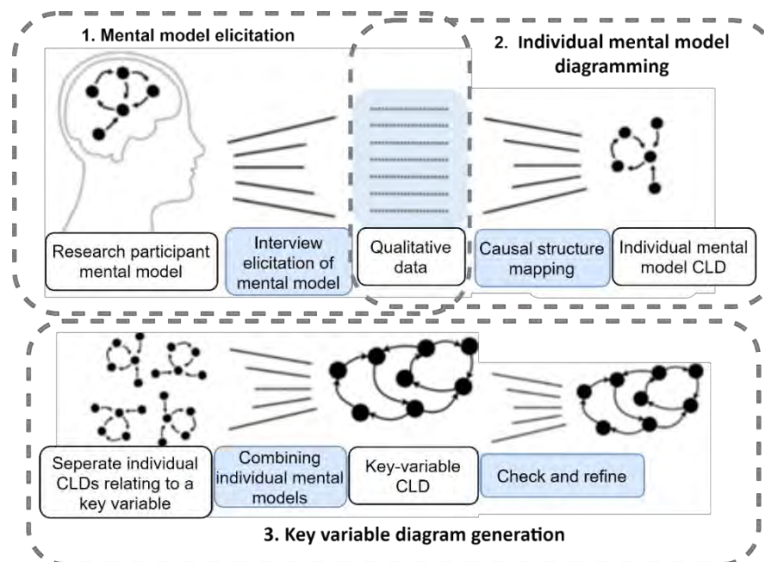


Figure 6.3. Overview of the method of mental model elicitation and key variable diagramming. Interviewee mental models were first elicited and converted into qualitative interview data. The qualitative data were then used to generate individual mental model diagrams. Finally, several individual mental model diagrams were combined to create key variable diagrams, which were checked and refined. Figure adapted from Kenzie (2021).

Mental model elicitation

People use cognitively generated mental models, made up of assumptions and observations gained from experience, to make sense of the world and to decide on actions (Forrester, 2009; Carley & Palmquist, 1992). Rook (2013, p.45) defines a mental model as a ‘concentrated, personally constructed, internal conception, of external phenomena (historical, existing or projected), or experience, that affects how a person acts’. Another definition comes from Biggs et al. (2008, p.3), who define mental models in the field of natural resource management as a cognitive structure comprising ‘representations of objects, their relationships and dynamics as well as the attributes or characteristics of these and the person’s valence (cognitive and emotional) to the objects, relationships, and dynamics’. Individual mental models are created through a synthesis of experiences in the real world. As context and individual characteristics change – through learning, for example – mental models will also shift and change over time (Jones et al., 2011).

We do not have access to a complete and objective view of reality; instead, we make models of the real world that are partial representations and that allow us to navigate the overwhelming complexity of the real world (Section 4.1.1). As with all models, mental models are incomplete representations of the real world (Box, 1976). Aside from the limitations of our mental models, we also tend to draw incorrect conclusions with a limited recognition of the unintended consequences of the mental models we hold (Forrester, 1971, 2009; Dorner et al., 1990).

Extracting, representing, and analysing mental models is an established method for making internal cognition explicit and for exploring the link between how people think and act (Carley & Palmquist, 1992; Lynam et al., 2012). Visually representing actor mental models can also help to uncover key variables and to explore how interactions between the variables are organised in people’s minds (Jones et al., 2011). The elicitation and analysis of mental models have been used in research and practice to reveal individual assumptions, integrate divergent viewpoints into stakeholder-based models, explore contrasting interpretations of an issue, support social learning, and develop more socially robust knowledge for envisioning pathways forward (Jones et al., 2011; Moon et al., 2019). Making mental models explicit in order to engage with them is seen as necessary in natural resource management to account for the diversity of values and goals (Jones et al., 2011).

Representing mental models for analysis and discussion is commonly done using diagrams. Most techniques for representing mental models consist of linked concepts (Giordano et al., 2007). Diagrams provide a valuable way of representing systems and relationships that are difficult to articulate in written or verbal form. As Meadows (2009, p.5) notes, ‘Words and sentences must, by necessity, come only one at a time in linear, logical order. Systems happen all at once. They are

connected not just in one direction but in many directions simultaneously. To discuss them properly, it is necessary somehow to use a language that shares some of the same properties as the phenomena under discussion'. Systems diagramming techniques have been used in systems thinking and system dynamics. They were initially conceptualised in the study of closed systems, but are increasingly applied to study partially open systems and complex issues (Pruyt, 2013; Stroh, 2015). Systems diagramming has been used to study CSEs – for example, in the use of system dynamics modelling to support decision-making in integrated water resource management systems that involve diverse actors (Tidwell et al., 2004; Guest et al., 2010; Mirchi et al., 2012; Carnohan et al., 2017), or in the use of collaborative systems diagramming to support the management of natural resources, such as flood risk management (Perrone et al., 2020) and soil salinity challenges on agricultural lands (Inam et al., 2015).

I elicited mental models through 15 semi-structured interviews with local land and water governance actors from the TsRC. Mental model elicitation involves making implicit actor mental models explicit (Ford & Sterman, 1998; Langan-Fox et al., 2000; LaMere et al., 2020). In designing the mental model elicitation, I consider the method's applicability in the study context and other practical considerations (Jones et al., 2011).

The applicability of mental model elicitation techniques depends on how well-defined the problem situation is. I explore participation as it manifests in governance spaces across the TsRC L&WGov system. Thus I elicited mental models through individual interviews, as they are preferable for ill-defined problems and more open-ended approaches (Langan-Fox et al., 2000; ElSawah et al., 2015). Semi-structured interviews allow research participants to express their ideas about a topic in their own words (ElSawah et al., 2013), and are an accessible mode of data collection for both the researcher and the participant (Kenzie, 2021). Group elicitation and model building can support the development of group mental models (Gray et al., 2013; ElSawah et al., 2015; Perrone et al., 2020), but require a well-defined domain of interest. Mental models relating to well-defined or closed systems can also be explored through techniques such as card sorting (Langan-Fox et al., 2000; Zaksek & Arvai, 2004) or verbal protocol analysis (Somerén et al., 1994; Langan-Fox et al., 2000).

Practical considerations of mental model elicitation include time availability and participant skill and engagement (Jones et al., 2011). Direct elicitation requires research participants to be involved in drawing diagrammatic representations of their mental model using words, pictures, and arrows. Direct elicitation is desirable because it enables immediate verification and the potential for collaborative analysis (Jones et al., 2011; Inam et al., 2015). Indirect elicitation of mental models can be done through interviews. The underlying assumption of interview elicitation is that verbal data can reveal perceptions of relationships between concepts, and thus enable the construction of mental

models through analysis after data collection (Jones et al., 2011). Content analysis and behaviour observations are other techniques for indirectly eliciting mental models (Langan-Fox et al., 2000). Content analysis involves analysing documents or interview transcripts to identify concepts and connections through a pre-defined coding framework.

In my semi-structured interviews I used a combination of indirect verbal elicitation and direct diagram-based elicitation (Jones et al., 2011). Interviews were tailored to the participant's time availability, level of interest, and ability or willingness to read and write. While direct elicitation is desirable, it requires extended time to explain the diagramming conventions and to diagram collaboratively (Inam et al., 2015). As participant literacy and interest levels are difficult to measure accurately without engagement, I made adjustments based on the participant's behaviour. For example, if a participant was illiterate or not comfortable with written text, verbal elicitation took preference. Elicitation sessions ranged from 30-minute discussions (if the participant had limited time and did not show an active interest in co-creating diagrammatic representations of their mental models) to two-hour-long discussions supported by collaborative diagramming.

The overarching interview process in which the mental model elicitation was embedded is introduced in Section 5.3.3, and the full interview protocol is in Appendix C1. The semi-structured interviews were guided by open-ended questions, which allowed both for the participant to ask clarifying questions and for me to ask follow-up questions and interrogate chains of causality. As shown in Table 6.1, each guiding question is paired with follow-up questions and prompts. Preliminary questions, such as '*What does your work involve?*' and '*What is your main goal?*' established the participant's domain of interest. Follow-up questions explored whether and how participants used participatory processes and collaboration to achieve their primary goal. After that, the guiding questions were '*What kinds of challenges do you face?*' and '*Have you had any recent successes?*' Questions were grounded in the participant's experiences, and the follow-up questions were designed to interrogate chains of causality. For example, if a participant described a particular problem, I would ask about the reason for the problem, thus further elucidating their mental models.

Table 6.1. A summary of the interview protocol used for the mental model elicitation.

Guiding question	Follow-ups and prompts	Purpose of question and general comments
What does your work involve?	What do you do on a daily basis?	This question allows the interviewee to talk about subjects with which they are intimately familiar.
What is your main goal?	What are you trying to achieve through this work? What specific problem are you trying to solve through your work?	Eliciting in-depth answers to this question requires a series of prompts to explore the complex aims and ideals that guide people's work.
What kinds of challenges do you face?	What are your biggest frustrations?	This question is often answered generically or by placing blame on another actor. However, once discussed, it reveals key underlying assumptions.
Have you had any recent successes?	Was there a specific event recently that was a success? Why would you consider it to be a success?	The purpose of this question is to uncover the interviewee's underlying assumptions about what they regard to be successful.

The interviews produced audio recordings, co-created mental model diagrams, and my personal reflections, which were documented in my field notes. Ethical considerations and data handling are described in Section 4.6. The next section describes the diagram-based analysis of the elicited mental models.

Generating individual mental model diagrams using causal loop diagramming

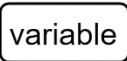
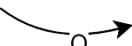
I first introduce causal loop diagrams (CLDs) and then describe the generation of individual mental models from the interview recordings.

Causal loop diagrams consist of variables connected by arrows that attribute cause and effect to form causal chains and feedback loops, and are a qualitative analysis tool (Inam et al., 2015; Baugh Littlejohns et al., 2018). They are most used in system dynamics modelling as a step towards quantitative system dynamics models (Lane, 2000; Dhirasasna & Sahin, 2019). However, there is an argument for the value of CLDs in providing reliable policy insights as a stand-alone method of analysis (Checkland, 1993; Richardson, 1996; Mirchi et al., 2012; Perrone et al., 2020). Creating CLDs helps to break down problem situations, identify key variables and the links between them, and identify reinforcing and balancing effects and, ultimately, possible intervention points (Pruyt, 2013). CLDs have been used to study CSES. For example, Rhoades et al. (2014) used them to identify leverage points for mitigating the effects of drought on a grazing system.

A variety of qualitative systems diagramming techniques has been used for eliciting and analysing mental models. Fuzzy cognitive mapping is another cognitive mapping process that has been used to study CSEs (Singer et al., 2017; Biggs et al., 2021). Fuzzy cognitive mapping also includes concepts linked by arrows indicating causality; however, elicitation involves quantifying the certainty of the connections with research participants (Gray et al., 2013; Singer et al., 2017). The purely qualitative CLDs were appropriate, given my predominantly indirect elicitation approach. A summary of the CLD diagram components is given in Table 6.2, with a generic example and explanation below it (Figure 6.4).

Table 6.2. Causal loop diagramming (CLD) components and conventions.

Table adapted from Clifford-Holmes, Carnohan, Slinger & Palmer (2017, p.13).

Component	Description
	A variable is something in the system that can increase or decrease, and that might cause a change in another variable.
	Arrows link variables and indicate a causal link. An 'S' causal relationship indicates causality in the same direction (i.e., an increase in X causes an increase in Y).
	An 'O' causal relationship indicates causality in the opposite direction (i.e., an increase in X causes a decrease in Y).
	Arrows with 'delay' overlaid on them indicate that a specific causal relationship is characterised by delays between cause and effect.
	'R' in a clockwise arrow indicates a reinforcing feedback loop, which creates an amplifying effect, which can be either vicious, in that the feedback produces an undesirable effect, or virtuous, in that the feedback produces a desired effect. Reinforcing loops are numbered (R1, R2... etc.).
	'B' in an anti-clockwise arrow indicates a balancing feedback loop, which creates a stabilising effect. Balancing feedback loops can be either weak, and therefore do little to balance dominant reinforcing dynamics, or strong, and keep a system stable. Balancing loops are numbered (B1, B2... etc.).

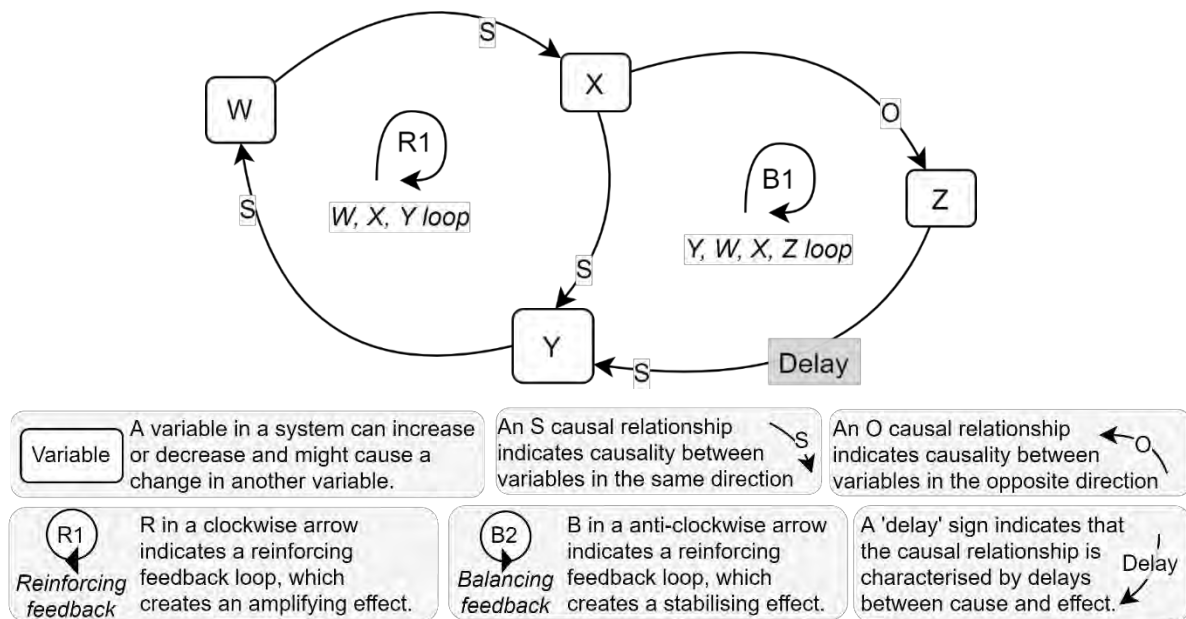


Figure 6.4. Generic causal loop diagram (CLD) to illustrate diagramming conventions. Variables W, X, Y, and Z are connected via causal relationships.

Polarity describes the **relationship** between two variables. The relationship between variables W and X is marked with an 'S' for 'same', indicating that an increase in W will cause an increase in X; thus, if W decreases, so does X. The relationship between variables X and Z is marked with an 'O' for 'opposite', indicating that an increase in X will cause a decrease in Z, and vice versa.

Figure 6.4 shows two **feedback loops**. R1 indicates that W, X, and Y interactions result in a reinforcing feedback loop. B1 indicates that the interactions between Y, W, X, and Z results in a balancing loop. Reinforcing loops can be **virtuous**, such as healthy growth, or **vicious**, such as runaway destruction (Meadows, 2009). If increases in W, X, and Y are desirable, then a virtuous cycle would be one in which the feedback loop increased all of them – an increase in X causing an increase in Y, in turn causing an increase in Z. A vicious cycle would be one in which they all decreased.

Balancing effects balance reinforcing feedback loops. In Figure 6.4, R1 is balanced by B1. For example, an increase in X results in an *increase in Y*; however, an increase in X also results in a decrease in Z, and a decrease in Z results in a *decrease in Y*. Thus the balancing effect created by Z's interaction with X and Y means that R1 is potentially stopped from oscillating.

The **delay** sign on the connection between C and A indicates that a delay likely influences the causal relationship between C and A. The delay in Figure 6.4 indicates that the influence of Z on Y will be delayed, thus hindering the ability of B1 to balance R1.

Mental models were systematically extracted from the interview data and represented as CLDs. Generating CLDs from qualitative data included four steps that relied on diagramming as the primary tool for recording and analysing emerging concepts and causality. The direct-to-diagram method, which differs from other methods that first place qualitative data in matrices before generating CLDs (Kenzie, 2021), was selected to support iteration between practice and emerging theories. The four steps were:

1. Listen to audio recordings to familiarise myself with the content.
2. Re-listen to the audio, transcribing the interview and highlighting emerging concepts.
3. Draw hard-copy mental models by connecting concepts based on the causality being described.
4. Draw mental models using diagramming software (Draw.io v14.9.6 on Windows 11).

During the first two steps I focused on getting familiar with the data (Kenzie, 2021) and identifying the variables to be included in the mental models. I only transcribed sections of the audio that related to the research objective and questions (Davidson, 2009). During the third step, variables were connected using positive and negative causalities, based on the description of the relationship provided by the research participant (Inam et al., 2015; Singer et al., 2017). In Table 6.3 below, I show how qualitative data are converted into diagram format.

I identified three main types of statement: narratives, observed trends, and statements about system functioning. Causality is inferred from narratives, while observed trends and statements about system functioning are more direct descriptions of causality. In reality, statements are often combinations of the types of statement, as shown by the examples in Table 6.3. However, I have created three clear examples to illustrate the types of statement in the bullet points below. All three statements indicate a similar causality: more time spent together led to more common understanding and more learning from one another (spending time together -s-> common understanding -s-> co-learning).

- Narrative type statement: 'We (researchers) went to the field, and the time spent looking at real problems on the ground allowed us to see where the implementers were coming from, which helped us to learn from each other.'
- Observed trend type statement: 'The researchers and implementers have been spending more time together, which has supported learning.'
- System functioning type statement: 'When researchers spend time in the field with implementers, they can understand the implementer's work, which enables the researchers and implementers to work together.'

Table 6.3. Translating quotes from interviews into causal loop diagrams.

The quote column includes two separate extracts from the same interview with Key Informant #7. The diagrams show how I converted the quotes into diagrams. The figure in the second row builds on the figure in the first row, showing how using CLDs as an analytical tool enabled me to connect ideas from distinct parts of the interview to create mental models.

Quote from transcript	Type of statement	Concepts and relations as drawn
Question: What are some of the challenges you face? Response: Funding... Not just having the money, it is also start-up costs. Costs of training new people... people finding work elsewhere...	Part narrative and part statement about the way the system functions. Key Informant #7 is saying that inconsistent funding results in more costs.	<pre> graph TD A[Consistency of funding] -- O --> B[Shut down / start up costs (time & money)] B -- O --> C[Efficient use of resources] </pre>
Question: What have been some of your successes? Response: Rehabilitation of wetlands has been great... consistent funding allows follow ups and good work... [Working for] Wetlands is run like a family... I can pick up the phone and then he will push to get things done... there are only four implementing agents... Working for Water is a massive bulky project – means that managing and making sure all of the contracts are correct is extremely difficult.	Part narrative and part observed trend. Key Informant #7 is saying that Working for Wetlands has generally been a success, while Working for Water has been difficult. He describes the negative trend associated with the ‘massive bulky projects’ that impact interpersonal relations, contracting, and, therefore, consistency of funding.	<pre> graph TD A[Programme size] -- O --> B[Inter-personal working relations] B -- S --> C[Consistency of funding] C -- S --> D[Quality of work] C -- O --> E[Shut down / start up costs (time & money)] D -- S --> F[Efficient use of resources] E -- O --> F </pre>

The individual mental models are predominantly linear chains of causality, reflecting the linear presentation of verbal information. The comparison and combination of individual mental models enable the shift from linear chains of causality to systemic representations of variable interactions.

Generating key variable causal loop diagrams

Most CLD and system dynamic methods include an integration phase in which smaller models are integrated into a single figure that can be either highly detailed with many variables or highly aggregated (Burchill & Kim, 1993; Inam et al., 2015). Aggregation or abstraction is a process of generalisation in which multiple similar concepts are grouped into a single abstracted concept (Burchill & Kim, 1993); highly aggregated diagrams can support the communication of research outcomes without a high level of technical detail (Pruyt, 2013). At the beginning of my systemic analysis, I

intended to integrate the main ideas from several mental models into a single comprehensive CLD. However, integrating and abstracting led to a model that increasingly failed to be consistent, and thus became useless.

I designed a more nuanced but fragmented process of generating key variable diagrams. While key variable diagrams do not provide an overarching picture, their strength lies in their increased specificity in defining variables and their maintenance of diverse perspectives.

Creating key variable diagrams from multiple individually elicited mental models was informed by CLD integration protocols (Inam et al., 2015; Ryan et al., 2019; Perrone et al., 2020), and was done with draw.io v14.9.6 diagramming software on Windows 11. (Refer to Appendix E2 for a worked example.) The method for drawing key variable diagrams is outlined below (Figure 6.5).

1. *Identify key variables.* I identify variables that repeatedly appear in the data set or central variables (i.e., those that are well-connected) in one or two mental models; more than three connections could constitute a central variable. Once the list of key variables has been consolidated, key variable diagrams are created. Steps 2 to 6 are repeated for each key variable (Figure 6.5). The steps are conducted sequentially, but iteratively.
2. *Collect all of the individual mental models that include the specific key variable.* The mental models with a specific key variable are found and placed on a single page.
3. *Identify common variables across mental models.* I search for and create dotted connections between the same or similar variables that feature in multiple mental models.
4. *Integrate individual mental models into a key variable CLD.* I combine the same and similar variables from individual mental models, thereby integrating separate mental models into a single key variable diagram. All of the mental models have at least the key variable in common, but the presence of other common variables enables the further integration of multiple mental models.
5. *Edit and simplify.* I then simplify the diagrams by removing loosely related variables – that is, those that are connected to only one other variable (and therefore are not involved in a feedback loop) or that are three or more causal relations away from a key variable. Editing also involves the further consolidation of variables to simplify the diagram and to ensure overall coherence, and searching for and exploring balancing and reinforcing loops in the diagram.
6. *Check for consistency.* Part of editing the key variable diagram includes checking the consistency of the diagram (Burchill & Kim, 1993). The first component of consistency is checking that the causality displayed in the diagram is consistent with the individual mental models that informed the key variable mental model. The second check is to go through the diagram and make sure that it ‘makes sense’: *can the diagram be understood with little to no explanatory text?* The final check is critically to analyse the diagrams along with the other data and the broader literature.

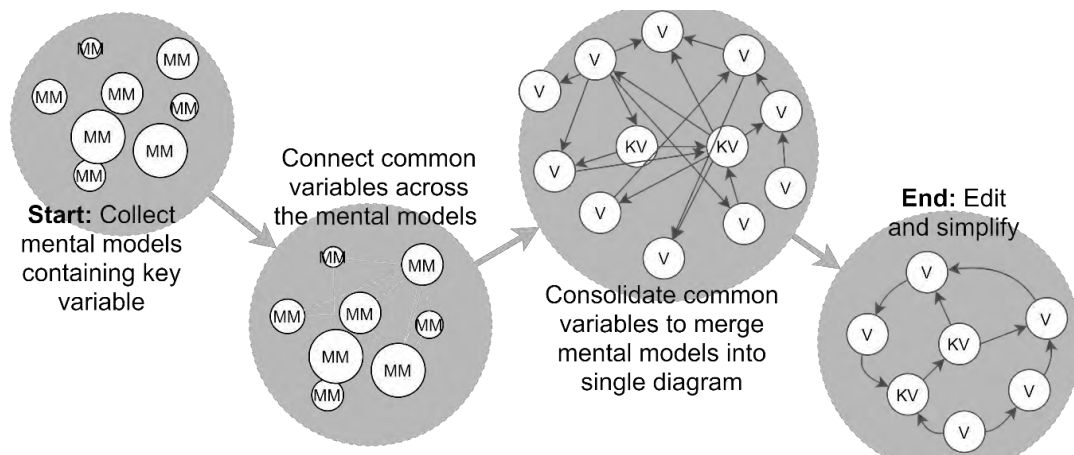


Figure 6.5. Flow diagram of the method used to create the key variable diagrams. The variables from the mental models are combined to merge and eventually to simplify the data regarding a specific key variable. MM: Mental model; V: variable; KV: Key variable.

Elucidating balancing effects

The collected mental model data exemplifies the observation that people more easily identify reinforcing effects than balancing effects (Meadows, 2009). Therefore, the systems diagrams generated from the data tend to be unbalanced, with an emphasis on runaway reinforcing dynamics, which tend towards absolutism in ways that are unrealistic but that might represent how we think about problems. In light of this insight, I recreate a selection of the key variable diagrams in which I insert balancing feedback loops and effects by combining the collected data with my own experiences and the relevant literature. These balancing diagrams are presented in the findings after the key variable diagram on which they are based.

6.3.3. Observation data collection and thematic analysis

This section presents the methods used to collect observational data and to analyse it thematically (Figure 6.6), and has two subsections: observation data collection, and thematic data analysis.

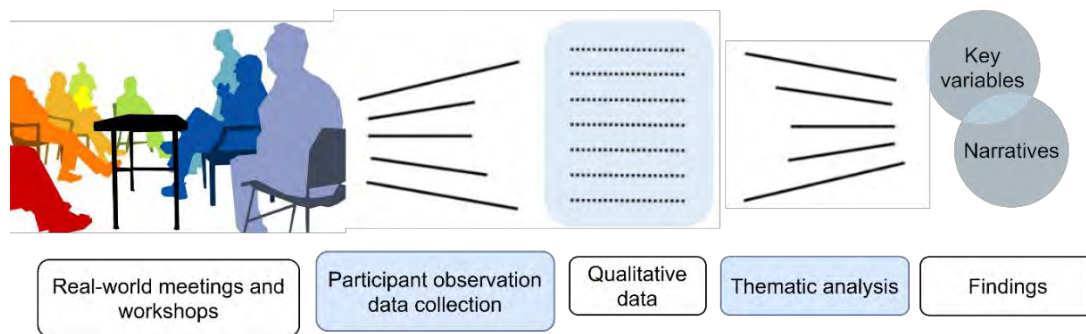


Figure 6.6. Graphic representation showing the collection and analysis of observation data. The first step involves observing meetings and workshops and taking notes, and the second step involves a thematic analysis that supports the identification of key variables and the narratives related to those key variables. Figure adapted from Kenzie (2021).

Observation data collection

I collected observation data during the period of embedded fieldwork (Section 4.4) between February 2019 and February 2020. Participant observation is an immersive strategy that emerged from sociology and anthropology for understanding a specific problem or organisation, and has a long history of being used to generate depictions of rural and informal governance systems (Hunter, 1936; Becker, 1958). By becoming involved in a situation, participant observation presents the opportunity to gain an internal viewpoint (Mack et al., 2005; Yin, 2017). Observations made by an alert outsider can reveal contradictions or contingencies in a system that are invisible to the people living and working in the system (Hughes et al., 1997). Observations can support interview data by revealing trends or structures that have been internalised (Lamé et al., 2019).

My research design compensates for the subjective nature of the participant observation data (Mack et al., 2002) by using triangulation between methods and by embedding data collection in the transdisciplinary and collaborative work of the Tsitsa Project, which included group reflections and sense-making sessions (Section 4.4). My role as an action researcher (Section 4.3.2) required that I balance the dual roles of ‘observing what would “naturally” happen’ and being a potential catalyst of change (Tax, 1975, p.515). I observed governance activities across the three stories, attending government departmental meetings (Broader Story); municipal meetings and Tsitsa Project workshops and field trips (Catchment Story); and village-level meetings related to Tsitsa Project activities (Village Story). I also spent informal time around the TsRC while living there (Table 6.4).

*Table 6.4. Summary of events in which I conducted participant observations.**The events are arranged according to my level of involvement, from organising and facilitating to participating with minimal involvement. Refer to Appendix A1 for a full timeline of activities.**Abbreviation: Department of Forestry, Fisheries and the Environment (DFFE).*

Type of activity	More details	Role
Governance community of practice (CoP) – Learning Words workshops (four workshops in four villages in 2019).	Building governance capabilities, particularly common vocabulary and understanding of concepts, among local governance actors and community groups (Palmer et al., 2022).	Participant observer and facilitator.
Tsitsa Project village-level planning workshops with community groups (three workshops in three villages in 2019).	Workshops to generate village-level restoration plans that incorporate the community voice (Tsitsa Project et al., 2021b)	Participant observer and facilitator.
Tsitsa Project Catchment-based employee capacity development short course (four multi-day modules between 2019 and 2020).	Learning together (researchers and monitors) about social-ecological systems, monitoring skills, and governance skills.	Participant observer and facilitator.
Tsitsa Project roadshow with CoPs (three events in three villages in 2019).	Large, open community engagement opportunity with researchers, DFFE implementers, and traditional leaders.	Participant observer and facilitator.
Tsitsa Project integrated planning meetings with DFFE implementers and managers from the regional DFFE office (2019).	One multi-day meeting to plan together. One multi-day field trip to learn together about restoration activities and methods.	Participant observer.
Tsitsa Project science-management meetings (2018 & 2019).	Tsitsa Project researchers and DFFE managers learn about one another's work.	Participant observer.
Other internal Tsitsa Project meetings and engagements (2019 – 2021).	CoP meetings, reflection sessions, and research symposiums.	Participant observer.
Meetings with other projects and organisations involved in land and water governance (2019 and 2020).	Meetings and field trips hosted by Umzimvubu Catchment Partnership, LandCare, University of Kwazulu-Natal; topics included governance and restoration work.	Participant observer.
Local municipal meetings (2019, 2020, and 2021).	Three integrated development planning local communicators forums and one ward-based planning meeting.	Participant observer.
Ad hoc community meetings between community members and the Tsitsa Project (2019).	Meetings to discuss topics such as the hiring of employees, difficulties in hiring processes, and communication challenges.	Participant observer.
Miscellaneous meetings and activities with other land and water governance actors, both private and government (2019)	For example, the water crisis meeting between local businesspeople and the water services provider; Wetlands awareness day organised by the provincial Department of Economic Development, Environmental Affairs and Tourism.	Participant observer.

Table 6.4. Summary of events in which I conducted participant observations. The events are arranged according to my level of involvement, from organising and facilitating to participating with minimal involvement. Refer to Appendix A1 for a full timeline of activities. Abbreviation: Department of Forestry, Fisheries and the Environment (DFFE).

Type of activity	More details	Role
Informal time spent outside of designated governance activities, observing people achieving their livelihoods.	Time spent at the local municipality offices and in town more generally, such as taking public transport and going into rural areas to visit friends and colleagues.	Participant observer.

My self-designed observation template (Appendix C3) has space to record activity data such as activity venue description and seating arrangement, the timing of activities, and the number of people in attendance. The observation template also includes the ‘notice and wonder’ protocol used in education research, to support observations that do not immediately generate inferential observations about the causes and effects of observed events (Venables, 2014). ‘Notice’ prompts a researcher to record observations – for example, *I notice that there are no young community members in this meeting* – which are then accompanied by a ‘wonder’ – for example, *I wonder why the youth are not engaging in this meeting*. Observation data were collected through hand-written notes, audio recordings, and photographs. I recorded data as meeting notes or compiled them into back-to-office reports, which I submitted to the Tsitsa Project as part of the project’s participatory monitoring, reflection, and learning framework (Botha et al., 2017; Tsitsa Project et al., 2021e). (The Tsitsa Project back-to-office report template is included in Appendix C4.) The outcome from the participant observations was a qualitative data set that I analysed using thematic analysis to identify themes and variables and then to identify the narratives relating to the themes. The next section elucidates the analysis process.

Qualitative data analysis

My qualitative data analysis followed a thematic analysis approach to identify, review, and describe the research themes (Braun & Clarke, 2006). Some authors see thematic analysis as a foundational qualitative method that reveals the meaning in qualitative data – a common feature of all qualitative analysis (Holloway, 2005; Braun & Clarke, 2006). Nowell et al. (2017) describe a six-phase process for thematic analysis, which requires the researcher (1) to become familiar with the data, (2) to generate codes, (3) to look for common themes, (4) to review the themes, (5) to refine and define the themes, and (6) to write up the research. Codes are the first tool used to describe qualitative data. While coding, a researcher identifies passages of text that exemplify the same theoretical or descriptive idea; these are labelled as the same ‘code’ (Gibbs, 2018). Themes bring individual codes and pieces of data together to make sense of them (Aronson, 1995). Thematic analysis can be used in conjunction with

a wide variety of other qualitative research, and can be used with either inductive or deductive reasoning (Nowell et al., 2017).

I compiled the data collected during the fieldwork activities (Table 6.4). I then coded each data source inductively, allowing the codes to emerge from the data (Charmaz, 2006). The coding was supported by Nvivo V1.6.1 qualitative data analysis software on Windows 11. Searching for and refining the research themes was conducted iteratively, sorting and resorting the codes into themes that were consistent with the data (Glaser & Strauss, 2006). (A table that shows which codes were related to which governance activity and an intermediate set of themes can be found in Appendix E4.)

Identifying and crafting narratives

The final step was to identify and craft narratives from the observation data set. Stories and narratives ‘are prime human ways of understanding, communicating and remembering’, and can support efforts to make sense of a complex world (Bolton, 2006, p.203). Narratives (or stories) are a flexible way to organise information while creating coherence and comprehensibility in a complex, changing world (Avraamidou & Osborne, 2009; Petit et al., 2011).

While the use of narratives for data collection and analysis is limited mainly to qualitative studies, they are increasingly being used in a wider range of applications. Narratives are central to the work of ethnographers, and are the tool with which experiences and observations in the real world are translated into analysis (Blasco & Wardle, 2019). In action research, narrative and field stories support the contextualisation and enrichment of research findings and more closed-ended results (Clifford-Holmes et al., 2018; Toledano & Anderson, 2020). There has also been an increase in the use of narratives in systemic analyses of complex systems, both in the collection of data in contested or data-scarce contexts (Singer et al., 2017; Carnohan et al., 2021) and in the presentation of complex case studies (Biggs et al., 2017).

The selection of narratives in my research was informed by the systematic identification of codes and themes, which was supported by the conversations with research collaborators throughout my fieldwork (Appendix A2). In the context of action research, narratives (which evolve through telling, retelling, and reflexive engagement) are a way both to communicate individual perspectives and to make sense of situations with others (Toledano & Anderson, 2020).

Narratives can be fictional or non-fictional, but all are inherently subjective, case-specific, and context-dependent (Dahlstrom, 2014). I present non-fictional narratives that are acknowledged to be from my perspective, based on observations, and that are, therefore, a single perspective on a complex issue. By acknowledging the subjectivity and limitations of the narratives, I highlight my role in shaping the findings while exploring the meaning of the phenomena under investigation (Toledano & Anderson,

2020). The elucidation of narratives supports the exploration of patterns and systemic structures. Although less structured and meticulous than systems diagramming, narratives can also create comprehensible structures out of complex information in ways that explore causality (Bolton, 2006).

6.3.4. *Framing meaningful participatory governance*

A crucial part of investigating meaningful participation is defining it. Indeed, enabling systemic change is as much about envisioning a new future as it is about understanding what is in the present and what has been in the past (Senge et al., 2004; Davelaar, 2021). In this emergent, synthetic analysis phase, I built on the general framing of meaningful participatory governance (Section 3.3.2) by generating a context-specific framing for such types of governance.

6.4. Findings

The findings respond to the three research questions by exploring the variables, patterns, structures, and mental models influencing participatory governance in the TsRC L&WGov system. The three research questions are:

- **Variables:** *What variables influence meaningful participatory governance in the TsRC L&WGov system?*
- **Patterns and trends:** *What patterns emerge from the interactions between participatory governance variables in the TsRC L&WGov system?*
- **Structures and mental models:** *Why do the dominant patterns of interaction between participatory governance variables in the TsRC L&WGov system recur?*

The primarily descriptive findings, which are based on the collected data, are presented here in a way that carefully navigates perspectives and positionality. A ‘perspective’ refers to a single point of view. The perspective of an individual is influenced by their identity, roles, motivations, assumptions, and biases, which constitute their positionality (Robertson, 2002; Cheng & Randall-Parker, 2017). The interview data reveal the perspectives of the local governance actors that they were willing to share with me during the interviews. Mostly I present these views without comment (which I save for the discussion in Section 6.5); however, in some places I highlight particularly problematic or confusing assumptions. I also recreate a selection of the key variable diagrams to make the implicit balancing feedback loops explicit. The narratives reveal my perspective – they are based on my observations and extended fieldwork, and draw on my interactions with the research collaborators, including researchers, local governance actors, and community members (Appendix A2).

6.4.1. Key variables influencing participation

I first introduce the six sets of variables according to which the body of the findings is structured; after that, I introduce three more general high-level variables that help to frame the analysis. These variables represent the main themes that were identified through the diagramming and thematic analysis (Figure 6.2).

Six sets of variables

The six sets of variables are: (1) accessibility and physical presence, (2) shared understanding and facilitation, (3) governance capacity and resources, (4) participation and incentives, (5) trust and interpersonal relationships, and (6) buy-in and accountability. In the six paragraphs below, I define the terms that I use throughout the findings. The paragraphs reflect the six sections (Section 6.4.2– 6.4.7) in which the key variable diagrams and narratives are presented. Variations in variable names throughout the analysis are a response to the differences in the wording used by research participants, and reflect the perspectives they represented.

(1) *Accessibility* refers to how easy or difficult it is for people to use a product or service (Adom-Asamoah et al., 2020; Tomej & Liburd, 2020). There are two sides to accessibility in rural areas: the *accessibility of rural areas to external actors*, and the *accessibility of participatory opportunities to rural residents*. Accessibility of rural areas is linked to *the mobility of rural residents* – that is, the ability of rural residents to get from one place to another using various modes of transport (Vergragt & Brown, 2007). Physical accessibility includes considerations such as awareness of an opportunity and people having the time to attend (Solitare, 2005).

(2) For people to have *a shared understanding*, there needs to be an overlap between their mental models to allow them to communicate. For *communication to be effective*, the transfer of information between actors needs to occur with relatively few misunderstandings. *Inclusive use of language* ensures that everybody participating in an interaction can understand and speak the language being used; this includes translation where necessary. *Facilitation* refers to a supportive role played by an individual in helping a group of people to understand one another and to work together.

(3) *Governance capacity* refers to the ability of societal actors to work together to solve collective problems (Dang et al., 2016). *Resources for governance* include natural resources, physical assets, human resources, financial resources, and social resources (Van Popering-Verkerk et al., 2022). *Capabilities* are described as ‘what people are effectively able to do and be’ (Sen, 2002); thus capabilities also include the contextual factors that enable or constrain (Nussbaum, 2003).

(4) *Motivation to participate* refers to the desire of actors to participate in governance activities, and can be influenced by both intrinsic and extrinsic factors (Gustafson & Hertting, 2017). External

motivations can be in the form of *benefits and incentives* such as improved roads and water running from a tap. The *appropriateness of a benefit* refers to how closely the benefit aligns with the desires and objectives of the participants.

(5) *Trust* is defined as ‘a psychological state in which an entity (a trustor) accepts some level of vulnerability based on a positive expectation of another entity (a trustee)’ (Stern & Coleman, 2015, p.119). Trust plays a role in *interpersonal relationships*, which are social connections or affiliations between two or more people. *Expectation management* involves establishing realistic ideas about what a project or intervention can achieve to prevent disappointment and distrust.

(6) *Accountability* refers to the ability of one actor to ensure that another fulfils a plan or promise made. *Upward accountability* refers to lower-level actors being held accountable by higher-level actors, while *downward accountability* refers to higher-level actors being held accountable by lower-level actors (Ribot, 2002; Ntsebeza, 2004). Accountability can be undermined when there is a lack of buy-in. *Buy-in* is the act of agreeing with and therefore supporting another actor’s actions.

Three cross-cutting, more general variables

At the higher level of abstraction (i.e., less detail), participatory governance can be understood as three interrelated variables: *the favourability of conditions for participatory interactions*, *the quality of participatory interactions*, and *the quality of participatory interaction outcomes*. Components of these three high-level variables are present in each of the six sets introduced above.

The favourability of conditions for participatory governance is equivalent to high-level categories such as *contextual factors* or *starting conditions* in popular frameworks for analysing institutions and collaborative governance processes (Ostrom, 2005, 2011; Ansell & Gash, 2008). The *favourability of conditions* does not feature in the analysis as an explicit variable in and of itself; however, it is represented through variables such as *accessibility of participatory interactions* and *trust among governance actors*, which indicate favourable conditions for participatory governance.

I am exploring what constitutes meaningful participatory governance, and the *quality of participatory interactions* can be seen as a placeholder for the more complex concept. For example, in Figure 6.12, presented later in the results, the variable *shared understanding* has an S (same) relationship with *the quality of collaboration*. The relationship between the two variables asserts that shared understanding is a fundamental part of what makes participatory interactions meaningful, thus simultaneously indicating causality and defining the terms in relation to each other. The focus on meaningful participatory governance explicitly emphasises the quality of participatory governance rather than its quantity. The quantity of participation is a factor that features, for example, variables such as *time spent planning together* or *regularity of interactions*. However, there is not necessarily any link

between quality and quantity; in fact, there is likely to be a decrease in quality if quantity is sought without corresponding increases in the other factors, such as *governance capacity for participatory governance* and *depth of shared understanding*. Therefore, *What is meaningful participation?* and *What influences the quality of participatory processes?* are questions that I explore.

Finally, the *quality of outcomes of participatory interactions* features throughout the analysis. Outcomes can be tangible (such as *quality of work done* and *quality of implementation and service delivery*) or intangible (such as *accountability* or *trust between actors*).

I present five key variable diagrams and 14 observation narratives in the six sections that follow. At the end of each section, I summarise the findings to link them to the discussion.

6.4.2. *Accessibility and physical presence*

I explore connectivity between rural communities and urban spaces through the following four topics:

- the current state of accessibility and mobility (narrative),
- the positive and negative dynamics related to accessibility (key variable diagram),
- the challenge of stock theft and the vulnerability of rural communities (narrative), and
- the potential power of being physically present together (narrative).

1st Narrative | Accessibility and mobility in rural areas

My fieldwork with the Tsitsa Project involved many hours of driving on bumpy gravel roads to remote areas of the TsRC. In most cases, I drove to activities with colleagues in private vehicles. Even so, the long distances and poor infrastructure made navigating the catchment time-consuming and energy-sapping. If it is difficult for governance actors (such as me) to access rural areas, then it follows that it is difficult for people living in rural areas to access urban centres. The primary transport system linking rural and urban areas is the network of minibus taxis, and it can take up to three hours to reach the nearest urban centre using such a taxi. The taxi drivers who service rural areas live in the rural areas and work in town, so the transport system is dominated by a flow towards urban areas in the morning and a flow out of urban centres in the evening, with little flexibility during the middle portion of the day. The lack of reliable transport and of general access to opportunities contributes to urban migration as people leave rural areas searching for opportunities. One of the Tsitsa Project's community liaison officers (CLO) described how she had grown up in the mountains where there was plenty of grazing for her cattle, and the water was 'so sweet'; but if she wanted to go to town, she would have to wake up exceedingly early, as only two people in the village owned cars. As a result, she moved to a less rural village to have more access to opportunities. The importance of accessibility was pinpointed by a disgruntled workshop participant who insisted, 'We need proper roads, as everything comes by road'.

Key variable diagram: Rural area accessibility

Figure 6.7 draws on the perspectives of headmen (interviewees #1, #2, #3) and community development workers (CDWs) (Key Informants #1, #2, and #3) living and working in rural areas. In Section 5.5.2, I describe the role of CDWs and headmen as key in connecting rural communities to governance institutions through their deeply engaged roles in attempting to support development in their areas. Headmen and CDWs have deep experience with the bidirectional nature of accessibility – that is, governance institutions must access rural areas, and rural residents must access institutions in urban centres. While urban residents have direct access to governance actors, rural residents need support to access institutions. The CDWs describe their work as connecting people to the government or bringing the government closer to people. Headmen state that they are interested in the holistic development of their areas. One headman (Interviewee #2) described his work as enabling people ‘to live the way they want to live’ – what I refer to generically as *rural area development*.

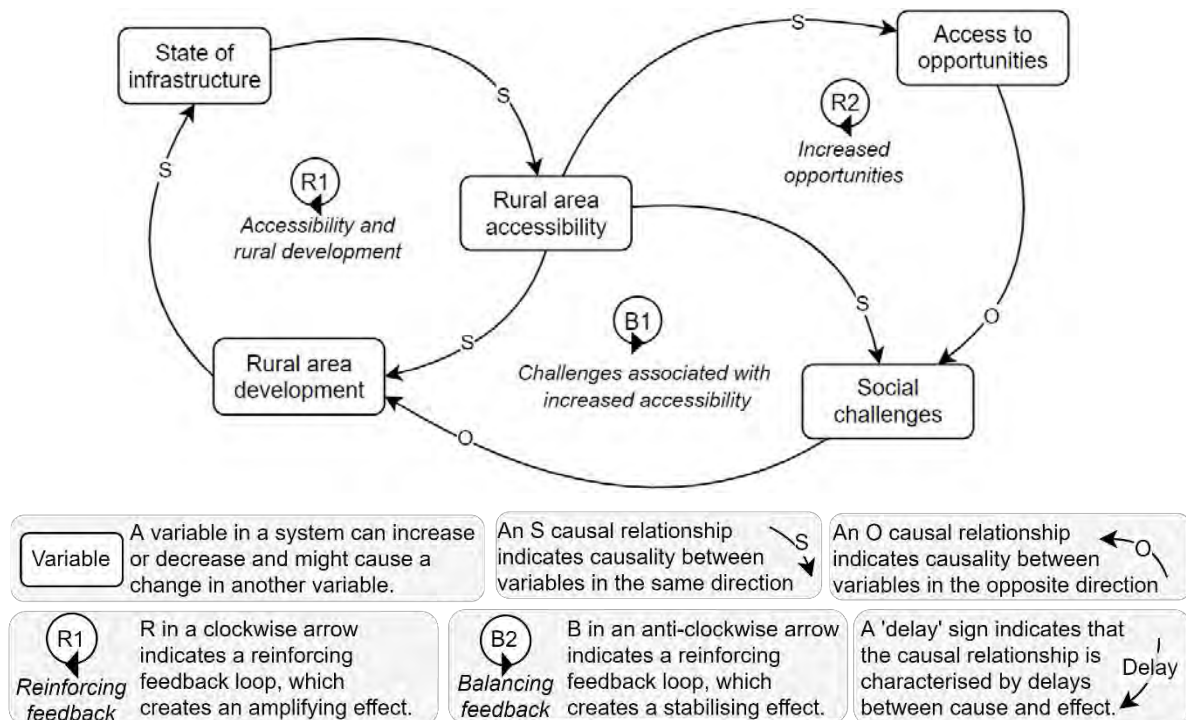


Figure 6.7. Rural area accessibility and development: a key variable causal loop diagram (CLD). The CLD is a combination of mental models from the perspective of headmen (Interviewees #1, #2, #3) and CDWs (Key Informants #1, #2, and #3) living and working in rural areas. The CLD conventions are in the grey boxes below the diagram. Rural area accessibility increases development and access to opportunities; however, it can also increase social challenges that negatively impact the development of a rural area. This key variable diagram includes a balancing loop and therefore does not have a complementary balancing loop diagram.

Reinforcing loop R1: accessibility and rural development shows rural area development and rural area accessibility in a reinforcing feedback loop. In a virtuous cycle, accessibility enables development and

improved infrastructure, increasing accessibility. However, rural area development in the TsRC is stuck in a vicious cycle in which the existing inaccessibility hinders development. Research participants expressed concerns about inaccessibility; the ‘ruralness’ of the municipality is seen as a barrier to development. As Interviewee #4 stated: ‘The challenge as a municipality that we are normally faced with, because of the rural nature of our municipality... is reaching the far-flung communities’.

The more rural a community is, the more likely it is that development interventions will neglect it while more accessible areas are selected for projects. For instance, the chairperson of a local agricultural project (Interviewee #5) noted the proximity to a tar road as a primary selection criterion, requiring the selected village to be less than 25km from a tar road. It is easier and more cost-effective to design and implement projects in areas that are easier to access. The difficulties of formal governance actors attempting to service rural areas are mirrored by the experience of rural communities being underserved and neglected. A headman (Interviewee #1) from the upper TsRC said that he had been asking the municipality to service their roads, but the municipality had been unresponsive. The municipality’s unresponsiveness to the headman’s requests illuminates the bidirectional nature of accessibility and how they interact. In this example, the governance actor’s inaccessibility contributes to a rural area’s ongoing inaccessibility.

Providing services to inaccessible rural areas is time-consuming, and involves governance actors proactively approaching residents. One CDW (Key Informant #2) discussed how he was supposed to be based at an office in a central location, but said that he could not do his job from there. ‘That thing is suitable in town; we have vast areas here. You cannot expect, at some point, you need to go to them. It will only service the nearest point’.

B1: Challenges associated with increased accessibility is a balancing loop that suggests that increased *rural area accessibility* leads to increased *social challenges*, thus tempering the reinforcing effects of R1 and R2. The most pressing *social challenges* with increased *rural area accessibility* are the increase in substance abuse and associated crime, along with easier access for gangs based in urban centres. The 2nd Narrative explores stock theft in particular. With the ongoing lack of *rural area accessibility*, rural areas remain isolated from the influence of crime and drug abuse. *Social challenges* directly impact *rural area development*, as they undermine rural residents’ capabilities.

R2: Increased opportunities suggests that increased *rural area accessibility* can increase *access to opportunities*. Increased access can result from more development projects in the area or from rural residents being able to access opportunities in urban centres. Increased *rural area accessibility* enables *access to opportunities* such as jobs or services, such as health care and education, that are often unavailable in a rural space. In a virtuous cycle, *access to opportunities* could reduce the *social*

challenges as employment increases and education improves, and so would be less likely to contribute to *social challenges*. High unemployment rates contribute to *social challenges*; therefore, *increased opportunities* can decrease *social challenges*. In a vicious cycle, poor access to opportunities results in increased *social challenges*, which decreases *rural area development*.

2nd Narrative | Stock theft and vulnerability

At the beginning of May 2019, early in my fieldwork in the TsRC, the Tsitsa Project's Catchment Coordinator took the newly appointed senior social facilitator and me on a tour of the TsRC to meet the Tsitsa Project's catchment-based employees, the traditional leaders, and some of the DFFE implementing agents. Part of the tour included visiting a headman in a deeply rural area; it took us about one and a half hours to get there from Nqanqarhu, an already small rural town. On arrival, the headman told us that he had lost all his cattle to a well-armed gang the previous night. The gang had entered his property, knocked on his door, and told him that they were taking his cattle; he was powerless. Livestock is a symbol of social stature, but they are also a biological asset (Section 3.2.1). One head of cattle can be worth as much as R12000, which is around five- or six-months' wages for an employee of the Extended Public Works Programme, through which DFFE restoration work is conducted (Section 5.4.3).

The raid was a substantial financial and cultural loss for the headman, and he was pessimistic that he would ever see his cattle again. I would later learn about social networks, closely related to familial ties, which are central to safety in village life. Everybody in the village knows everyone else, and they can therefore watch out for one another and provide security as people's movements are observed and discussed. This security system is limited by the ability of the collective community to apprehend criminals. These informal networks can work to stop petty crime, but they do not make up for the lack of a police presence in deeply rural and inaccessible areas.

3rd Narrative | The potential power of physical presence

On top of the long physical distances in the TsRC, poor cellular signals meant that setting up meetings and contacting people was often tricky. I often struggled to contact people over the phone. Pragmatically, the physical presence of actors often enabled me to access them. If the person I was trying to contact was physically present in the area, I could go to their office or home and wait for them as a last resort.

The power of physical presence struck me when a well-respected senior traditional leader died in 2019. Suddenly, government officials from the Broader Story, who seldom come to the TsRC, arrived to pay their respects to the traditional leader's memory and family. In the context of death, only their physical presence was sufficient to communicate their respect and condolences.

Physical presence later emerged as a factor in the Village Story. When organising village-based activities, I observed that people would not arrive until the cars with external actors arrived. When asked ‘Why?’, participants say that they are unsure what time an event would start or whether it would start at all. Despite communication that an event would happen, community members would not show up until the government representative was physically present. I considered the community members’ distrust and scepticism to indicate ongoing broken promises and miscommunications between governance actors and rural communities.

Conversely, one risk of being physically present is the creation of unmanaged expectations. An interesting example of physical presence being dubiously leveraged was the visit of the then Minister of the National Department of Water and Sanitation, Mr Gugile Nkwinti (SABC, 2018). The visit was organised in response to community concerns about the construction of the Ntabelanga Dam and associated infrastructure as part of the Mzimvubu Water Project (Section 2.2.1). Minister Nkwinti’s visit was conducted in the build-up to the national election in May 2019. After the election, as political cycles go, the minister was transferred to a different department and, by the end of 2021, progress on the Mzimvubu Water Project had stalled, and there was still uncertainty about whether or not it would go ahead (Bonani, 2021). Whether intentional or not, the result of the minister’s visit was considerable expectations that slowly turned to disillusionment as the promised construction failed to materialise according to the proposed timelines. The general lack of communication about the project’s development led to local governance actors feeling undermined (Wolff, 2018), and has affected relations with the Tsitsa Project because of the project’s connection to the Mzimvubu Water Project (Key Informant #9).

Section summary

I have explored physical and institutional connectivity between governance institutions and communities in rural areas. While rural accessibility and increased connectivity are seen as positive means for development and access to opportunities (1st Narrative), there are also the negative impacts of increased connectivity – such as the increase in social problems, which are more prominent in urban areas (Figure 6.7).

Stock theft is an example of an intractable challenge faced by rural residents who attempt to use local resources to support their livelihoods. The 2nd Narrative highlights the reliance on livestock as cultural and financial capital, but also the vulnerability of rural residents in the absence of government support, such as law enforcement. The 2nd Narrative reveals a fundamental limitation of rural communities to self-organise to maintain some level of ownership over their resources; even if rural

communities work together with local traditional leaders, they remain vulnerable to exploitation by an external actor with more resources.

Physical presence accompanied by face-to-face dialogue seems to be an essential part of creating more meaningful connections between rural communities and governance actors in a way that encourages more active buy-in and accountability. However, the 3rd Narrative points out that, while the identification of physical presence as a powerful tool is substantive, it can either be used to support trust building or be abused for political gains.

6.4.3. Shared understanding and facilitation

In participatory interactions, skilled facilitation can enable actors with diverse interests and backgrounds to understand one another; however, the fundamental challenges related to the use of language and terminology present substantial barriers to be overcome. I explore three narratives:

- Learning Words together,
- skilled facilitation in a climate change workshop, and
- my experiences of language use in the three stories of governance.

4th Narrative | Learning Words together

Before I became involved in the Tsitsa Project, the GovCoP undertook two adaptive planning processes (Rogers & Luton, 2011; Palmer et al., 2018) as part of developing visions for the future in two catchments in the Eastern Cape: the Upper Kowie River Catchment and the TsRC. The workshops used words common to natural resource management and water resource management (catchment, landscape, restoration, vegetation cover, governance, participation, and sustainability). A workshop analysis revealed a lack of understanding of these words among participants (Ralekhetla, 2019), which led to the Learning Words workshops (Section 5.3.4). Learning Words was designed to equip participants with an experience of fair and meaningful participation, and the opportunity to increase their confidence in participation and to learn a vocabulary related to their landscape, its restoration, their livelihoods, and the governing of their landscape. Therefore, it was about bridging the language use gap between researchers, municipal and government officials, traditional leadership, and rural communities.

The negotiations of meaning inherent in the Learning Words process confirmed the differences in the understanding of keywords among the people with whom the Tsitsa Project had been engaging. Thus it illuminated the difficulties of communicating across language barriers, especially when communicating concepts that do not have direct translations; for example, there is no direct translation for the word 'catchment' in isiXhosa. It further revealed how the dominance of one or two group members can determine the meaning of a word in a given context. Translation also created

delays, which gave participants time to think. Moving to the dominance of isiXhosa in workshop facilitation supported the involvement of the less confident English speakers. The communication challenge was highlighted again when we attempted to receive substantive feedback. It was clear that many participants did not want – or were unable – to express themselves in writing, and we had to use a mixture of options to support the documentation of meaningful feedback, such as recording individual interviews or dictating feedback to more capable participants.

5th Narrative | Skilled facilitation in a climate change workshop

On 21 January 2020 I attended a workshop organised by the Tsitsa Project's Climate Change Community of Practice in collaboration with DFFE local government support. The workshop aimed to highlight the urgency of acting to mitigate and adapt to climate change at the local government level and to explore the Tsitsa Project's role. The workshop was held in the Mount Fletcher town hall. It included representatives of the local and district municipalities, the national DFFE, the provincial Department of Economic Development, Environmental Affairs and Tourism (DEDEAT), and the Department of Rural Development and Agrarian Reform (DRDAR). There were also Tsitsa Project representatives, including the Tsitsa Project catchment coordinator, the integrated planning coordinator, LIMA, and the community liaison officers (CLOs). During the workshop, climate change was used as a challenge, with cross-cutting impacts that were relevant to several actors to enable cross-departmental collaboration and planning. The workshop was a participatory governance activity that was aimed at enabling future collaboration. This narrative is based on a reflection session that I facilitated with the Tsitsa Project CLOs.

At the beginning of the workshop, several participants expressed negative sentiments about the workshop. Some suggested that the workshop was a waste of time, and that, given the proximity of the financial year-end, it was just an attempt to spend money. Another group of representatives of the provincial DEDEAT, who were responsible for coordinating climate change adaptation, felt threatened by the meeting because, they suggested, it indicated that they were not doing their job correctly. These negative attitudes towards the workshop and the resultant disruptions meant that some of the CLOs were unable to concentrate, engage, and learn from the workshop. However, the facilitator showed patience in enabling open dialogue between the organisers and those who felt negative about the workshop, both unravelling the negative attitudes and building a shared understanding of the workshop's purpose.

Relieving the underlying tensions in the workshop was the first positive aspect of open and skilled facilitation. The second aspect was the quality of the pedagogy, which consisted of both quality presentations and various activities that enabled people with different abilities, learning styles, and

strengths to engage with the content. Furthermore, the facilitator enabled peer-to-peer learning, and drew on people's diverse skills by splitting us into groups and allowing the participants to be more comfortable with the subject matter in order to support the learning of the less confident participants. The diversity of people in the workshop meant that it was hard to pitch the content at the right level; and, while parts of the presentations were difficult for the CLOs to understand, peer-to-peer learning in the breakaway groups helped to overcome the misunderstandings.

6th Narrative | Language across stories

There is a mix of language use in governance spaces in the TsRC. There is a dominance of isiXhosa and Sesotho in the Village Story, shifting to a mixture of isiXhosa and English in the Catchment Story and predominantly English in the Broader Story. In the Catchment Story, it was common to have verbal exchanges dominated by isiXhosa and written text such as presentations and handouts in English. I can speak basic isiXhosa, a skill that enabled me to enter Village Story meetings that would have been inaccessible to many of my colleagues. However, prolonged and detailed discussions are difficult for me to follow. Even if I follow the conversation, it is not easy to engage simultaneously with the ideas in such a way that I might be able to formulate responses. In other cases, I follow what is going on, but my lack of confidence that I was able to understand the discussion would make me tentative to contribute substantively. I often declined a translator, preferring not to hold up a meeting and instead asking a colleague to clarify after the meeting.

Section summary

Differences in knowledge and understanding can create barriers to meaningful participation. Participant engagement is influenced by the quality of the facilitation (5th Narrative), the language, and the terminology used. Learning words together (4th Narrative) highlighted the challenges of communicating across language barriers and the low literacy levels among elderly community members. My partial ability to speak isiXhosa limited my access to the Village Story (6th Narrative). Similarly, community members based in the Village Story who are not confident to speak and write English have restricted access to the Catchment Story, and are excluded from the Broader Story.

6.4.4. Governance capacity and resources for participation

Prioritising capacity and resources for participation is difficult in the context of local government failure and material poverty. I examine the following:

- my experience of water rationing as an example of a governance failure (narrative), and
- how proactive and reactive forms of governance influence how resources are allocated (key variable diagram and balancing diagram).

7th Narrative / Water rationing in Nqanqarhu

The Water Service Authority and the provider have had to enforce water cuts in the town of Nqanqarhu (formerly Maclear) for the last three years, and concerns about the future of bulk water supply in ELM mean that this trend will likely continue. For five out of the ten months I lived there, the town was subject to water rationing; water was available for five hours on alternate days, and we relied entirely on rainwater during the cuts. The high rainfall and poor service delivery suggest that Nqanqarhu suffers from second-order water scarcity. It is not a case of demand exceeding supply (which would be considered first-order scarcity); instead, it is the case that the relevant social institutions do not have the necessary adaptive capacity (Clifford-Holmes et al., 2018). Formal water service provision is primarily in the towns and, in the dry season, only those able to afford rainwater storage tanks can ensure a continuous supply.

Key variable diagram: Local governance capacity

Figure 6.8 reflects the individual mental model of Key Informant #6 (Appendix E1), the local government support who was hired by DFFE to support the environmental work done by local and district municipalities. However, I have generalised the CLD to include the concepts and connections elicited from other local governance actors: a community development worker (Key Informant #2), two members of the Tsitsa Project team (Key Informant #4 and Key Informant #5), and the water manager working for the water services provider (Interviewee #8). These five research participants all work with the implementation of land and water governance activities and with capacity development in the Catchment and Village Stories. I explore the diagram through the eight reinforcing loops presented in Figure 6.8.

R1: Proactive skills development shows how an increase in the governance capacity that is available for *proactive governance activities* can enable local governance actors to conduct more *proactive management activities*, such as skills development, which can increase *governance capacity* (virtuous). When local governance actors lack capacity, as in the case of the TsRC, there is a decrease in *proactive management activities* such as *skills development*.

R2: Resources for planning shows how an increase in governance capacity can increase proactive management activities, such as planning together and planning in general. This, in turn, increases the quality of planning, implementation, and service provision, reducing the need for reactive problem-solving and thus making more governance capacity available for proactive governance activities.

R3: Prioritising integration shows how using available governance capacity to plan together and integrate work activities can result in improved planning and enable quality implementation work, thus reducing the need for reactive governance.

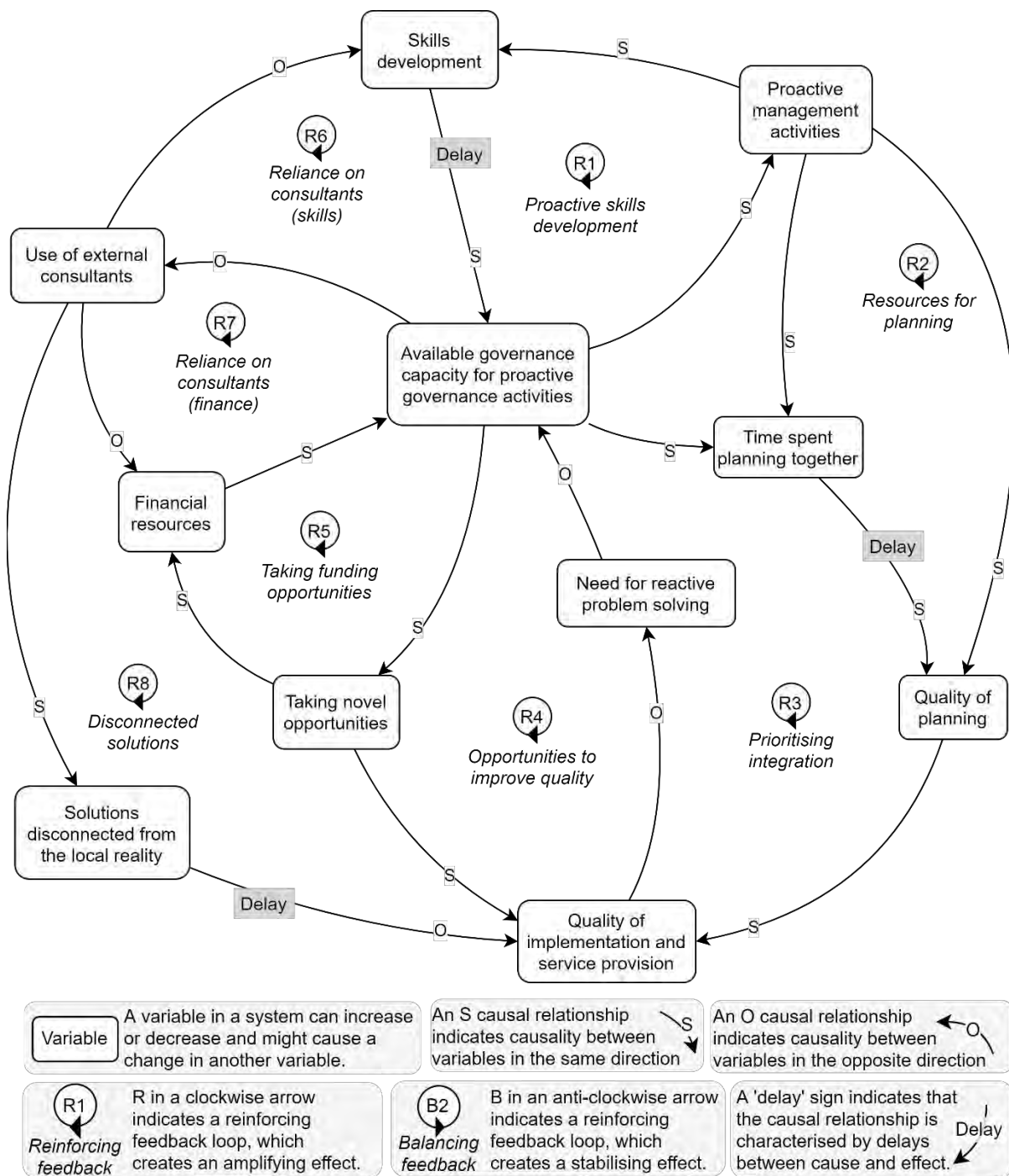


Figure 6.8. Capacity and resources available for participatory governance: a key variable diagram. Diagram created by combining mental models from Key Informants #2, #4, #5, #6, and Interviewee #8, who work with implementation and capacity development in the Catchment Story. The figure differentiates between proactive governance activities (e.g., skills development and planning) and reactive governance activities (e.g., hiring external consultants and reactive problem-solving). R1 to R8 are eight reinforcing feedback loops influencing local governance capacity allocation. The CLD conventions are in the grey boxes below the diagram.

R4: Proactive governance involves maximising opportunities, such as increasing revenue streams or developing capacity. Taking such opportunities improves the quality of implementation and service provision, whereas missing such opportunities contributes to the vicious cycle of insufficient time or resources.

In line with *R4*, *R5: Taking funding opportunities* suggests that taking opportunities to increase revenue would increase the *financial resources*, thus contributing to the *available governance capacity for proactive governance activities*.

R6: Reliance on consultants (skills) refers to the fact that, when local governance actors rely on external consultants, there is a tendency to neglect in-house skills development. Thus, as governance capacity decreases and the use of external consultants increases, then skills development decreases, which means less available governance capacity. External consultants are paid per hour and work on specific contracted tasks. Once they have left, they are difficult to contact unless additional funds are available. *Reliance on external consultants* means that much of the information about an area is stored and understood by external consultants who are absent.

R7: Reliance on consultants (finance) refers to the fact that, when the available governance capacity for proactive governance decreases, the use of external consultants increases, along with a high financial cost that, in turn, reduces the available financial resources (a vicious cycle). In a more virtuous cycle, the *capacity available for proactive governance activities* would reduce the use of external consultants and thus increase the financial resources, providing even more capacity for proactive governance activities.

R8: Disconnected solutions shows that along with the use of external consultants come solutions that do not draw on the knowledge of local actors who are connected to the problem context, resulting in plans that are disconnected from local realities, thus reducing the *quality-of-service provision* and increasing the need for reactive problem-solving, which reduces the *capacity for proactive governance activities*.

Research participant mental models are represented in Figure 6.8, and are focused mainly on the negative endogenous variables influencing local dependence on external consultants, which tends to view local governance actors unfavourably. As part of the discussion, I place this undesirable pattern within broader systemic structures (Section 6.5).

Balancing diagram: Local governance capacity

Figure 6.8 highlights the virtues of proactive management and the vices of reactive management, implying that reactive forms of governance that tend to deplete resources without effectively solving

problems will ultimately reduce the resources available for investment in proactive governance activities, such as participatory processes. However, Figure 6.8 does not suggest any balancing effects that would limit the efficacy of proactive governance. Figure 6.9 below shows the two most prominent feedback loops from Figure 6.8, with two added balancing loops and an important stabilising exogenous variable. I cannot explore all of the relevant loops, but I provide key examples to provide some nuance to the findings. Figure 6.9 also highlights the delays associated with the positive impacts of proactive activities.

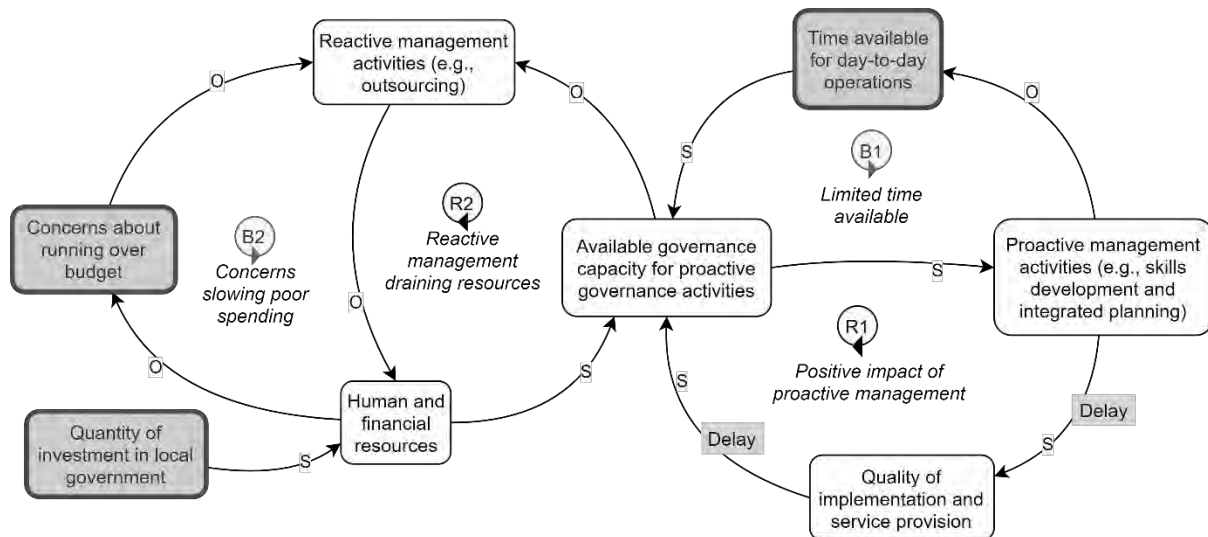


Figure 6.9. Enhanced key variable diagram with balancing effects influencing governance capacity. Building on Figure 6.8, from which the two reinforcing loops (R1 & R2) were derived, this diagram shows two balancing loops (B1 and B2) and one stabilising exogenous variable. The diagram components in grey indicate variables and feedback loops related to the balancing dynamics.

The first balancing loop stems from the recognition that there is *limited time available* (B1); therefore, there is a limit to the amount of proactive planning and in-practice capacity development that can be done before these activities use the time required for real-time problem-solving and day-to-day management activities. The second balancing loop shows how *concerns about running out of resources* (B2) might slow spending – another balancing effect created by natural limitations. Local government actors do not have unlimited resources to spend; thus, as resources decrease, the *concern of running over budget* will influence spending.

Another balancing effect is the *quantity of investment in local government*. In South Africa, local governments receive an equitable division of nationally raised taxes – a measure enshrined in the Constitution that supports poorer municipalities to account for the existing inequalities in South African society (RSA, 1996). The equitable share is an unconditional grant that municipalities may use as they see fit; thus it is an exogenous variable, as it is not dependent on any measure of performance.

Section summary

The lack of governance capacity and the associated negative implications (7th Narrative) have already been introduced and discussed as part of the governance mapping (Sections 5.5.4 and 5.7.1). Having the capability to enable meaningful participatory governance requires both internal capacities and a conducive external environment. Governance actors see the value in proactive strategies such as proactive skills development, planning, and integration of work (Figure 6.8). However, the potential for transitioning out of the current situation, which is dominated by reactive strategies and vicious cycles, is influenced by localised limiting factors (Figure 6.9). I explore further the broader institutional context later as part of the discussion (Section 6.5).

6.4.5. Participation and incentives

Participatory interactions are embedded in complex webs of power, motivation, incentives, and benefits. In this section, I explore the following:

- community participation in external interventions (key variable diagram and balancing diagram),
- the loss of faith among community members and traditional leaders (narrative),
- the use of short-term benefits in an agricultural project (narrative),
- challenges that the Tsitsa Project faced when trying to communicate with a fractured community (narrative), and
- a municipal interaction designed to promote self-organisation (narrative).

8th Narrative | Loss of faith in external interventions

My fieldwork with the Tsitsa Project involved diverse interactions, such as the Learning Words workshops and participatory planning events that attempted to reconcile scientific management approaches with local experiential knowledge and priorities (Tsitsa Project et al., 2021b). In most cases, residents were willing to participate out of interest, and were grateful for a plate of food at the end of the interaction.

While willingness and gratitude were typical, I also met angry participants. Their anger was not necessarily directed at us, but as representatives of the Catchment and Broader Stories, we had to engage with dissatisfied residents' complaints and allow them to inform our engagement (see 5th Narrative). Residents complained that projects did not result in tangible benefits, and that ineffective projects had wasted their time in the past. The loss of faith in external interventions has resulted in some people being completely unwilling to collaborate with any external actor.

The Tsitsa Project CLO's role includes but is not limited to sitting in local governance activities, answering questions, and feeding information back to the Tsitsa Project. In one area of the catchment, the project's CLO had difficulty entering and legitimising his presence in governance spaces. The trouble in that specific area was that the Tsitsa Project had not yet done any implementation, so there had not been any jobs created nor benefits from the restoration work. The CLO's difficulties were later contextualised when the local headman explicitly said that he did not want any workshops or engagements – just implementation and employment. The headman's negative attitude towards workshops indicates past negative experiences in workshops.

Key variable diagram: Community participation and benefits

Figure 6.10 explores community participation in land and water-related projects. It draws on mental models from three interview participants: the chairperson of an agricultural project funded by RAFI (Interviewee #5), an animal health technician working under DRDAR (Interviewee #7), and an implementing agent working under DFFE (Key Informant #7). These three local governance actors are all involved in implementing projects in the Village Story. The CLD, therefore, reflects the perspective of an external actor whose aim is to intervene or interact with a rural community.

The scope of the three participants' work includes growing crops and mentoring farmers (Interviewee #5), providing medicine and animal health care services (Interviewee #7), and landscape restoration, including wetland restoration and invasive alien plant clearing (Key Informant #7). The two key variables in the CLD are *problems during interaction* (which the governance actors are trying to reduce as much as possible) and perceived benefits to the community (which is how much the community members think they are benefiting from a project).

R1: Reinforcing community participation describes how the *community benefits* influence *community participation*. In the virtuous version of R1, increasing *community participation* decreases problems during interactions; and fewer problems mean more *actual community benefits*, increasing the perceived benefits to the community members. Finally, the loop is completed: if communities perceive benefits, they are more likely to participate. In the vicious version of R1, increased problems during interactions lead to decreased actual community benefits, decreased perceived community benefits, and reduced *community participation*.

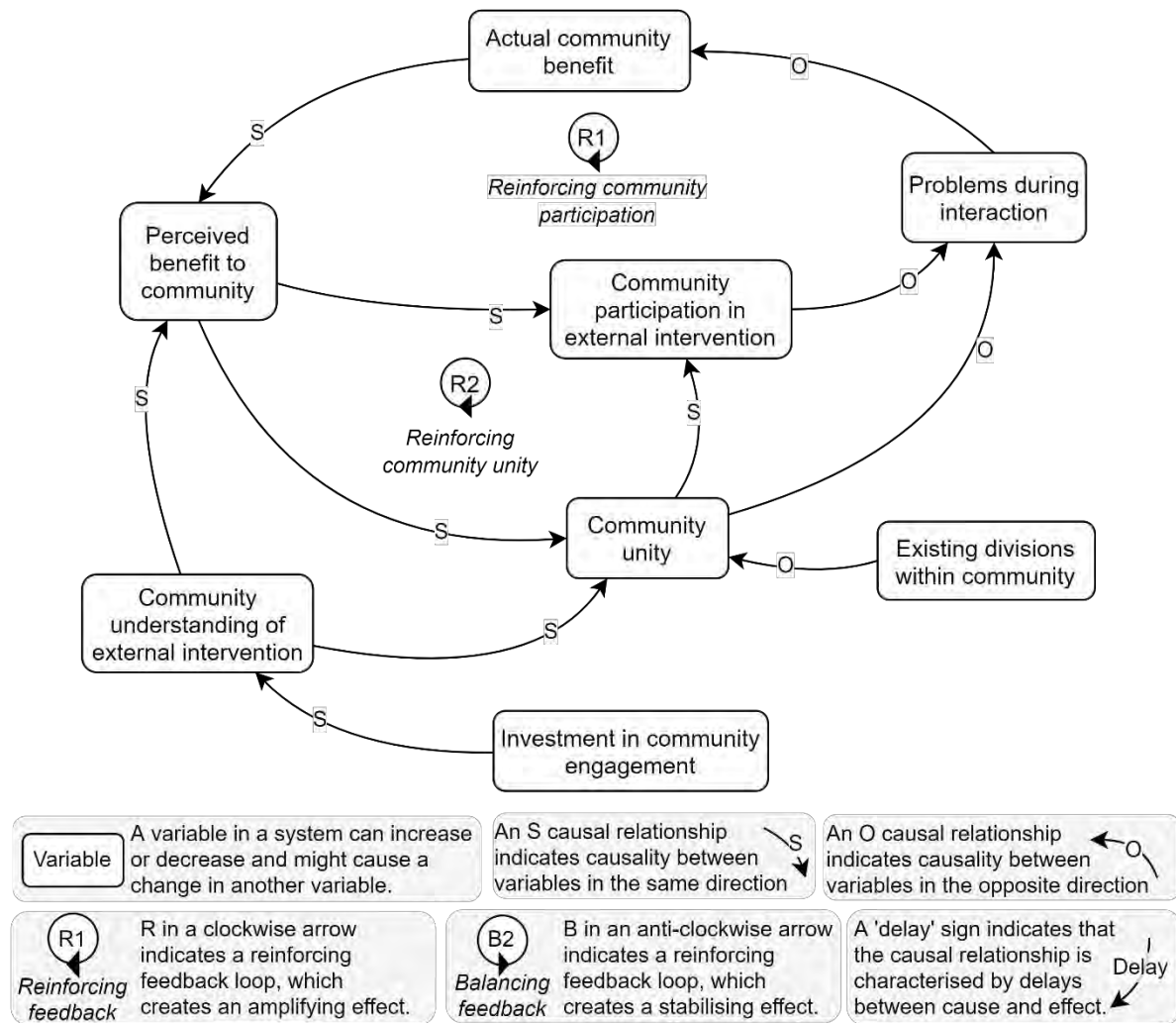


Figure 6.10: Community participation and benefits: a key variable causal loop diagram (CLD). Diagram created by combining research participants' mental models, including Key Informant #7 and Interviewee #5 and #7 – all local governance actors who implement interventions in the Village Story. The two reinforcing loops (R1 & R2) indicate that increased community unity and participation can reduce problems during an interaction and increase benefits. The CLD differentiates between actual and perceived benefits, which means that benefits do not lead directly to unity and participation, but are mediated through community perceptions. The CLD conventions are in the grey boxes below the diagram.

R2: Reinforcing community unity describes *community unity* as another key factor influencing whether there are *problems during an interaction*. In the virtuous version of R2, an increase in *actual community benefit* increases the *perception of benefit*, which increases *community unity* in favour of an interaction, reducing *problems during the interaction*. *Community unity* was a commonly used term to describe the degree to which a specific community were acting together in relation to a particular project. In the vicious version of R2, a decrease in *perceived community benefits* would result in a reduction in *community unity*, as more community members would view the interaction as not beneficial and would therefore be more likely to cause problems during implementation.

Community unity is influenced by two other factors, *existing divisions in the community*, and *community understanding of an external intervention*, which is, in turn, influenced by the *investment in participation*. *Existing divisions*, such as conflicts between the traditional leaders and municipal officials (Section 5.5.3), result in a lack of *community unity* and, therefore, more *problems during implementation*. As Key Informant #7 put it: ‘In the villages, we have people who trust the councillor, and some have faith in the traditional leaders. Some communities are split into two, which makes it very difficult to implement what we want to implement’. *Community understanding of external intervention* influences both *perceived community benefit* and *community unity*. The CLD suggests that more *community understanding of external intervention* would increase the perceived benefits and unity. Key Informant #7 described a case in which some community members were involved with clearing invasive alien plants (IAPs) while others were concerned about losing their source of fuelwood and space for initiation rituals. Thus the intervention benefited some community members while being undesirable for others, leading to a lack of community unity, which made implementation difficult.

I address the problematic assumptions about community homogeneity, which underpins this key variable diagram, in the discussion (Section 6.5.1). It is also necessary to point out that, while community unity can improve participation and reduce problems, the assumption is that the community members are united in favour of the project. If the community members are united against an intervention, the likelihood of pushback or sabotage increases.

Balancing diagram: Community participation and benefits

Figure 6.11 has the two reinforcing loops from Figure 6.10 (R1 & R2), one novel reinforcing loop, and two balancing loops (B1 & B2). These added diagram components enrich Figure 6.10. *R3: Problems exacerbating disunity* provides nuance to R1 and R2 by suggesting that an increase in *problems during interaction* would cause a decrease in *community unity*, which would, in turn, decrease *participation in the external intervention*. This feedback loop from problems to disunity highlights the multiple negative impacts of problems, not only on the ability of an external actor to implement a project, but internally in a community as well. It is worth noting that the participants’ emphasis on the value of community unity overlooks the potential value created by dissensus – the limitation is then the capacity to utilise the transformative potential of contradiction into positive collective change (I re-highlight the limitations of consensus in the discussion in Section 6.5.4).

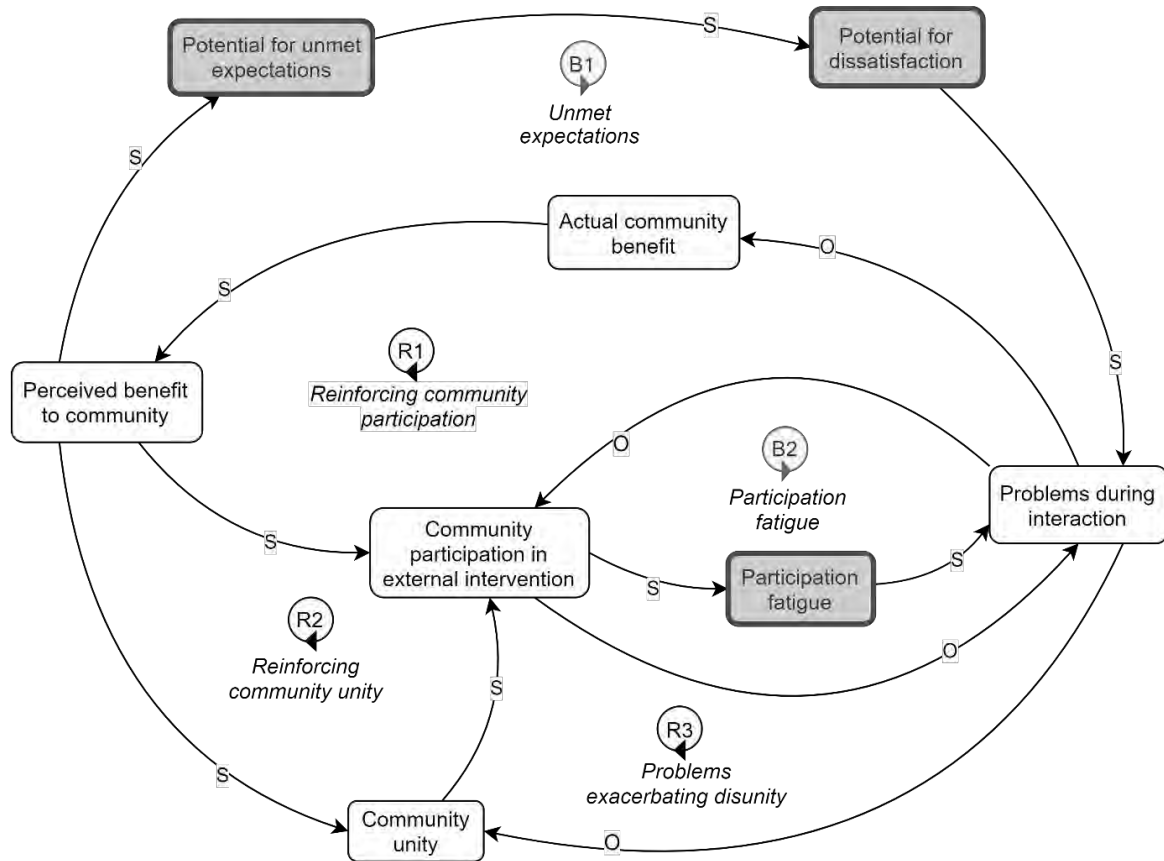


Figure 6.11. Enhanced key variable diagram showing dynamics balancing community participation. Building on Figure 6.10, from which the two reinforcing loops (R1 & R2) were derived, Figure 6.11 now includes an additional reinforcing loop and two balancing dynamics (B1 & B2) that have the potential to limit the positive impacts of community participation. The diagram components in grey indicate variables and feedback loops related to the balancing dynamics.

B1: Unmet expectations indicates the *potential for unmet expectations* to emerge from creating the perception of benefit and the expectation of future benefits. While a positive perception of benefits increases community participation, as described in R1 in Figure 6.10, a perception of benefits can also lead to an increase in the expectation of future benefits, which could increase the gap between the actual and the expected benefits. An increase in the *potential for unmet expectations* would increase the *potential for dissatisfaction*, which would increase *problems during the interaction*. Creating expectations of benefits is linked to community buy-in and participation; however, expectation management raises several challenges that I address in the discussion (Section 6.5).

B2: Participation fatigue. Increased participation of community members is likely to lead to increased instances of participation fatigue, where community members get tired of participating in workshops and answering questions, which might balance the reinforcing feedback loop R1 through which benefits increase participation. *B2: Participation fatigue* indicates that with the increase in participation comes the increase in *participation fatigue* through which community members exceed

the amount of time they are willing to invest in an intervention. While participation fatigue is related to a range of factors, such as the benefits of participation or the relevance of the intervention (Moseley, 2007), I use the term here as a limiting factor to highlight the fact that there is a limit to the number of participatory interactions that community members are willing to attend.

9th Narrative | Benefits and sabotage in the RAFI agricultural project

In the upper TsRC, an agricultural project is run as a collaboration between the local government and a non-governmental organisation called RAFI. The project is trialling alternative cultivation techniques with maize and soybeans on two sites. Local governance actors commonly cited the project as an example of why community participation is needed.

The project provided short-term benefits by employing community liaison officers and security guards, and by providing mentorship to local farmers. By demonstrating community buy-in through a certain number of signatures on an agreement, one project site was able to secure support from the local DRDAR office, which enabled them to fence the area under cultivation, enabling a successful harvest. On the second site, the community members did not act cohesively and secure the necessary support to build a fence, and livestock destroyed the crops. Despite the success of the first site, some community members still believed that the project would take all of the crops and sell them for the benefit of the project without providing any benefits for the community members. Other community members were worried that the project was 'selling their land, giving it to the white people' (Interviewee #5).

The project funding is structured to benefit the community members gradually over time. The local government funded the project, which would receive the profits from the sales in the first years of operation; after that, the project would slowly pay the municipality back while increasing the amount of money fed back into the community members. The projection was that the community members would receive all of the project benefits after ten years. Unfortunately, towards the end of 2020, the project chairperson was absent from the sites for a few months. During these months, community members stole fencing and gates from the first site, leaving it in a comparable situation to the second site. The difficult start to the project indicates that the community members are unlikely to see benefits from the project; this would contribute to the community members' concerns about not benefitting, and so become a self-fulfilling prophecy.

10th Narrative | Challenges communicating and hiring

In late 2019, the Tsitsa Project was hiring eco-rangers to support the protection of land restored by the DFFE implementing agents (Section 5.4.3). A meeting was called because, despite the efforts of the project staff, only one person had shown up at the interviews. The project staff knew that people

were interested in the jobs, and were surprised that so few people had arrived at the interview. Some meeting participants reported that they had been told that the job would be given to someone who had been attending meetings and had been involved in some of the Tsitsa Project activities. It was unclear where this rumour came from, but it effectively dissuaded community members from coming to the interviews. Another participant suggested that the problem was more fundamentally about a lack of communication with all parts of the community, and that information about the Tsitsa Project was confined to the involved community members.

The initial discussion about the interviews turned into a more general discussion about people attending meetings and becoming involved in the Tsitsa Project activities. While the main reason for certain portions of the community not hearing about activities was linked to existing fractures, other dynamics were at play beyond one group excluding other groups from joining. One participant suggested that there is a lack of clarity around the reasons for meetings, which can lead to negative experiences of a meeting and result in a particular group becoming disillusioned and avoiding future meetings even if they are unrelated to the initial negative experience.

Four participants volunteered to support spreading information to overcome difficulties with communication. One participant was selected to communicate with young community members.

11th Narrative | Ward-based planning

One innovative initiative in the local municipality was ward-based planning, which aimed to support the emergence of community-based organisations in rural communities. I was able to attend one session run by Ruliv, a non-governmental organisation based in East London. The event was planned in Nqanqarhu. Unfortunately, constrained budgets meant that only a few ward representatives could attend, all of whom were already employed full-time in formal governance roles. In this case, the initiative's purpose, which was essentially to promote self-organisation, was stunted by the creation of an 'invited space' in which participants' agency was controlled rather than enabled (Gaventa, 2019; Cornwall, 2008). When following up with the progress on the ward-based plans, key informants (Key Informant #1, Key Informant #2) complained that they did not have time to convene the programmes outlined in the ward-based plans on top of their existing work.

Section summary

The dominant communication channels between the Catchment Story and the Village Story are informal and flexible to account for the rural context, but can result in community divisions, thus restricting dissemination. For example, if one social group in an area obtains information about an opportunity, they might not share it with another social group that competes for the same opportunity (10th Narrative). The informal information flows mean that (a) the reliability of information is reliant

on the capacity of governance actors who are tasked with spreading information, and (b) direct communication from officials with recognised authority can be a powerful means to create trust in that information. One challenge is that, rather than being a core role, participatory processes are often considered extra add-ons and, therefore, are difficult to prioritise (Narrative 11). Furthermore, rather than being generative processes, they become additive in nature, and require additional effort on top of existing work.

While divisions within a community can be harnessed for collective change, divisions in communities are generally seen to undermine interventions. While local governance actors see community unity and community participation as ways to reduce problems during implementation (Figure 6.10), it is also important to realise that the history of broken promises has contributed to a loss of faith and an unwillingness to participate (8th Narrative), and that there are tangible limits to what can be achieved through participation (Figure 6.11).

6.4.6. Trust and interpersonal relationships

Participatory governance founded on collaboration requires trust and interpersonal relationships between actors. In this section, I explore the following:

- trust building (narrative),
- how trust can promote collaboration (key variable diagram and balancing diagram), and
- the negative impact of a high turnover of governance actors (narrative).

12th Narrative | Water crisis meeting

In November 2019, towards the end of the dry winter season, a member of the Elundini Chamber of Commerce (ECC) invited me to attend a closed meeting between the ECC and the water service providers from Joe Gqabi District Municipality. The invitation directly resulted from spending time in the context, meeting actors informally, and discussing my research interests. The water service provider initiated the meeting to discuss options for alternative water supplies in the town of Nqanqarhu.

The Elundini Chamber of Commerce is a group of mostly white local businesspeople, many of whom formed part of the local government pre-1994, but have since been replaced by black people. The current government, in which black isiXhosa-speaking people hold overtly powerful positions, contrasts with pre-1994 when white people dominated local government. I emphasise ‘overt power’, as the changes in government demographics have visibly shifted who holds the practical decision-making power; however, it is more difficult to decipher who holds the covert influence to shape the paradigm in which those decisions are made – for example, the ongoing use of consultants. The shift in the formal allocation of power was evident in the expressed feelings of disenfranchisement among

white residents who have watched service delivery for white people deteriorate as the post-1994 democratic government attempted to extend the supply of services to the previously neglected black population (SALGA, 2015).

At the beginning of the meeting, there was explicit discussion about the ‘us versus them’ mentality, which disrupts the working relationships between businesspeople and local government, and an expressed desire by both actors to move past the historical conflict. The Chamber of Commerce representatives said that they had helped to fix a few burst pipes, and supported the water services provider, but were not getting any feedback or support in return. There was discussion about previous attempts to increase the town’s water storage that had been marred by corruption, resulting in the job not being done. The ongoing experiences of unmet promises and expectations had deepened distrust between the two actors. Even though the meeting was friendly, with good intentions voiced from both sides, the Chamber of Commerce members stated that they were not convinced that anything would change.

Key variable diagram: Trust and interpersonal relationships

Figure 6.12 draws on the perspectives of six research participants: a representative of DFFE working in the local municipality (Interviewee #6), an actor from the local DRDAR office (Interviewee #7), two Tsitsa Project members (Key Informant #4 and Key Informant #5), the local government support person working under DFFE (Key Informant #6), and a DFFE implementing agent based at the district municipality (Key Informant #7). These six governance actors work predominantly in the Catchment Story, with interactions with Village Story actors. I consider community members to be governance actors; therefore, collaboration is not only between formal governance actors, but also encompasses collaboration between all stories of governance.

R1: Regular interactions for collaboration shows that an increase in the *quality of interpersonal relationships* increases the regularity with which governance actors engage. An increase in the *regularity of interactions* supports *collaboration*, which improves the *quality of work done*. An increase in the *quality of work* builds *trust between actors*, which supports the *building of interpersonal relationships* (a virtuous cycle). A decrease in the *quality of interpersonal relationships* would reduce how much actors engage, which would then reduce *collaboration* and the *quality of work done*, undermining *trust between actors*. *R2: Shared understanding* shows how *regular interactions* would increase the *shared understanding* between actors, thus enabling *collaboration*, which could increase the *quality of work* and build *trust*.

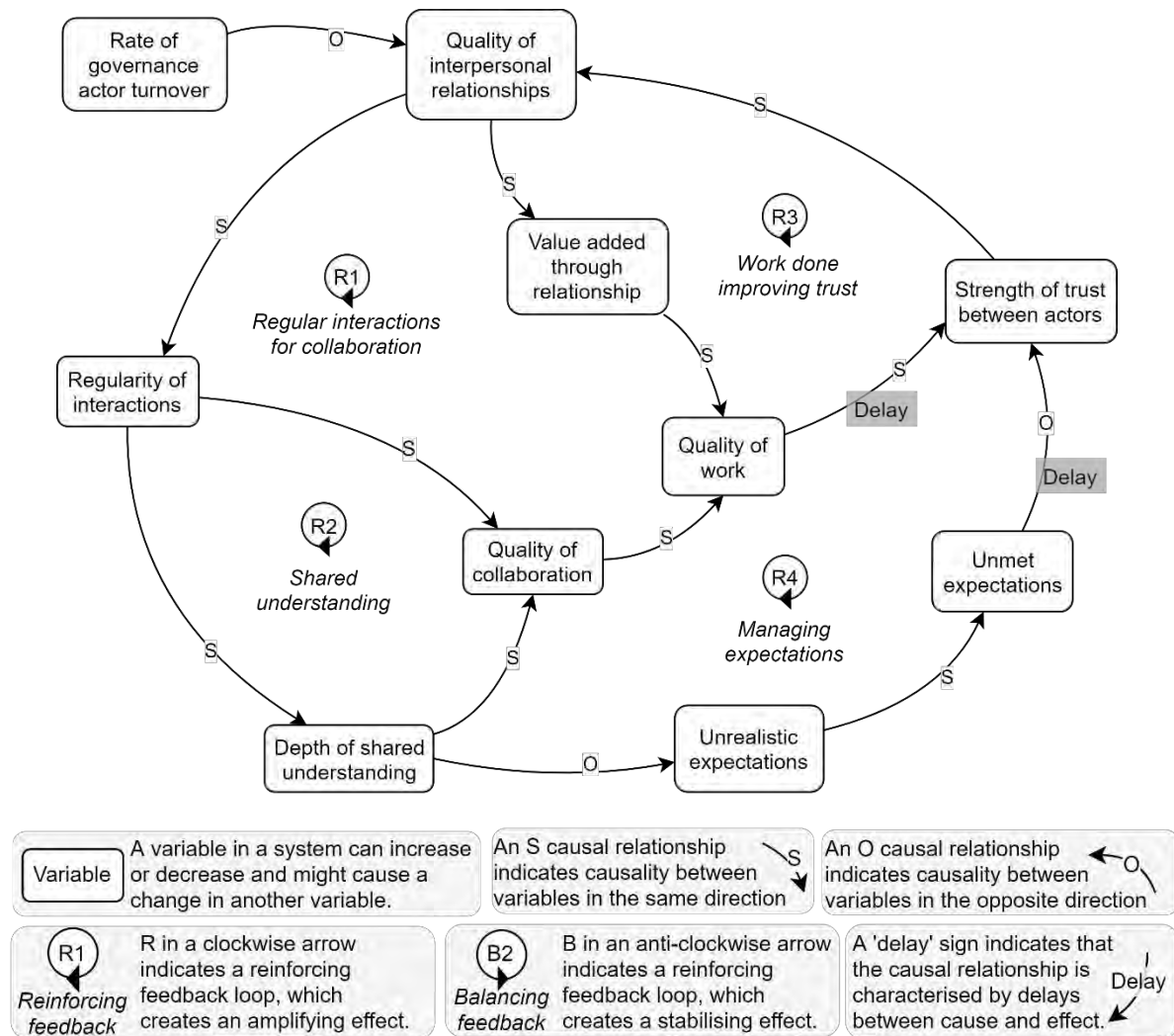


Figure 6.12. Trust and interpersonal working relations: a key variable causal loop diagram (CLD). Diagram created by combining research participants' mental models, including Key Informants #4, #5, #6, & #7, and Interviewees #6 & #7. CLD conventions are in the grey boxes below the diagram. Quality interpersonal relationships characterised by trust and regular interactions that support shared understanding enable collaboration that improves work done (R1, R2, and R3). Shared understanding can also support expectation management (R4).

R3: Work done improving trust shows how high-quality interpersonal relationships increase the value added through a relationship, directly improving the quality of work, thus building trust and interpersonal relationships between actors. **R4: Managing expectations** suggests that regular interactions between actors would enable shared understanding that would reduce unrealistic and thus unmet expectations. Reduced unmet expectations would help to build trust and support interpersonal relationships. In a vicious version, a decrease in the quality of interpersonal relationships would decrease the regularity of interactions, decreasing the shared understanding between actors and creating the potential for unrealistic expectations to build up.

Governance actor turnover influences the *quality of interpersonal relationships*. Research participants indicated that it was easier to build relationships with people in permanent positions who did not change regularly. There is high staff turnover in local institutions, and political actors change every four years. The short political cycles contrast with the traditional leaders, who can hold their positions until they die. Other key informants, such as the CDWs, expanded on the value of working in a place for extended periods. Key Informant #2 said, ‘I am permanently employed here... Councillors come and go, but I will be here as long as I keep my position. That is what makes me to be interested in so many things because I am not going anywhere’. While Key Informant #3 asserted that ‘the area is under poverty, and even though projects have come, they are only there for a short period, so they cannot make a long-term change, and then they go away, and nothing changes’. Key Informant #7, an implementing agent under DFFE, stated that ‘the problem is a staff turnover. You can build a relationship, but then it changes, and the work falls flat’.

The perspectives of local governance actors on interpersonal relationships, trust, and collaboration represented in Figure 6.12 do not grapple with the difficulties and complexities of these messy processes. While it is likely that the participants have all had positive experiences of engaging in collaboration, the proclamation of its benefits must also be interrogated – particularly given that the official position in the policies and legislation is that cooperative governance and collaboration are desirable; and this creates an incentive for actors to say that they believe in collaboration without necessarily acting as though they do.

Balancing diagram: Trust and interpersonal relations

Figure 6.12 explores collaboration, but does not explore any balancing effects that would limit its efficacy. In Figure 6.13, I have simplified Figure 6.12 to show the two core reinforcing loops, and added two balancing loops and one balancing effect. I do not, for example, include external factors such as unrealistic government promises of service delivery, which drive the generation of expectations introduced as part of R4. A fundamental balancing force limiting the runaway benefits of collaboration is the existence of mistrust from *past injustices*, and *ongoing negative interactions* (12th Narrative and 9th Narrative), which continually counterbalance the potential benefits generated from interpersonal relationships and trust between actors.

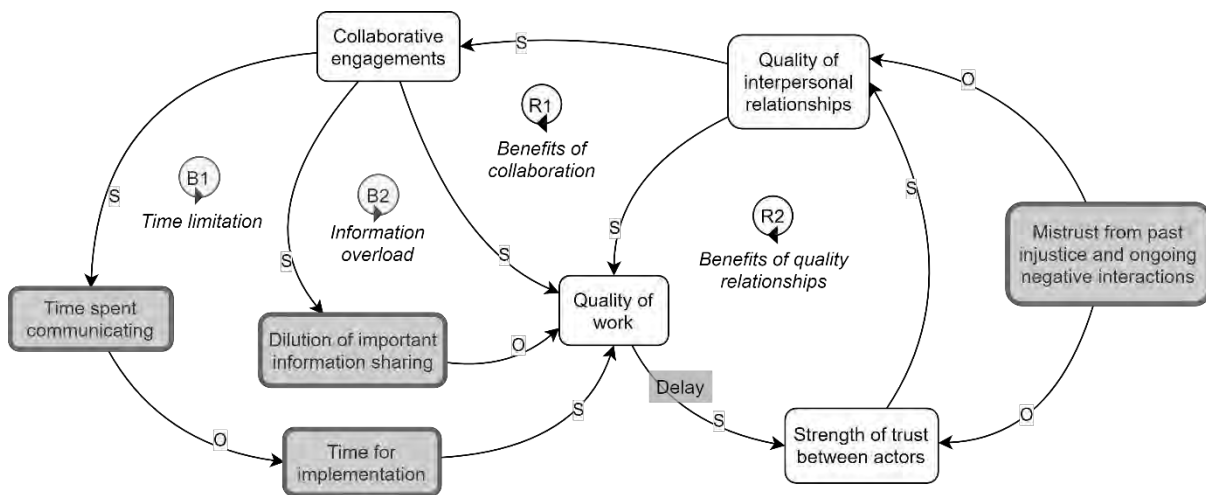


Figure 6.13. Enhanced key variable diagram showing balancing dynamics of collaboration and trust. This diagram builds on Figure 6.12, and adds two balancing effects (B1-B2). The diagram components in grey indicate variables and feedback loops related to the balancing dynamics.

B1: Time limitation indicates that the amount of collaboration and the number of collaborative engagements increase the time spent communicating, reducing the amount of *time available for implementation*. **B2: Information overload** is another balancing effect created by the resources required for collaboration. While Figure 6.12 highlights the value of collaboration between groups of actors, there is also a concern that the over-porosity of boundaries can dilute the communication of important information, which might lead to collaborative processes using more resources than necessary (Clark et al., 2016a).

Section summary

Research participants understand and value trust, and there is an expressed desire to build trust and to collaborate (Figure 6.12). Mirroring the views shown in Figure 6.12, both observation narratives, about the water crisis meeting and about staff turnover, describe actors coming together with good intentions. However, both narratives suggest that the collaborations are faltering owing to distrust (12th Narrative) and other factors, such as rapid staff turnover and instability, which disrupt interpersonal working relationships (Figure 6.12).

6.4.7. Buy-in and accountability

Interactions between governance stories are influenced by actors from different stories buying in and supporting one another, as well as having mechanisms to hold one another accountable. In this section, I explore the following:

- my experiences of buy-in and accountability in a local municipal forum (narrative),
- buy-in and accountability (key variable diagram and balancing diagram), and

- a meeting between actors from multiple levels working under DFFE (narrative).

13th Narrative / Buy-in to a local municipal forum

In August 2019 I attended the Integrated Development Planning Communicators Forum (IDP forum) at the Nqanqarhu town hall. The IDP forum is an open meeting for stakeholders working within the jurisdiction of the local municipality, providing an opportunity to encourage accountability, integration, and networking (Section 5.4.4). The event is hosted annually by the local municipality's public participation unit. At the beginning of the day, around 50 people were present, peaking at about 70, then dropping to around 30 by the end of the day. The governance actors present included representatives of provincial government departments and local and district municipal departments. Traditional leaders, CDWs, and ward councillors represented community interests. Attendees sat in rows facing a front table, where the IDP coordinators and the municipal mayor sat.

The 2019 event started on time, and consisted predominantly of government departments presenting their work during the 2018-2019 financial year. Each presentation was less than five minutes, and concentrated solely on quantitative measures of work done – such as the number of people employed, or kilometres of road maintenance done. Many of the department representatives left directly after their presentation. A more extended presentation was given by the water services provider (Section 5.4.2) from the district municipality, who presented their water services development plan (JGDM, 2019a). Unlike the other presenters, the water services provider engaged with questions and concerns – raised primarily by the ward councillors. One concern raised by the local municipality was that their office receives all of the complaints from community members but is unable to respond; in their reply, the water services authority agreed to monthly reporting to improve the information flow.

The forum was facilitated by the municipal mayor, who had to keep tight control over proceedings to ensure that the meeting progressed. Towards the end, when the number of people in the room had dwindled, the mayor gave a rousing speech about senior managers' lack of buy-in and commitment and the importance of spending time planning together.

Key variable diagram: Buy-in and accountability

Figure 6.14 elucidates the relationship between buy-in and accountability by combining the mental models of four governance actors: a CDW from the lower TsRC (Key Informant #3), the local municipality's IDP manager (Interviewee #4), the Tsitsa Project's integrated planning coordinator (Key Informant #5), and an implementing agent working under DFFE (Key Informant #7).

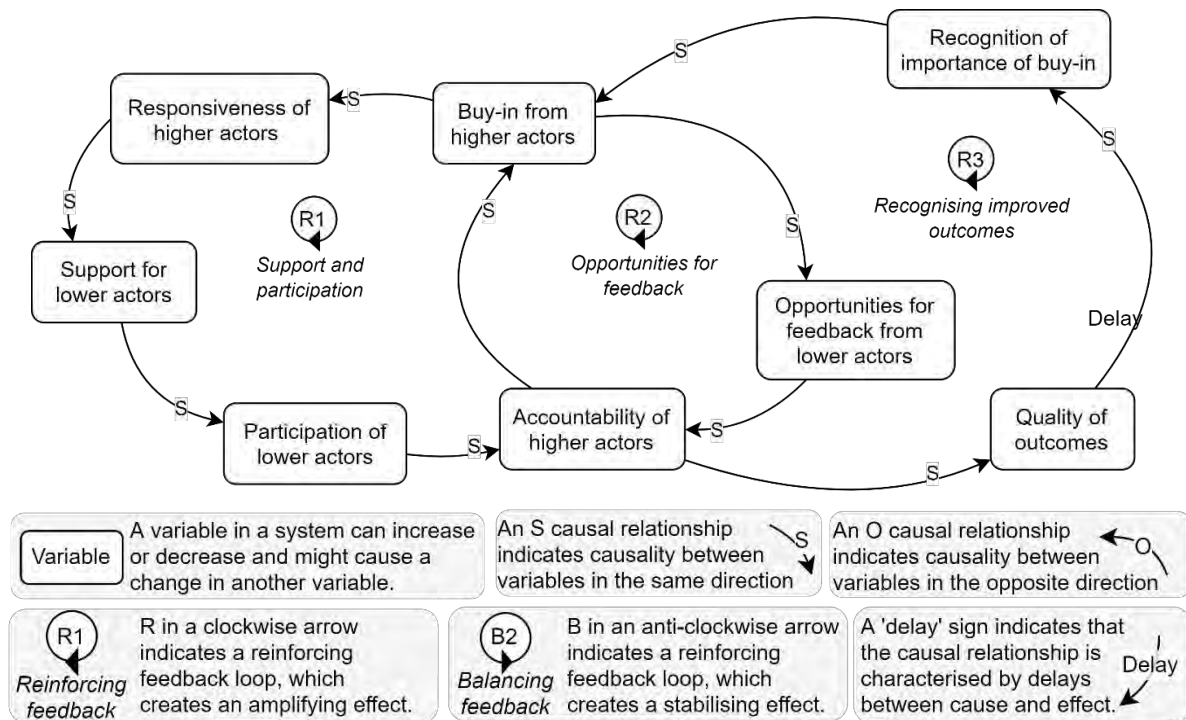


Figure 6.14 Buy-in and accountability: a key variable causal loop diagram (CLD).

The CLD was created through the combination of research participants' mental models (those of Key Informants #3, #5, & #7 and Interviewee #4). By 'higher' and 'lower', the figure refers to where actors are located in the governance system; a simplification would be to say that higher actors work at larger scales (e.g., in the Broader Story) while lower actors work at smaller scales (e.g., in the Village Story). At the centre of the diagram is buy-in from higher actors and the accountability of higher actors, which are linked by three reinforcing feedback loops. 'Buy-in from higher actors' refers to the tendency of actors from higher levels to be present to participate and provide support for lower actors. 'Accountability of higher actors' is the ability of lower actors to monitor and influence the actions of higher actors. The CLD conventions are in the grey boxes below the diagram.

R1: Support and participation suggests that, when higher actors buy in and support lower actors, lower actors participate more, which supports the *accountability of higher actors* (or *downward accountability*). In the virtuous version of R1, an increased *buy-in from higher actors* increases the *responsiveness of higher actors*, which increases *support for lower actors*, thus increasing the *participation of lower actors*. The *participation of lower actors* can support accountability mechanisms that influence the actions of higher actors. Given that higher actors should buy in and support lower-level interactions, an increase in accountability would increase buy-in. In the vicious version of R1, a decrease in buy-in results in unresponsive higher actors and unsupported lower actors, which decreases participation; in turn, the efficacy of accountability mechanisms would reduce, and higher actors would feel less need to buy in. For example, the local municipality's IDP manager struggles to get meaningful engagement from higher-level actors (Interviewee #4). The IDP is a legislated process to enable integrated planning in a way that holds departments and service providers accountable; however, if higher actors are not present, neither objective can be achieved.

My findings suggest a prevalence of vicious cycles, as actors in the Catchment and Village Stories experience neglect by actors from the Broader Story. Village Story actors do not feel supported by the municipal officials and department managers, who in turn do not feel supported by the provincial and national departments. An example of a Village Story actor feeling unsupported by Catchment Story actors is a CDW (Key Informant #3), who stated that her biggest problem is ‘working with departments. I work closely with the community, I take their problems to the department, but... they don’t respond’. An example of a Catchment Story actor feeling unsupported by Broader Story actors is the local municipality’s IDP manager (Interviewee #4), who stated: ‘At times we feel that some of government departments are not prioritising our IDP processes’.

R2: Opportunities for feedback indicates that buy-in from higher actors provides *opportunities for feedback from lower actors*, which enables *accountability of higher actors* (the virtuous version). Alternatively, decreased *buy-in from higher actors* reduces *opportunities for feedback from lower actors*, which means fewer opportunities for ensuring accountability, and thus higher actors are less likely to buy in.

R3: Recognising improved outcomes proposes that improved *accountability of higher actors* would improve the *quality of outcomes*, which would result in increasing *recognition of the importance of higher actor buy-in* (virtuous version). In the vicious version of the feedback loop, a decrease in *accountability of higher actors* can result in reduced *quality of outcomes* and, therefore, no *recognition of the importance of buy-in from higher actors*, leading to *decreased buy-in from higher actors*. The delay in *recognition of the importance of buy-in* would limit the strength of R3, potentially resulting in any improvement in the *quality of outcomes* being attributed to a more superficial change that was enabled by the increased accountability.

Balancing diagram: Buy-in and accountability

Figure 6.14 proposes two balancing feedback loops that might limit the potential benefits of the reinforcing loops suggested in Figure 6.14. *B1: Time limitations* indicates that the availability of actors is limited. Any increased *responsiveness of higher actors* would reduce the *higher actor time available*: the more time spent in participatory interactions; the less time actors have to do other work. With reduced time available, the higher actor is less likely to buy in in the future. In *B2: Power structure threatened*, the increased *accountability of higher actors* increases *higher actors feeling threatened* by lower actors. B2 reduces the efficacy of accountability mechanisms in influencing higher actor buy-in.

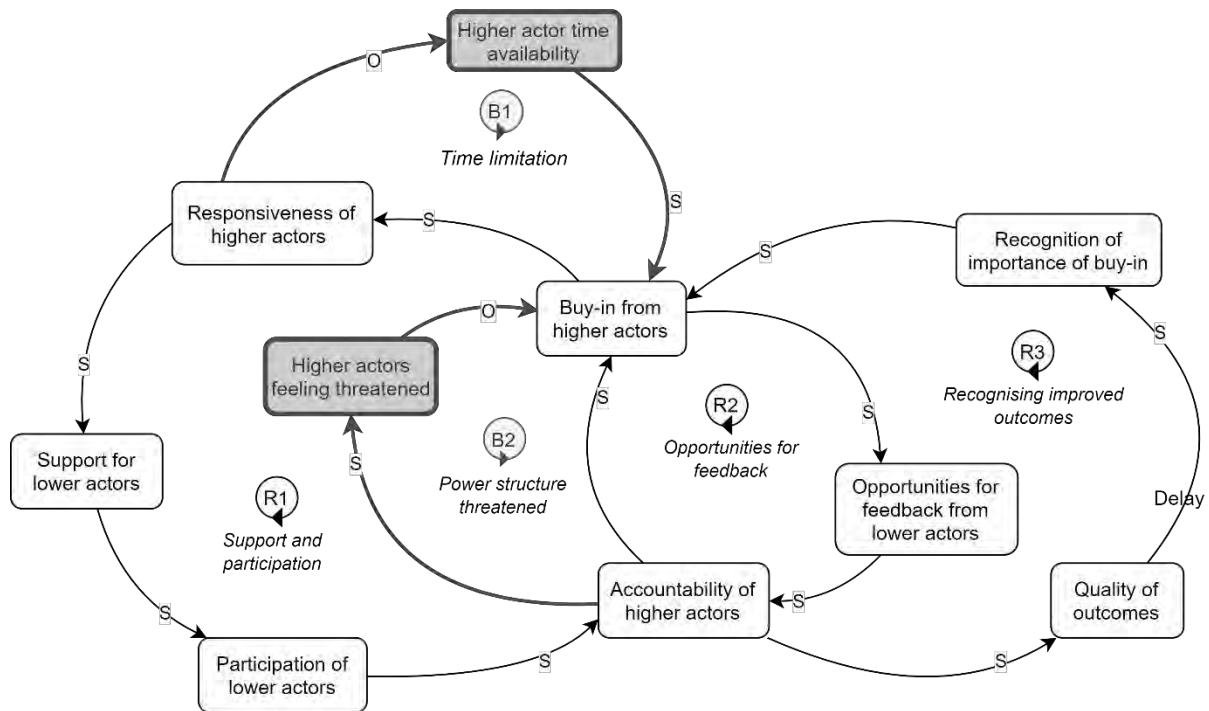


Figure 6.15. Enhanced key variable diagram showing balancing dynamics of buy-in and accountability. Building on Figure 6.14, from which the three reinforcing loops (R1-R3) were derived, Figure 6.15 adds two balancing effects (B1-B2). By 'higher' and 'lower', the figure refers to where actors are located in the governance system: higher actors work at larger scales (e.g., in the Broader Story) while lower actors work at smaller scales (e.g., in the Village Story). The diagram components in grey indicate variables and feedback loops related to the balancing dynamics.

14th Narrative | Multilevel relationships in natural resource management

In November 2021 I attended a meeting convened by DFFE: NRM in Matatiele and hosted by the uMzimvubu Catchment Partnership (Section 5.5.4). The meeting was attended by representatives from Tsitsa Project, national and provincial DFFE, 'Working for Water' implementing agents, and other natural resource management actors working with DFFE: NRM. Ahead of the meeting there had been a series of systemic issues in DFFE: NRM that disrupted implementation work and corroded the existing working relationships between the Village and the Catchment actors, and between the Catchment and the Broader actors. The purpose of the meeting was to discuss the issues and collectively to envision a way forward.

The meeting included actors from all three stories of governance. During the meeting it emerged that instability in the Broader Story has severe impacts at all levels of governance – not only on the fulfilment of contractual obligations and the realisation of project outcomes, but also on the personal integrity, mental health, and safety of participants.

The primary issue being addressed in the meeting was the problem of a change in procurement procedures. National DFFE: NRM had recently shifted from a flexible payment model to a more rigid

procurement for 'goods and services'. The enforcement of more rigid procurement procedures across government has come about in an attempt to reduce corruption and the misuse of finances. The problem with the new procurement model is that it shifts the burden of start-up costs onto the implementing agents, as they must now show evidence of work done before being paid. The practical content of the meeting was to discuss the technicalities of the procurement and the potential ways forward. The meeting was envisioned as a space for the actors to learn together about the issues at hand and to create a shared understanding to support future work together.

I interpreted the meeting as an instance of Broader Story officials buying in to instil confidence and reduce uncertainty in attempts to improve the work and to reduce the pressure on the implementing agents working in the Catchment Story. This intervention was possible thanks to the pre-existing trust between the implementing agents and the broader story officials, which supported the acknowledgement of broken promises and the need to come together. This trust enabled the officials to show up and be present.

In practical terms, the institutional instability was disrupting funding cycles and, therefore, the work being done on the ground and the ability of the implementing agents to fulfil promises made to communities. Representatives are often forced to make promises to keep their employees satisfied. On a personal level, for the representatives, the increased occurrence of broken promises and inconsistent work generated stress, decreased their sense of integrity about their work, and reduced their motivation to work. Representatives in the meeting spoke about sleepless nights and their difficulty getting out of bed when their work was disrupted.

In relational terms, broken promises between community members and the implementing agent led to community dissatisfaction, which impacted the safety of the implementing agents. In the week leading up to the meeting, one implementing agent had been held hostage by an implementation team that had not been paid. Fortunately, robust relations with the local traditional leaders enabled the situation to be resolved before anybody was seriously injured. In this case, trust and social capital made up for the negative consequences of the inconsistent funding. Threats to the implementing agent's safety increased their anxiety and stress and disrupted the continuity of their work, as the implementing agent did not want to engage further with that particular community.

Section summary

A fundamental justification for more participation is the increased accountability that accompanies increased interactions between actors, which can improve information flow and trust in decision-making. However, contributions to enabling accountability can be disrupted when actors from higher levels of governance do not buy into lower-level participatory processes, or when participatory

processes are not designed to enable meaningful engagement (13th Narrative and Figure 6.14). Furthermore, there are inherent limitations to the amount of time that can be spent together and how much actors in positions of power will be willing to share their decision-making power (Figure 6.15).

The findings presented thus far have taken on multiple perspectives to explore variables, patterns, mental models, and structures that influence the system under investigation. I now shift the focus from 'what is' to 'what could be' by presenting a framing for meaningful participatory governance in the context that has emerged from the collected data.

6.4.8. Framing meaningful participatory governance in the Tsitsa River Catchment

My research focuses on the relational and contextual aspects of participatory interaction, making them understandable, significant to participants, and relevant to and coherent in a broader, multilevel governance system. I now provide some specificity to the general framing of meaningful participatory governance (Section 3.3.2) by re-framing meaningful participatory governance on the basis of the collected data (Textbox 15). This framing is a high-level abstraction of some of the characteristics of meaningful participatory governance in the context of land and water governance in the TsRC.

Textbox 15 | Context-specific framing of meaningful participatory governance

This text box summarises some key elements that could constitute meaningful participatory governance as derived from the research conducted in the Tsitsa River Catchment.

- Meaningful participatory interactions are *accessible*, do not restrict the *agency and confidence of disempowered actors*, and open the possibility for participants to become *actively involved* in organisation and facilitation.
- Participants can, or are enabled to, *communicate* in such a way that *all participants understand* what is being communicated.
- Reducing misunderstandings requires *creating a shared understanding* that draws *on the knowledge of all participants*.
- Meaningful engagements are promoted through *balanced facilitation* that allows *open dialogue* but does *not lose touch with the broader objectives of the process*.
- Participation processes allow for the emergence of *interpersonal relationships* within and between levels of governance.
- *Inter-story relationships* are enabled by *higher-level actors supporting* interactions organised by lower-level governance actors.

My context-specific framing of meaningful participatory governance sits within a large body of literature relating to water governance, natural resource management, and environmental governance (Armitage et al., 2012; Woodhouse & Muller, 2017; Baird et al., 2019), collaborative and adaptive governance (Berkes, 2009; Kingsford & Biggs, 2012; Karpouzoglou et al., 2016; Novellie et al.,

2016), critical institutionalism (Cleaver, 2012; Cleaver & Whaley, 2018), and public participation (Cornwall, 2008; Newig & Fritsch, 2009; Godden & Ison, 2019), as well as in the literature focusing specifically on ‘meaningful’ participation in a range of fields (Solitare, 2005; Stewart & Sinclair, 2007; Ruwhiu & Carter, 2016; Haricharan et al., 2021). My framing of meaningful participatory governance is learning-centred, and therefore is informed by research into social learning in general (Reed et al., 2010b; Wenger-Trayner & Wenger-Trayner, 2021) and more specifically by social learning in natural resource management contexts (Prell et al., 2008; Cundill, 2010; Cundill et al., 2014). I discuss my framing in relation to a selection of comparable framings from across this literature in the discussion (Section 6.5.4).

My findings have yielded a framing that elucidates some characteristics that could enable participatory interactions to become more meaningful to the people involved and in the broader governance landscape. In the discussion, I discuss my framing alongside four complementary framings that synthesise insights from a variety of fields (Section 6.5.4). In the real world, realising these ideals requires grappling with local patterns and with larger systemic structures, as discussed below.

6.5. Discussion

The Central Aim of this thesis is to identify high leverage points for meaningful participatory governance. The findings presented in Chapter Six form part of the Central Aim, in that they elucidate the key variables, patterns, mental models, and structures emerging from the collected data, along with an accompanying framing of meaningful participatory governance. In the next three sections (Sections 6.5.1– 6.5.3) I discuss my findings concerning the Central Aim. I use the following questions to frame this discussion: *What do the findings raise as significant obstacles and trade-offs influencing the implementation of meaningful participatory governance? What are some of the broader systemic structures that could help to explain the local manifestations? What are the leverage points that emerge at this point in the analysis?* I then appraise the context-specific framing of meaningful participatory governance with four comparable frameworks in the literature (Section 6.5.4). Finally, I discuss the contribution of the multi-method approach (Section 6.5.5).

6.5.1. Overcoming obstacles and habits of exclusion

Numerous tangible challenges inhibit efforts to foster meaningful participation in the rural TsRC. Many of these challenges are linked to the fact that the TsRC falls within one of the most underdeveloped and under-resourced areas in South Africa (COGTA, 2009; Jacobs & Hart, 2014; Kwenda et al., 2020), a society generally characterised by inequality (Tapscott, 2017; Knight & Rogerson, 2019). I introduce the challenge of accessibility in Section 5.5.3, and explore it further in Section 6.4.2; indeed, recent

efforts to enable the participation of people in governance come up against the roots of the apartheid ideology, which sought to remove black people from every aspect of South African society (Thompson, 2000; Tapscott, 2017). Using English as the formal language of governance excludes many rural residents from participating in formal governance interactions (6th Narrative). This language barrier is exacerbated by the poor quality of English being taught in rural schools (Howie et al., 2016; Pretorius & Spaull, 2016). The use of English is a clear example of the impact of power and knowledge asymmetries. Indeed, analyses of power in participation reveal that participatory interactions can be meaningless (or actively damaging) when powerful actors use them to legitimise decisions already made or to promote a particular agenda by inaccurately framing a development challenge (Cooke & Kothari, 2001; Gaventa, 2006; Cornwall, 2008). I have already discussed the low capacity among local governance actors that places them in a poor position to interact meaningfully with governance actors from 'higher' levels of governance (Section 5.5.4). My findings in this chapter further elucidate the complexities of inter-story and cross-boundary interactions, showing how meaningless interactions can occur as a result of historical divides and distrust, which can nullify decisions made (12th Narrative) or because of a lack of governance capacity to act on decisions made (Figure 6.8).

Another challenge, also stemming from the apartheid system, which neglected the former homelands, is the poor physical infrastructure such as roads and communication infrastructure, which makes the inclusion of rural residents in governance interactions difficult and expensive (Figure 6.7). Information communication technology provides one potential mechanism for overcoming the prohibitive costs of bringing people to the same physical location. The use of communication technology in participatory governance increased dramatically during the COVID-19 pandemic (Gottlieb et al., 2020). Unfortunately, the 'digital divide' (Lembani et al., 2020) meant that the transition to technology-assisted communication was not as smooth in rural areas as in many of the more developed sectors of society. My experiences as an action researcher in the Tsitsa Project raised concerns about the increasing use of information communication technology to facilitate participation – a transition that might exacerbate the existing exclusion rather than reduce it – for example, in attending poorly planned and implemented online events and struggling to reliably communicate with catchment-based actors over the period impacted by the COVID-19 pandemic (Kulundu-Bolus et al., 2021).

While these difficulties are significant and undermine many participatory processes, my findings also reveal clear examples of challenges being effectively tackled and boundaries being overcome. For example, the Tsitsa Project overcame boundaries through the inclusion of practitioners from DFFE in research (Cockburn et al., 2018b), the inclusion of community members in restoration planning (Van der Waal et al., 2018), and the implementation of the Leaning Words processes, which built on an acknowledgement of a lack of common vocabulary and the importance of these fundamental building

blocks of participation (Palmer et al., 2022) (4th Narrative). The Tsitsa Project was also able to overcome accessibility problems by hosting participatory planning workshops in rural areas where rural residents and traditional leaders feel comfortable. CDWs similarly adapted their work (Key Informants #1, #2, and #3), highlighting the short-comings of group meetings in central locations where people feel intimidated, and the benefits of going door-to-door to discuss issues with people one-on-one in a space where they feel comfortable (Sections 5.5.2 and 6.4.2).

Another effective strategy was the investment in skilled facilitators who can create an open dialogue, unravel existing tensions, and create the required space for learning (5th Narrative). While most of my experiences of the positive impact of skilled facilitation in participatory activities were in Tsitsa Project workshops and meetings, I did also attend a ward-based planning session hosted by the local municipality but facilitated by an independent facilitator who created a more engaging environment than other municipal events I attended (11th Narrative). While I was impressed to attend a well-facilitated municipal event, hiring an external facilitator is indicative of the tendency to outsource skills instead of building local capacity (Figure 6.8).

These instances of more meaningful participation suggest that tools are available for overcoming some of the tangible challenges. However, my findings also suggest that limited meaningful participatory governance is currently being practised in the TsRC L&WGov system, thus aligning with the literature on land and water governance in South Africa (Brown, 2011; Stuart-Hill & Meissner, 2018; Mahlati et al., 2019).

Increasing resource allocation to participatory processes is challenging, given the lack of resources and the multiple crises that face local governance actors in the TsRC (Figure 6.8). At the local government level, resource allocation is constrained by corruption and financial mismanagement. For example, the 2017-2018 audit outcomes revealed substantial regression in municipal financial management, with only 8% of municipalities receiving clean audits and over R20 billion being wasted by irregular expenditure (Makwetu, 2018).

Another challenge in grappling seriously with meaningful participation is the limited local governance capacity, often consumed by reactive problem-solving rather than proactive governance (Figure 6.8). The tendency to be reactive rather than proactive in governance suggests the existence of what Repenning and Stermann (2001) call the 'capability trap', in which all efforts are directed towards doing work now rather than putting in the time to build better systems and, therefore, more capabilities for the future. The existence of the capability trap has been noted in another study of local water governance in the Eastern Cape (Clifford-Holmes et al., 2015). Repenning and Stermann (2001) appropriately entitle their article *Nobody ever gets credit for fixing problems that never happened*. The

capability trap is a typical example of an outcome when short-term thinking drives a focus on low-leverage points.

Another fundamental challenge in prioritising participation is that meaningful participatory governance, which includes diverse voices and grapples with complexity, requires substantial upfront resource investment, and does not fit the paradigm of short-term economic efficiency (Sinwell, 2011). Furthermore, it is common to overlook the difficult-to-attribute, long-term benefits of participatory approaches such as relationship- and trust-building (Figure 6.12) and to underestimate the unintended consequences of not creating more meaningful participation, such as community sabotage owing to lack of trust (9th Narrative), the unsustainability of short-term benefits (Figure 6.10), or high transaction costs as a result of a lack of shared understanding.

Another inhibitor of meaningful participation is the systemic inertia caused by centralisation, which can be defined as the concentration of power and resources with a small number of actors (Ribot, 2002). There have been efforts to create genuine democratic decentralisation in South Africa (Section 1.2.1 and 5.4), which is, in theory, characterised by a transfer of power and resources to authorities who are representative of and downwardly accountable to local populations (Ribot, 2002). However, in general, progress towards decentralisation has been slow across Southern Africa (Monkam, 2014; Fuo, 2015; Hove et al., 2019), including in land and water governance in South Africa (Brown, 2011; Stuart-Hill & Meissner, 2018; Mahlati et al., 2019). In the dominant pattern of centralisation, Catchment Story actors find themselves upwardly accountable to Broader Story actors, while not being satisfied with the buy-in of the Broader Story actors to Catchment Story interactions designed to facilitate downward accountability (13th Narrative). While it is not clear exactly how much Broader Story actors should reasonably buy in and be present in local forums, given the substantial time commitments required (Figure 6.15), it is clear that there is a disjunction between the expectations of the Catchment Story actors and the reality, which generates tension. Furthermore, Village Story actors feel that there is an insufficient presence of local government representatives, and view themselves as semi-autonomous but politically disempowered, with limited support from the government (Section 5.6.6).

The poverty and the desperation of Village Story actors for external support leave them open to manipulation or abuse by external actors (Figure 6.10) – a fact about which the headmen were open (Interviewees #2 & #3). Many community members see protest and sabotage (9th Narrative and 14th Narrative) as the only reliable way to push back against interventions they deem undesirable or exclusionary, thus mirroring broader trends of unrest and dissatisfaction in South Africa (Paret, 2018; Mamokhere, 2020; Bhattacharya & Rach, 2021). While protest and sabotage can be effective, some limitations make them a less than ideal tool in the democratic governance process; for example,

protest can add to uncertainty and antagonism, and the gains can be short-lived if unrelated to established institutions. There is also the inherent potential for violence, and the potential for protests to be captured by a group or individual with nefarious purposes (Hossain et al., 2021). Fostering ‘community participation’ is often seen by external intervenors as a way of legitimising an intervention or as a way to limit the ‘problems during implementation’ created by unhappy community members, rather than as an attempt genuinely to engage and to bring the views of community members into decision-making (Figure 6.10). Rather than forcing an external intervenor to engage, protest can break trust and so exacerbate the view of a community as homogeneous or non-rational. Again, these patterns inhibit the shift towards more meaningful modes of participation.

In the TsRC, a setting characterised by communal forms of land use and ownership, the pessimism of a small group looking to benefit themselves can destroy an intervention (9th Narrative). There was an assertion that increasing community understanding and uniting ‘the community’ behind an intervention could help to reduce problems (Figure 6.10); however, fracturing in communities and micro-politics are the norm, because there is rarely a homogeneous ‘community’ making decisions and then sticking to them (Cleaver, 2012; Hall et al., 2014). The underlying assumptions of homogeneity implicit in these ideas are at odds with the recognition of the depth of engagement required to conduct a land- and water-focused intervention in a shared landscape. Pushback or protest from community members could indicate a lack of community unity or the presence of ‘troublemakers’; however, they could also indicate past broken promises. There is a history of broken promises between rural communities and external governance actors, which has contributed to a loss of faith and a lack of willingness to engage in participatory approaches (8th Narrative). Despite the many people who have disengaged, have lost faith, or are actively antagonistic towards external interventions, there is still a substantial willingness to engage, suggesting either hope and resilience in the face of serious challenges or a level of vulnerability that leaves few other choices. A combination of hope and vulnerability likely influences motivations to participate.

A core part of the systemic structures that create systemic inertia are the mental models of actors in the system who perpetuate what they know, have experienced, and are comfortable with (Section 6.1) (Nguyen & Bosch, 2013; Davelaar, 2021). An individual’s mental models emerge in response to stimuli to which they are exposed; therefore, change to a mental model requires new stimuli (Jones et al., 2011). People can talk about and learn meaningful participation as part of a functioning democracy, but few have experienced it. Lotz-Sisitka and Burt’s (2006, p.13) observations, in the context of water resource management, remain relevant today:

‘For most people in South Africa, no matter what their status, democracy is a new system and South Africans are still developing their understanding of this system. A personal and group

responsibility for water management that will lead to meaningful participation is something that needs to be encouraged and developed in almost every South African citizen, from rich white farmers to rural dwellers to the urban middle class to DWAF [Department of Water Affairs and Forestry] employees. One cannot, therefore, assume that participation will take place by simply calling a meeting.’

A further challenge is that participatory governance goes beyond the contained sphere of meetings and workshops and into the even messier real world. Participation happens in the daily activities of governance and in the one-on-one interactions through which relationships are built. My presentation of findings in Chapter Six fell into the trap of focusing on discrete events. The fact is that these meetings are often where decisions are made and where there is substantial data to collect. Beyond the confines of these meetings, the data is more diffuse, and patterns and trends are more difficult to identify. This participation, which happens beyond the facilitated spaces, is harder to study and evaluate and, therefore, provide funding and support. This insight is part of the justification for my focus on participatory governance roles (i.e., spanning and convening [Section 5.7.1]) rather than on a particular institutional structure.

Reprioritising time and resources to participation is necessary; however, one cannot advocate reprioritisation with naïve optimism. One insight is the value of being aware of the broader context and political climate in which points of low change resistance (Harich, 2010) or windows of opportunity (Olsson et al., 2006) might emerge in ways that support reprioritisation. Another insight is that, despite the potential positives of participation, unlimited participation will not provide unlimited benefits. It is important to note that participation needs, at some point, to deliver some benefits (Figure 6.14) to justify itself – indeed, in order to remain meaningful.

6.5.2. Making trade-offs and finding balance

While my overall thesis is based on the premise that more participation of rural residents is required, rigid and forceful implementation of participatory processes is unlikely to succeed in a CSES. An adaptive approach is required to grapple with difficult trade-offs and to respond to change (Section 3.2.3). Therefore, the uncritical promotion of participation without recognition of the inevitable trade-offs and complexities is problematic. The most conspicuous balancing effects are the limitations on capacity, time, and resources to which I have already alluded in this discussion. In the balancing diagrams, I introduce the various limits to participation (Figure 6.11), collaboration (Figure 6.13), and buy-in (Figure 6.15).

Another balancing dynamic is the emergence of balancing feedback loops that result in situations where the efficacy of participation reaches its limits. For example, Figure 6.13 includes the potential for the dilution of information exchange arising from an excess of bridging links between

organisations. Moves towards increased participatory governance aim to enable the bidirectional information, knowledge, and resource flows that are necessary for governance across levels and between groups (Hassenforder et al., 2015b). A move from centralised governance systems towards more participatory forms of governance suggests an increase in bridging links that improve connectivity between separated groups and increase bidirectional connections and feedback mechanisms. Both of these changes imply an increase in information flow – if not the volume of information, then certainly the heterogeneity of that information. Indeed, part of the justification for more decentralised and participatory governance approaches is that they support the generation of information for decision-making with input from a wider range of stakeholders in ways that do not assume that decision-makers hold near-perfect information (Schneider, 1999).

Figure 6.15 also suggests that, if power-sharing is too rapidly effective in sharing decision-making power, then the likelihood of resistance to change from people in power will increase. Centralised systems of governance necessarily generate dependence of small systems on central entities that control the institutions and resources through hierarchies characterised by unidirectional connection (Heinelt et al., 2002). Middle-ground approaches highlight the necessity of capabilities at multiple levels of governance (Patterson, 2017), with less oversight from a central organising body and more feedback from local levels to higher levels. An increase in bidirectional connections implies an increase in responsibility and, therefore, an increase in the capacity required at the local level. While more decentralised systems theoretically support self-organisation and local-level resilience, decentralisation fails when there are no substantive transfers of power nor meaningful mechanisms for accountability (Ribot et al., 2006).

While meaningful participatory governance necessarily engages a plurality of perspectives, there is a pragmatic necessity to achieve practical goals (Daniels & Walker, 1997). Tangible intermediate outcomes are crucial, as collaboration and participation without progress or ‘incremental outcomes’ can be detrimental to trust building and buy-in (Ansell & Gash, 2008). For example, participant fatigue might result from too many ‘talk shops’, a term commonly used by governance actors during my fieldwork to refer to participatory interactions that are all talk and promises without any perceivable benefits or intermediate outcomes (Figure 6.14).

Participatory approaches cannot be applied uncritically. At each step of the way, interventions navigate local dynamics and broader systemic structures. One of the major complicating factors is the broader context of corruption and mistrust, which influences all interactions between people. So how do we move forward in such a context?

6.5.3. *The necessity of creating resilient local networks*

The South African public's trust in their government is currently at its lowest level since 1994 (Moosa & Hofmeyr, 2021). While relations between civil society and formal governance actors pre-1994 created a deep-seated distrust of white people in positions of power, the widespread corruption and service delivery failures post-1994 create distrust of black people in power – for example, the water crisis meeting in Nqanqarhu (12th Narrative), in which the distrust between white business owners and black government officials undermined the good intentions of cooperation. In my findings, one expression of community distrust in external governance actors is the concern about land and resources being stolen (9th Narrative). Given the history of displacement in the TsRC, it is not difficult to imagine how such ideas take root; indeed, other case studies in the former homelands have found similar fears (e.g., Kepe, 1999).

One result of the pervasive corruption is the rigid and bureaucratic structures that are put in place to curb corruption but that only reinforce the dominance of upward accountability and centralisation that contributes to the curtailing of self-organisation. One example is the change in DFFE's procurement contracts (14th Narrative); another is the institutional reforms proposed in response to local government corruption and failures by the national DWS to strengthen the role of the national and provincial government in local water management (DWS, 2022c) (Section 5.4.2). Unfortunately, there is widespread corruption and financial mismanagement at the local level (Makwetu, 2018). The challenge is to find the balance where local-level governance actors have some level of freedom to adapt the formal rules to suit the local conditions while being both upwardly and downwardly accountable to the people they are supposed to serve.

As long as governance is ineffectual and inhibited by corruption, the generation of participatory interactions founded on trust is unlikely to be realised. One trend in South Africa is civil society becoming actively antagonistic towards the government in attempts to enforce accountability; compelling examples include Equal Education in education (Equal Education, 2015) and the Treatment Action Campaign in health (Heywood, 2009). While an aggressive response is sometimes necessary, civil society and formal governance actors will ultimately need to move beyond it to support the emergence of more participatory forms of governance. The participation of actors in processes that are unlikely to have desirable outcomes will increase distrust and dissatisfaction; however, participatory governance forms part of increasing accountability. Which comes first? It is likely that, rather than waiting for a trustworthy government, civil society participation and accountable institutions must emerge simultaneously. Building relationships and trust at multiple levels simultaneously would likely require accessing the highest-leverage points (Meadows, 1999) and taking

‘a leap of faith’ in ways that transcend the past patterns and paradigms that drive system function – but in the full knowledge that there will be disappointments along the way.

While acknowledging the challenges, complexities, and limits to participation, I now reassert the value of aiming for meaningful participation by further exploring my contextually posited framing of meaningful participatory governance.

6.5.4. Comparing framings of meaningful participatory governance

I now discuss my context-specific framing of ‘meaningful participatory governance’ (Section 6.4.8) by comparing it with four other frameworks that have been created to support the design and evaluation of participatory processes (Section 3.3.1). My intention is not to critique other framings based on my single case study, but to position my framing in the literature to enrich my conception of meaningful participatory governance. The four framings were selected from across the range of the literature and of theoretical positions, providing diverse theoretical perspectives to analyse my framing (Table 6.5).

Table 6.5. Frameworks for design and evaluation of participatory and collaborative governance. The table compares my own six sets of key variables (according to which the table is organised) with four synthesis framings – two for monitoring and two for design.

	My findings	Indicators/criteria for evaluation		Guidelines/recommendations for design	
Key variables	Meaningful participatory governance	Collaborative planning (Innes & Booher, 1999)	Social learning and co-management (Cundill, 2010)	Public participation (Bryson et al., 2012)	Participation in environmental management (Vente et al., 2016)
Accessibility and physical presence	Processes are accessible to the most vulnerable and most affected. Information flows across divides to promote inclusion.	Groups are represented.	There is a reliable information flow. Information is shared and understood. Decision-making is perceived as open and fair. Information sharing is valued.	Analyse and involve stakeholders. Use information, communication, and technology to support participation.	Select participants carefully (representative and diverse). Provide relevant information. Adapt location to participants.

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Key variables	Meaningful participatory governance	Collaborative planning (Innes & Booher, 1999)	Social learning and co-management (Cundill, 2010)	Public participation (Bryson et al., 2012)	Participation in environmental management (Vente et al., 2016)
Shared understanding and facilitation	Processes are understood by all. Language and terminology are inclusive. Facilitation supports open dialogue and learning.	Challenges status quo and generates creative ideas. Seeks consensus based on dialogue. Results in learning. Produces understandable information.	Common interest and shared norms. Listen to all viewpoints, willing to engage and learn. Leaders and facilitators are honest and not corrupt.	Clarify the purposes of participation. Use inclusive processes to engage diversity productively. Foster effective leadership to legitimise, champion, and facilitate.	Make participation attractive and easy. Use independent facilitators. Adapt language and process to participants. Respect and critically evaluate all knowledge.
Governance capacity and resources	Actors have the capacity and resources to act on decisions made.	Driven by real, practical tasks. Incorporates reliable information. Resource efficiency.	There is secure access to resources. There is long-term investment, including decision support and training.	Ensure that the process fits the context and problem. Seek resources for and through participation. Align all elements.	Ensure realistic economic support that is required for implementation.
Participation and incentives	Actors benefit from proceedings. Incentives promote self-organisation.	Self-organising and directed by participants. Supports future self-organisation.	Actors agree on the problems to be solved and the potential benefits. Contributions are rewarded.	Create appropriate rules and structures to guide the process.	Provide participants with actual decision-making power.
Trust and interpersonal relationships	Trust is built throughout. Support the building of interpersonal relationships.	Engaging and dialogue generating. Creates social capital, and generates partnerships, collaborations, and networks.	Trust building takes place between groups. Actors respect one another's viewpoints. Leaders are trusted and recognised.	Manage power dynamics through trust building.	Foster trust among participants.

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	My findings	Indicators/criteria for evaluation		Guidelines/recommendations for design	
Key variables	Meaningful participatory governance	Collaborative planning (Innes & Booher, 1999)	Social learning and co-management (Cundill, 2010)	Public participation (Bryson et al., 2012)	Participation in environmental management (Vente et al., 2016)
Buy-in and accountability	External actors' buy-in to local processes. Enable accountability.	Generates high-quality agreements. Creates political capital.	Involve actors from within a community and external actors. Networks connect local bodies to outside partners.	Build process legitimacy among stakeholders. Develop evaluation measures.	Promote long-term commitment from all participants.

All four of the other framings suggest that *careful participant selection can ensure the representation of the stakeholder groups and the diversity of perspectives*. My framing emphasises the practical accessibility of events and the necessity of information flow to ensure that all groups are aware of the opportunity. Information flow is also highlighted by three of the other framings. My focus on practical details is a product of the grounded perspective of my analysis and the particular challenges in a rural context that is characterised by large spatial distances, poor infrastructure, and low mobility.

I emphasise *the value of the inclusive use of language and terminology*, which is mirrored across the framings that highlight the necessity of producing understandable information and using inclusive tools. Collective communication resources are the foundation of participation; indeed, participation can broadly be defined as the 'interaction among individuals through the medium of language' (Webler, 1995, p.39). I do not suggest that the other authors ignore language and communication resources, but rather that my analysis includes a finer level of detail about language in participatory spaces.

I agree with the other authors who *highlight learning as a central aim of participating*. Innes and Booher (1999) focus on building consensus, which includes experimentation, learning, changing perspectives, and building shared meaning. There is consistency among the authors about the necessity of having open dialogues and respecting everybody's point of view in order to learn from one another. Kersten and Ison (1998) make a helpful distinction between debate, which tends to shut down engagement and deepen divides, and dialogue, which is dependent on relationship building, overcoming prejudices, open listening, and space for the expression of personal understandings, as

well as openness to alternative ideas and understandings of the situation. Vente et al. (2016) emphasise critically engaging with diverse perspectives as essential to coming to coherent conclusions. Innes and Booher (1999) emphasise the need to disrupt the status quo – indeed, participatory governance, which distributes decision-making power, is fundamentally about reframing how people imagine their futures and their contributions to those futures.

Beyond learning together, the *co-creation of knowledge and solutions is an ideal to strive towards* (Van Buuren et al., 2019). While none of the framings refers to co-creation, the explicit recognition of the necessity of open dialogue, respecting one another's viewpoints, and learning together are all part of co-creating knowledge. Co-creation is commonly posited as a way to address the dominance of one form of knowledge over another by creating a situation where knowledge forms can interact fairly (Leibowitz, 2017). Knowledge production and its application to address complex problems cannot follow the conventional approach, in which academics generate knowledge that is then transferred to communities and practitioners (Roux et al., 2006). Given the importance of context in complex systems, knowledge needs to be produced and used locally and be sensitive to meaning within the system (West et al., 2019). Centring knowledge co-creation as a way of enabling meaningful participatory interactions is in line with viewing participation as transformation, as it implies that participants will generate knowledge and therefore will shift and grow in their understanding (Hickey & Mohan, 2004; Fritz & Binder, 2018).

All five framings, including my own, *stress the importance of facilitation in participatory interactions*. Some provide specifications – for example, that independent facilitation is desirable (Vente et al., 2016). I introduce two roles of a facilitator: as mediator of conflict and as enabler of learning (5th Narrative). Creating criteria for participation can be difficult, as facilitation styles differ, and different contexts might call on diverse skills. For me, acknowledging the importance of facilitation aligns with reframing participation as social learning, which is a two-way dialogue that needs to be facilitated rather than a one-way presentation.

All four of the other framings suggest either that *participatory interactions should be framed around common problems* (be problem-driven) or that the purpose needs to be clarified to ensure a common interest among participants. Indeed, long-term participation is predicated on participation processes addressing relevant problems or opportunities (Solitare, 2005). There is convergence around the idea that interactions should emerge out of a shared desire and should, in essence, be self-organising. Ensuring and clarifying common interests among participants is key to gaining buy-in and support; however, it is possible that being too rigid about the goals of an organisation grappling with complex problems in open systems would limit the potential for later adaptation and self-organisation (Cilliers, 2000).

Participatory interactions require rules and structures. While my framing and that of Innes and Booher (1999) emphasise the need for incentives and benefits that support self-organisation, the other authors specify more practical examples, such as actors collectively agreeing on the problem to be solved, providing participants with real decision-making power, or ensuring that participants who contribute more are compensated more (Cundill, 2010). These practical suggestions provide some detail for how self-organisation can be supported.

There is agreement that participation *should enable participant agency and create the conditions to support self-organisation that can enable problem-solving and response to unforeseen changes.* Enabling agency and self-organisation require balancing power in ways that redefine governance roles away from benefactor and beneficiary to collaborators. One challenge is that self-organisation of lower-level actors can lead to subsystem goals that conflict with larger system goals. In other words, empowering a localised group to act in their interest could create conflicts with the larger groups in which they are embedded. What follows is that openness to the possibility of genuinely empowered participation includes openness to the potential for seemingly unconstructive outcomes from one perspective or level of analysis. This concept is undoubtedly difficult to grasp within the confines of conventional linear interventions, and the genuine rigorous reflexivity required might be beyond the capability of most governance actors. The inherent difficulty of genuinely empowering participation contributes to Cooke and Kothari's (2001, p.15) view that 'authentic reflexivity requires a level of open-mindedness that accepts that participatory development may inevitably be tyrannical, and a preparedness to abandon it if this is the case'.

Although implied by all four of the other framings, two specifically refer to the *need to adapt to local contexts and fit the participants and the problem.* While enabling transformative participatory governance is aimed fundamentally at shifting the structures of social and institutional relations (Hickey & Mohan, 2004), transformation still sits within the existing social, ecological, and institutional contexts. Institutional bricolage highlights the importance of local and informal institutions, and suggests acknowledging and using the informal rather than trying to create new governance systems as if implemented on a blank slate. Cleaver (2012) refers to the process of naturalisation through which societal features are considered natural and part of the system. In the context of embedding participatory governance institutions, naturalisation means working with people to create institutions that are accepted into the local domain of governance. The concept of contextual and problem fitting is comparable to the concept of finding an optimal form of participation in a given context (Cornwall, 2008). Thinking in terms of fit and optimisation still promotes participatory governance, but acknowledges that protracted interactions are not always necessary or desirable.

All five framings include reference to the *funding and capacity required for organisation and facilitation*, as well as the resources needed to act on outcomes and agreements – one way of fitting into the local context. Only Innes and Booher (1999) state the need to be as resource-efficient as more conventional, non-participatory governance processes; but that is somewhat contrary to my assertion that more participatory processes will, in the short term, be necessarily more time- and resource-intensive than the dominant forms of superficial participation being practised. Enabling meaningful engagements takes time and resources (Cvitanovic et al., 2016; Nguyen et al., 2019). The contradiction points to the challenge of comparing and evaluating participatory interactions that are based on conventional measures.

Building trust is a crucial outcome of participatory governance (Schneider, 1999; Heinelt et al., 2002), and features in all five framings as a way to build social capital, cross boundaries between groups, and manage power dynamics – or as an end in itself. One challenge is that change towards the desired state in CSES takes time (Cilliers, 2006; Palmer & Munnik, 2018), meaning that substantial trust is required to maintain cooperation and collaboration. The necessity of trust is evident in land- and water-related interventions, where large-scale sustainable benefits take time to come to fruition (Tsitsa Project et al., 2021f).

Buy-in and commitment to the process are vital to sustaining a process and ensuring accountability. Bryson et al. (2012) specifically highlight the value of building the legitimacy of a process among stakeholders when attempting to gain buy-in and commitment. As already mentioned, developing evaluation measures is another way to support action and outcomes related to a participatory process. Other suggestions include involving external actors to promote accountability, garnering support from external entities, and generating political capital. Innes and Booher (1999) suggest the need for high-quality agreements to support clear accountability, which comes back to the idea of being clear about the purpose and having a shared vision.

My framing of meaningful participatory governance in the research context (Section 6.4.8) aligns with the four comparable framings explored above and with the broader literature on what constitutes meaningful participation (Section 3.3.2). I have specifically highlighted the practical details of meaningful participatory interactions, such as ensuring that everybody can attend and that there are sufficient interpretive resources to engage meaningfully. Indeed, how much participant support should be provided (including financial compensation) has been noted by other authors as a contentious issue without a simple solution (Stewart & Sinclair, 2007). The extreme poverty and the history of the TsRC and the former Transkei homeland have highlighted these practical concerns related to supporting marginalised groups to access participatory processes, which could suggest that they are under-considered in other contexts where they are less obvious.

What constitutes meaningful participation will vary between contexts; therefore, learning from diverse case studies provides valuable perspectives on participatory governance practice. Increasing the understanding of a wide range of influential variables is particularly valuable, as they are likely to be interdependent, with the degradation of one being detrimental to many of the other elements (Stewart & Sinclair, 2007). A rich knowledge of the influential variables across contexts might help researchers and practitioners to identify the aspects causing problems. Framings and frameworks can support interventions; however, interventions must necessarily be informed by multiple perspectives, including the local perspectives of actors who have previously grappled with the problem. The method applied in this chapter provides a range of insights into grappling with multiple perspectives.

6.5.5. Multiple methods to explore perspectives

A feature of the method presented in this chapter is the use of two different approaches to explore the same phenomenon: the mental model elicitation with diagram-based analysis, and the observations with thematic analysis. The two sources of data and the two methods of analysis created the opportunity for triangulation to support the development of the findings and the conclusions. I now briefly clarify the perspectives that are represented, and then explore some limitations of the method.

The multiple methods allowed me to compare my own experiences with those of other governance actors. While the data were overlapping and supportive, the different data sets focused on distinct aspects. The governance actors' mental models were most helpful in providing detail of the dynamics surrounding participatory interactions, such as the challenges of organising and getting everyone together (Figure 6.7), the governance capacity required (Figure 6.8), and the challenges of enabling accountability (13th Narrative). These are difficult to observe, as they play out predominantly 'behind the scenes'. My observations, in contrast, allowed for insight into specific participatory interactions and into the internal dynamics, such as language use and facilitation, that did not feature in the interview data.

The use of both diagrams and narratives enabled complementary modes of enquiry. The diagram-based analysis supports process tracing, in which chains of causality are generated from detailed descriptions (Harding & Seefeldt, 2013; Tomoaia-Cotisel et al., 2022). The diagramming conventions place a focus on the logic and consistency that require detailed and iterative analysis. The thematic analysis complements the diagram-based analysis by providing a way to organise a large volume of qualitative data. Through coding and theme generation, the thematic analysis supports synthesis, which is expressed through narratives. While the narratives do not provide the same level of detail and causal exploration as the diagrams, they provide context, and support the elucidation of a fuller picture of the complex problem situation.

While it is impossible to capture all perspectives, some perspectives were inadequately represented in the analysis. For example, my analysis of community members' views is limited to the informal conversations during events and to my interactions with the Tsitsa Projects CLOs (5th Narrative). I did not conduct any direct diagramming with community members, nor explore any of the variables influencing community participation in detail through their perspectives. Community motivation for participation is one example of a variable that I did not study in depth. My sample was limited by the onset of the COVID-19 pandemic, which made further interviews impossible. In this context, I did not consider doing remote interviews using information communication technology to be viable. However, two complementary studies were conducted by GovCoP research collaborators who engaged more directly with community members on their experience of participation (Ralekhetla, n.d.; Mtintsilana, 2019); and there will be opportunities for further research that compares and contrasts my analysis with these studies and that focus more directly on individual participant experiences of participation.

My research approach foregrounded the importance of iteration in generating rigorous and coherent findings (Section 4.2); indeed, iteration is valued in action research and in transdisciplinary research (Holwell, 2004; Baker-Shelley et al., 2017; Ison, 2017; Pricope et al., 2020). In my analysis, the late iteration, which involved identifying balancing loops, enriched the analysis and ultimately shaped the discussion. However, iteration has challenges, as each iteration inevitably reveals nuances and new areas to explore. This desirable feature of iteration can become a problem, as endless iteration can cause an engaged and transformative study to become time-consuming and detached. My recognition of the challenge of relying on iteration highlights the need to design a study carefully and to set constraints on the number of iterations.

6.6. Conclusion

I conduct a systemic analysis of participation by identifying key variables (Section 6.4.1), elucidating patterns, structures, and mental models through diagrams and narratives (Section 6.4.2 to 6.4.7), and exploring some of the structures that influence South African society and how they influence the TsRC L&WGov system. I also investigate what constitutes meaningful participatory governance (Section 6.4.8 & 6.5.4). The substantial alignment between my findings (which represent my observations and the perspectives of local governance actors), the academic literature, and the legislation seem to suggest a level of coherence across the multilevel governance system. *What, then, are the problematic issues?* I have discussed some of the local balancing effects and trade-offs that hinder substantial investment in participatory processes that have the potential to be meaningful (Section 6.5.1). My findings contribute descriptions of emerging instances of participation in South Africa and, therefore,

the efforts to find and illuminate new pathways that shift actors' experiences and mental models of what is possible.

In this uncertain terrain, windows of opportunity seem scarce. Persistence is vital (Cilliers, 2006; Tsitsa Project et al., 2021f); however, in order to create more resilient governance systems (that remain relatively stable in response to shocks and changes), persistent effort needs to be matched with adaptability (the capacity to adjust in response to change) and transformability (the ability to create new stable states and new development trajectories) (Folke et al., 2010). Building resilience is necessary to transition the current malfunctioning governance system into one that can anticipate and respond to change and generate local solutions that can inform broader governance. I explore resilient transitions and transition pathways in more depth in Chapter Seven. Identifying patterns and structures that influence participatory governance does not provide a 'true' representation of participation; instead, it provides a requisitely simple understanding of the system of interest (Section 4.1.2) to support the identification of places of high leverage to enable transformation. Identifying leverage points and exploring how they might work is the overarching aim of this thesis, and it is undertaken in Chapter Seven.

CHAPTER SEVEN | Leverage points for meaningful participatory governance

In this chapter I seek to achieve the central research aim: to *identify leverage points to support the emergence of participatory governance in the TsRC L&WGov system* (Section 7.1). The body of the chapter begins with a theoretical background to the leverage point framework (Section 7.2), after which, I describe the methods applied (Section 7.3). I then present the findings (Section 7.4) and discuss them (Section 7.5).

7.1. Introduction

The optimistic vision of a ‘new South Africa’ that emerged in the post-1994 period represented the potential of a more just and equitable society (Section 1.2.1). While South Africa has undoubtedly undergone multiple transformations since 1994, developmental challenges persist, such as unequal access to resources and exclusion from governance processes (Section 6.5). The Tsitsa River Catchment (TsRC) in the former apartheid-era homelands (Section 2.1.2) exemplifies the observation that substantive changes envisioned in formal legislation do not always trickle down (Denby et al., 2016) from the national and provincial levels to local governance (Section 5.7.1). For land and water governance in South Africa to become more meaningfully participatory, transitions are required across multiple scales and levels (Section 3.5). The question is: *How do we make the large-scale and desirable systemic changes that can be sustained over time?*

It is generally recognised that transitions start in innovative niches where the rules are more flexible (Geels, 2010) and adequate preparation can be made to access the windows of opportunity that are required to transition into a new phase (Olsson et al., 2006; Biggs et al., 2008a). When a local innovation takes off, it can influence the wider regime by which a system operates, which can then influence broader society (Geels, 2010).

The TsRC has emerged as an innovative niche, with interest driven by its valuable water resources, giving the potential to support local development for the benefit of local people and ecosystems. However, linked social-ecological challenges limit the usability of the water resources in the TsRC (Section 2.1.1). The Tsitsa Project was initiated as a pilot project (*sensu* Vreugdenhil et al., 2010) to address these challenges (Section 2.2). A central component of the Tsitsa Project has been supporting participatory governance that enables desirable long-term changes, led by the Tsitsa Project’s Governance Community of Practice (GovCoP) (Section 2.2.1). Supporting the work of the GovCoP, my

research addresses the question: *From a systemic perspective, how can the work of the Tsitsa Project be enhanced and sustained through meaningful participatory governance?*

Meadows (1999) describes a framework of leverage points, suggesting that some points of intervention are only likely to enable minor system changes, while only high leverage points in a system can enable fundamental transformations for sustained improvement (Abson et al., 2017; Leventon et al., 2021) (Section 3.4). The theories that underpin the leverage point framework guided my research as I will introduce in Section 7.2.

7.1.1. *Realising the central research aim*

In this thesis I assert that the rural residents of the former homelands of South Africa do not have enough influence in the governance of their natural resources. They are politically marginalised. An improved situation would be one in which these rural residents had more decision-making power, ownership, and capabilities to participate meaningfully in governance. In other words, I view participatory governance more as an end in itself rather than merely a means to an end.

The Central Aim of my research is to *identify leverage points to support the emergence of participatory governance in the TsRC L&WGov system*. This aim has two connected parts: the first is the *identification of leverage points*, and the second is the active use of these identified leverage points in *support of the emergence of participatory governance in the TsRC L&WGov system*. My aim actively to support the emergence of participatory governance aligns with the practically oriented transdisciplinary philosophy and methodology underpinning my work (Section 4.1).

I begin by identifying leverage points in the system of interest – i.e., land and water governance (L&WGov) in the TsRC. This identification process builds on the transdisciplinary governance mapping in attaining Objective One (Chapter Five) and on the systemic analysis in realising Objective Two (Chapter Six). The identification of leverage points in the context is in line with the Central Aim of my research; however, mere identification provides an overly complex and practically unusable picture of the available leverage points in the context.

To meet the second part of the Central Aim, I generate a practically oriented and context-specific framework for supporting the emergence of participatory governance in the TsRC. I refer to this as the *five-point framework* (Section 7.4.2), and it comprises five leverage points that influence participation in land and water governance and is intended to support engaged praxis, and the design or evaluation of participatory governance interventions. The five-point framework is designed to be a tool that is actually used in participatory governance interventions in the TsRC. Systems thinking is often described as a set of tools and ways of thinking that can be used and adapted to suit a specific context (Ison, 2008). The five-point framework can be added to this ‘systems thinking toolbox’.

7.2. Leverage points for systemic transformations

The leverage point framework describes places to intervene in a system (Textbox 16), and suggests that tinkering with internal parameters and system dynamics without shifting the dominant underpinning paradigms can only result in minor system change (Meadows, 1999; Abson et al., 2017). The theory in this section builds on Section 3.4.

Textbox 16 | Leverage points for transformations

The 12 places to intervene in a system defined by Meadows (1999) are divided into the four system characteristics defined by Abson et al. (2017).

Intent (high leverage for enabling deep systemic change)

1. The power to transcend paradigms.
2. The paradigm out of which the system arises.
3. The goals of the system.

Design

4. The power to add, change, or self-organise structure.
5. The rules of the system.
6. The structure of information flows.

Feedbacks

7. The gain around positive feedback loops.
8. Balancing negative feedback loops.
9. The length of delays relative to the rate of system change.

Parameters (low leverage)

10. The structure of material stocks and flows.
11. The size of buffer stocks relative to their flows.
12. Parameters and material characteristics.

In this chapter I draw on the various metaphors that have been used by other authors to describe the leverage point framework (Nguyen & Bosch, 2013; Abson et al., 2017; Chan et al., 2020; Davelaar, 2021). Metaphors can be a powerful tool to communicate complex ideas (Newell, 2012; Cockburn et al., 2018b; Davelaar, 2021). ‘Indeed, metaphors are the most primitive, most elusive, and yet amazingly informative objects of analysis. Their special power stems from the fact that they often cross borders between the spontaneous and the scientific, between the intuitive and the formal’ (Sfard, 1998, p.4). Meadows (1999) used the metaphor of a lever to describe her list of places to intervene in systems. Since then, various metaphors have been used to describe and highlight aspects of the leverage point framework, such as a lever (Section 7.2.1), an iceberg (Section 7.2.2), and an onion (Section 7.2.3).

7.2.1. Lever: A human tool

The lever is the foundational metaphor, as implied by the use of the term ‘leverage.’ A lever is used in mechanical systems to create a mechanical advantage, as shown in Figure 7.1. As Archimedes famously said: ‘Give me a lever long enough and a fulcrum on which to place it, and I shall move the world’. Leverage is used metaphorically in everyday language, making the metaphor accessible.

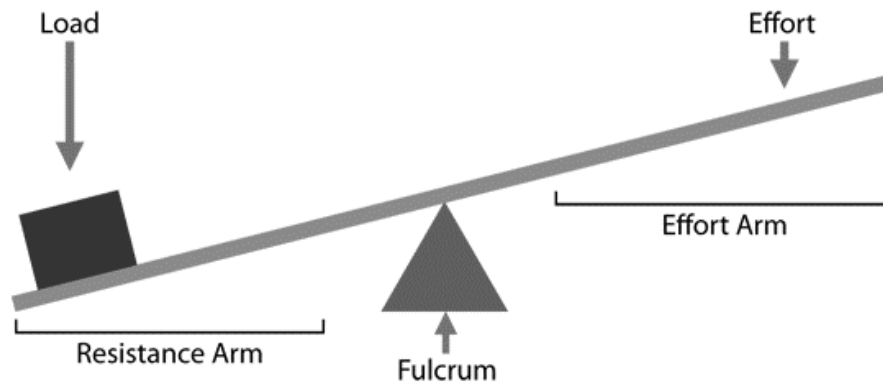


Figure 7.1. Mechanical advantage: a key to understanding the lever metaphor.

The upward force on the load (left), created by the effort (right), is a product of the force applied (effort) and the distance of the applied force from the fulcrum (effort arm). Therefore, to increase the upward force on the load, one can increase either the effort or the length of the effort arm. (Image sourced from: <https://drjoesworldofwork.weebly.com/levers.html>)

The lever metaphor in systems thinking proposes that it is reasonable to search for points of high leverage when trying to overcome system inertia in order to create system-wide change, and suggests that system change can be created with less effort through the use of high leverage points. ‘Effort’, ‘force’, and ‘load’ in the metaphor refer to the resource requirements to make a change. ‘System inertia’ is another concept borrowed from Newtonian physics (Figure 7.2). ‘Inertia’ refers to the tendency of an object to resist change in motion; according to Newton’s first law of motion, if an object is stationary, it will remain stationary; if it is moving, it will continue moving unless a net force acts on the object. In systemic terms, inertia is the tendency of a system to resist change. Change resistance can interfere with the efficacy of any leverage point. Some types of system inertia result from path dependencies, such as built infrastructure or existing skills, while some system inertia results from active resistance driven by agents who benefit from the status quo. In other cases, our mental models lead us to the wrong conclusions about how to intervene in a system (Sterman, 2002).

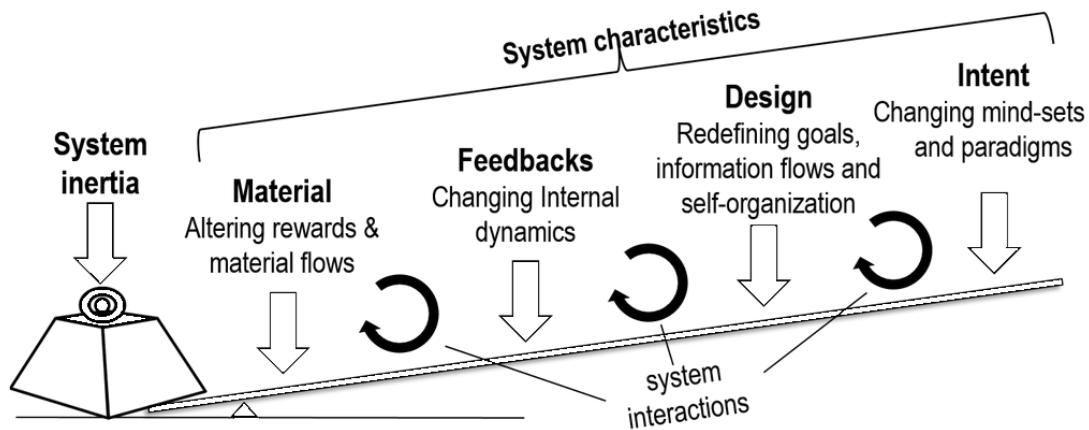


Figure 7.2. The lever metaphor depicts places of high leverage.

Material leverage points that are close to the fulcrum are low leverage places to intervene, while intent leverage points are high leverage. The image also shows interactions between the leverage points, suggesting that they are not discrete (Abson et al., 2017).

The lever metaphor is useful when considering force and system change at a whole system level. However, I explore the forces at play in more detail below. While the lever depicted in Figure 7.2 shows 'system inertia' as a balancing force, it does not specify any other forces. According to Harich (2010), discussions about leverage points too often focus on the 'make the change' part or the 'force required for implementation', while the multiple forces working on a system are, which might work against efforts to change the system, are inadequately considered. Harich (2010) suggests that change resistance is often the most important force to consider. If change resistance is low (i.e., the resistance arm is short), then the potential impact will be big compared with the required force. The emphasis on engaging with points of low resistance highlights the impact of politics on problems and solutions; interventions that align with the dominant politics are considered 'windows of opportunity' for action (Kingdon, 1995; Olsson et al., 2006; Biggs et al., 2008a).

At the heart of the leverage points framing is that material interventions require much work, while paradigm shifts can occur rapidly without massive physical or financial input. What is less often acknowledged is that paradigm shifts are the most difficult lever to access. Meadows acknowledges this when she states: 'The higher the leverage point, the more the system will resist changing it... Magical leverage points are not easily accessible, even if we know where they are and which direction to push on them' (Meadows, 1999, p.19). Abson et al. (2017) also acknowledge that with increasing effectiveness in creating system-wide change comes increasing immutability, which refers to how difficult something is to change.

The positioning of paradigmatic shifts as the ultimate place to intervene would suggest paradigms as the place for interventions to change behaviour. Many seem to agree (Fischer & Riechers, 2019; Ives

et al., 2019). This viewpoint suggests that intent drives behaviour change. However, Manfredo et al. (2017) suggest that intentional intervention at the level of societal values is unrealistic, and advocate a focus on behavioural interventions to drive sustainable change. While I would tend to agree that genuine transformations require change at the level of paradigms, working at that depth without interacting with more easily accessed leverage points could stray into the realm of the unrealistic.

In applying the leverage points framework to a complex social-ecological system, the framework cannot be applied mechanistically (as the lever metaphor might seem to imply). The next two metaphors guide an increasingly complexity-sensitive approach.

7.2.2. Iceberg: A physical manifestation

The iceberg metaphor illustrates the size and importance of a system's intangible aspects (Figure 7.3) (Nguyen & Bosch, 2013; Rhoades et al., 2014; Fletcher, 2017).

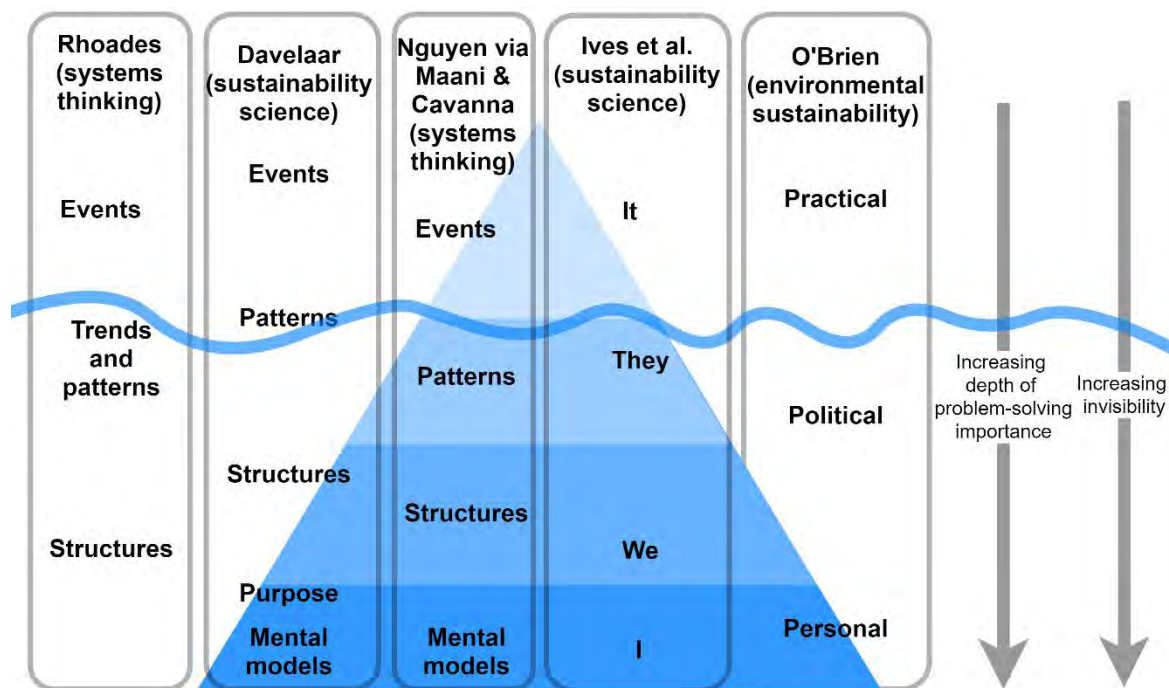


Figure 7.3. The iceberg leverage point metaphor with five representations of the concept.

The triangle represents the iceberg, which becomes darker in colour with increasing depth. The arrows on the right-hand side indicate that, with increasing depth (the foundational importance), a system characteristic becomes increasingly invisible and difficult to access (Nguyen & Bosch, 2013; Rhoades et al., 2014; Ives et al., 2018; O'Brien, 2018; Davelaar, 2021).

The iceberg metaphor illustrates that the most accessible places to intervene are often ineffective at creating the desired impact (Meadows, 1999). Unfortunately, because the tip of the iceberg is visible, much energy is spent working at this level (Meadows, 2009). Creating fundamental transformations requires engaging with the root causes of problems (Abson et al., 2017). Furthermore, short-term solutions are often counter-productive to desirable long-term transformations – a challenge

exacerbated by the fact that high leverage points are apparent and are often counter-intuitive (Senge, 2006; Meadows, 1999).

When looking at high leverage points, Ives et al. (2019) highlight the importance of the inner lives of individuals. Ives et al. (2019) draw parallels between the iceberg and Esbjorn-Hargens' (2010) four realms of enquiry – it, they, we, and I – pointing out that most sustainability science is working on the 'it' level, which examines events and physical manifestations. Similarly, O'Brien (2018) categorises Meadows' (1999) 12 places to intervene in a system as practical (12-11), political (10-4), and personal (3-1). By reframing the leverage points in this way, O'Brien (2018, p.158) suggests that the deepest leverage points are the personal parts of the system, and that 'activating conscious human agency that is critically reflective of individual and shared assumptions, beliefs and paradigms is a powerful way to shift norms and institutions'.

The iceberg metaphor suggests that the existing paradigms and goals that dictate system behaviour are invisible and hard to identify. There are goals and visions in legislation and operational guidelines that point to the material reality that these goals and visions should produce. In reality, paradigms are not in the policy documents, goals, and visions (Figure 7.4). There is a large 'messy' or 'muddled' middle between the formal rules-in-form and the actual rules-in-use (Mehta et al., 1999; Cleaver, 2012; Clifford-Holmes et al., 2018). Paradigms are invisible; thus deciphering them can be tricky (Figure 7.4). It is possible to analyse what people aspire to, how the paradigms are described (the base of the green iceberg in Figure 7.4), and what is happening (the tip of the red iceberg in Figure 7.4).

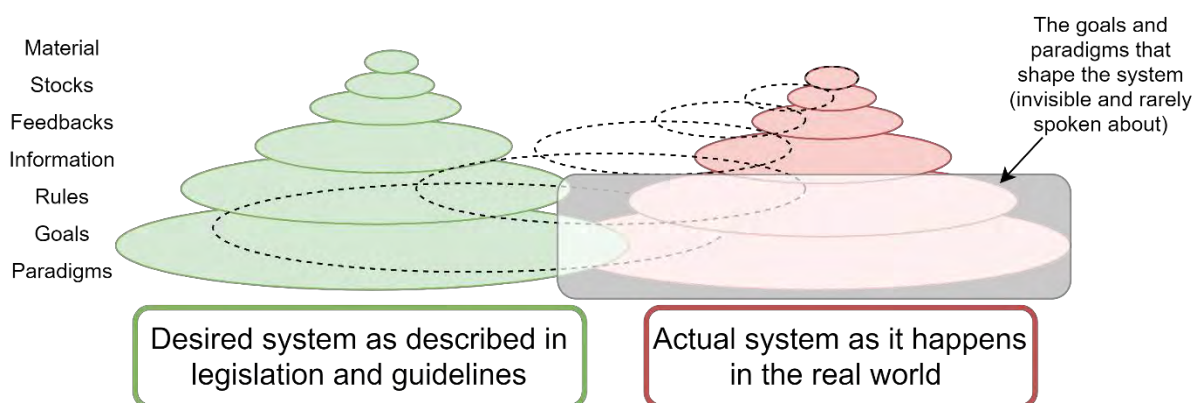


Figure 7.4. The interaction between the actual and the desired systems.

The desired system sits alongside the actual system. These two systems interact, but the goals and visions documented formally differ from the goals and paradigms that dictate the system's behaviour in the real world. I explore these two systems in the comprehensive governance mapping in Chapter Five.

7.2.3. *Onion: A living system*

The onion metaphor represents the interplay between the leverage points. Davelaar (2021) posits the onion metaphor, which captures the nested nature of the leverage points, as a core metaphor for holistic systems thinking for sustainability. According to the onion metaphor, parameter characteristics are embedded in the feedbacks, design, and intent characteristics. Peeling the layers of the onion is a metaphor for finding the root cause. The onion has been used as a metaphor in other contexts. One example is spatial scales and institutional levels in a learning system, in which the smallest level is at the centre of the onion (Ricento & Hornberger, 1996).

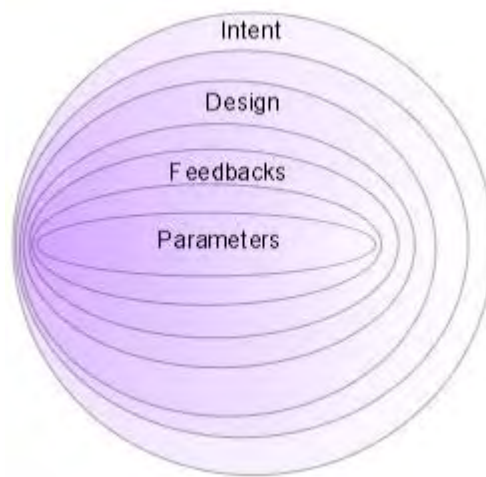


Figure 7.5. The onion metaphor, as suggested by Davelaar (2021).

The onion metaphor according to Abson et al.'s (2017) system characteristics, in which the parameter characteristics are embedded in the feedbacks, design, and intent characteristics.

The leverage points framing is oriented towards the high leverage points that dictate system behaviour. However, certain leverage points may be inaccessible, depending on the scales and levels that one intends to change. High leverage points can be accessed through lower leverage points. Leverage points are not discreet, and leverage often lies in the interactions between leverage points (Meadows, 2009; Abson et al., 2017). Leverage points are interdependent; therefore, pulling a lever can create complex system reactions – hence the concern about unintended consequences (Abson et al. 2017). Once interdependency is acknowledged, applying the leverage point framework shifts from a mechanistic task into a complex navigation of the relationships and the interconnectivity of the leverage points. Nested hierarchies in systems thinking, which link the structure of a system to the function of that system, are consistent with ecology and the study of living systems (Davelaar, 2021).

Davelaar (2021) overlays the three orders of change described by Sterling (2011) (incremental, transitional, and transformational change) on the leverage point framework, suggesting that incremental change is conventionally associated with less effective levers, while transformational

change is associated with the points of high leverage. Acknowledging the interdependencies of the leverage points necessitates the interdependencies of the types of change. As Davelaar (2021) breaks down the hierarchy of leverage points, Swilling (2020) breaks the 'orders of change' hierarchy to create a nested model in which incremental steps are essential to transitional and transformational changes – essential, because existing path dependencies make large or deep changes unlikely to be sustainable unless the system is well-prepared (Göpel, 2016). This understanding is well articulated as 'radical incrementalism' (Halpern & Mason, 2015; Swilling, 2020), which underscores the need for a solid normative stance but also acknowledges that systemic change occurs slowly (Section 3.5). The integrated view provided by the onion metaphor is a warning against over-simplification and the artificial separation of leverage points and phases of transformation.

7.3. Method

This analysis is embedded in an action research and single case study research approach (Section 4.3), which has been designed within a transdisciplinary and systemic methodology (Section 4.1). My research approach is characterised by an iterative interaction between theory and practice, because the high leverage points that are relevant to a particular problem and context cannot be identified on a purely theoretical basis (Meadows, 1999; Tourangeau & Sherren, 2020; Davelaar, 2021). The adaptive approach (Layder, 1998) used in this leverage point analysis aligns with conceptions of abductive logic, which includes both inductive and deductive logic, and allows for tentative theories to be generated and clarified (Bowker et al., 2015; Blaikie, 2018).

In this methods section, I outline the process whereby I first identified leverage points in the system of interest (Section 7.3.1) and then crafted the five-point framework (Section 7.3.2) (Figure 7.6).

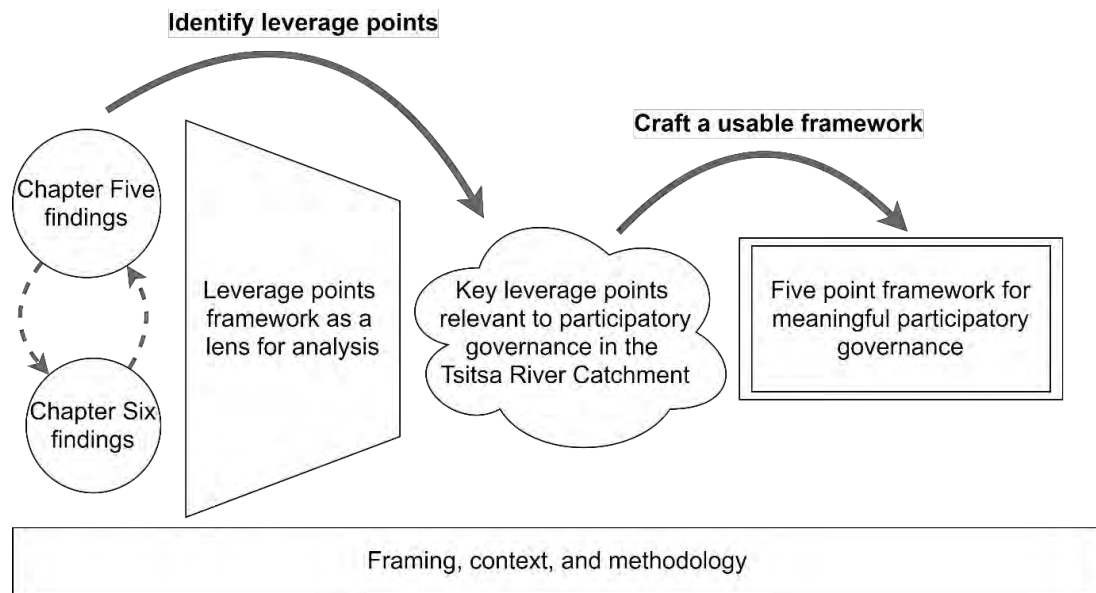


Figure 7.6. Process overview of the methods used in Chapter Seven.

I first use the leverage point framework (Meadows, 1999) as an analytical tool to identify leverage points in the system of interest – i.e., land and water governance in the Tsitsa River Catchment. I then craft the usable five-point framework for meaningful participatory governance through iteration between practice and theory. The entire process is embedded in the research context, framing, and methodology described in Chapter Four.

7.3.1. Identifying leverage points

I used Meadows's (1999) leverage points framework (Textbox 16) to analyse the findings presented in Chapters Five and Six. I used Meadows's framework because it is widely respected and applied (e.g., Abson et al., 2017; Gladkykh et al., 2018; Dorninger et al., 2020; Woiwode et al., 2021) and because it is still the most detailed account of the full range of available leverage points, and therefore has supported a systematic consideration of a broad range of leverage points, from paradigms to parameters. The identification process involved iteratively analysing the findings in Chapters Five and Six using the leverage point framework as my guiding analytical framework (Textbox 16). I also drew on the broader CSES literature to support my interpretations and analysis. Embedded in my evolving transdisciplinary methodology, the rigour of the analysis is enhanced by my real experiences of working collaboratively in the system of interest (Section 4.5).

I began by identifying the leverage points being engaged through existing interventions, which involved discovering and explaining how actors in the system attempt to resolve their main concerns (Simmons & Gregory, 2005; Lam et al., 2020a). My analysis focused on local interventions, which are actions taken by an actor with the intention of creating change in a system (Midgley, 2000). Interventions are distinct from leverage points. For example, a capacity development intervention might attempt to increase the stock of human capacity in a system. The intervention is the actual work done by the actor to organise and conduct the capacity development process, while the leverage point

is the human capital itself. Chan et al. (2020) distinguish between leverage points (as the system points) and levers (as the actual interventions).

In order to create change in a system, interventions must change some aspect of the system; these are the leverage points. My focus on existing interventions assumes that what people do is substantive. However, the leverage points being engaged are likely the most intuitive, and might only be grappling with symptomatic problems (Senge, 2006; Meadows, 1999). While analysing existing interventions was useful for exploring how each of the separate leverage points might be pushed or pulled, there is also the danger of falling into the pervasive trap of focusing on the most easily recognisable or intuitive solutions rather than engaging with the deep intangible system characteristics.

Therefore, I also spent time reviewing leverage points research in the CSES and the participatory governance literature in order to identify which leverage points in the TsRC are not being engaged. My identification of underutilised leverage points was enhanced by the ethnographic methods described in Section 6.3.3, as they enable immersion while maintaining an ‘outsider’ perspective, and therefore provide the opportunity to identify patterns in a system that are invisible to the people living and working in the system (Hughes et al., 1997).

A key challenge when identifying leverage points is the problem of causality in complex systems (Preiser, 2019). For example, the focus on low leverage points is reinforced because lower leverage points tend to give immediate feedback, resulting in the attribution of success to what happens just before a decision is made, and not recognising the complex system of causes leading to the decision (Harich, 2010). My descriptions of interventions and the leverage points are, therefore, necessarily tentative, particularly when analysing the highest and least-visible leverage points. My research was not designed to explore the potentially transformative effects of engaging with various leverage points, it was not designed to evaluate interventions on relation to each other, particularly given the fact that not all of the explored interventions had the promotion of participatory governance as a central aim.

7.3.2. Crafting the five-point framework

I then crafted a framework for enabling meaningful participatory governance to support the design and evaluation of participatory governance interventions. The value of deriving a practically oriented framework from the identified leverage points emerged through the data analysis process. I identified that creating an intelligible framework could increase the usability of the identified leverage points. Allowing such emergent insights to inform my research is in line with the evolving transdisciplinary

methodology (Section 4.3.1), which I applied to study this CSES characterised by emergent properties (Section 3.1.2).

The methodological concept of ‘crafting’ is often invoked at the intersection between theory and practice, where rigorously developed findings and theories are applied to complex, practical problems embedded in specific contexts (Clark et al., 2016b), with examples including institutional crafting in CSES (Thiel et al., 2015) and the crafting of public participation processes (Webler, 1999). For theories and findings to go from being potentially useful to be actually used, they must be presented and communicated in an understandable manner to bridge the gap between theory and practice. Applying the principle of requisite simplicity again (Section 4.1.2), crafting a framework is an attempt to discard some of the detail to avoid delivering ‘fragmented information that is not useful at the scale of implementation’ (Stirzaker et al., 2010, p.600).

In my research, the crafting process involved iteratively moving between my findings (presented in Chapters Five and Six), the broader literature, and the experiential knowledge gained through my time as an action researcher with the Tsitsa Project. The five-point framework emerged from my research in the TsRC and was crafted to support participation within land and water governance in the TsRC.

The first part of the analysis, outlined in the previous section, revealed a set of available leverage points, some apparent and some unapparent. From this set, I selected five key leverage points. I selected these five leverage points to be wide-ranging, distinct and understandable. I will describe the rationale for each of these three criteria.

- I selected *a wide range of leverage points*. By this, I mean that I included high and low leverage points, as opposed to just high leverage points. The reason for this was two-fold. First, I was aiming to create an adaptable and informative framework which could be used to guide the design of interventions, rather than attempting to clearly define high leverage points and associated interventions. The five-point framework was designed to support thinking rather than as a panacea or as a step-by-step guide to participatory governance. Second, prompted by the onion metaphor, I recognised the importance of nested interactions between the leverage points and identified that lower leverage points may be important for accessing high leverage points (as I discuss later in Section 7.5.3).
- I selected *distinct leverage points* in order to support overall clarity of the five-point framework. There are inevitably overlaps and interactions between the leverage points. The selection of easily distinguishable leverage points provides conceptual structure to support the use of the framework in an attempt to support simplicity in the face of complexity.

- I selected *understandable and relatable leverage points*. I selected common leverage points within the data collected within the TsRC and which I thought that people in the context would easily relate to. This selection criterion links the resulting framework most clearly to the context. While the selected leverage points recurred within the data, they were not necessarily commonly engaged – the higher the leverage points, the less likely that it was regularly or systematically utilised as a leverage point.

Along with the leverage points framework as posited by Meadows (1999) and Abson et al. (2017), the theories underpinning the three complementary leverage point metaphors (Section 7.2) supported a rich exploration of the five point framework and the relationships between the five selected points (Section 7.4.2). Use of lever metaphor highlights the fact that higher leverage points are places where less force is required to create systemic change. Use of the iceberg metaphor creates a focus on the invisibility of high leverage points and the depth with which they create change in a system. Application of the onion metaphor emphasises the nested nature of the leverage points and the complex dynamic interactions between them. The use of all three metaphors, rather than focusing on one, enabled a multidimensional understanding of the five-point framework.

7.4. Findings

The findings are presented here in two sections. I begin by exploring the leverage points available in the TsRC (Section 7.4.1). Thereafter, I present the crafted five-point framework as a usable tool for informing interventions to improve participatory governance (Section 7.4.2).

7.4.1. Key leverage points relevant to the Tsitsa River Catchment

This section presents a selection of the leverage points identified in the L&WGov system in the TsRC. I refer to particular interventions to assist in elucidating and exploring the available leverage points and the options for engaging them. I do not discuss all of the interventions mentioned in the findings in Chapters Five and Six; neither do I provide a comprehensive list of available leverage points. Furthermore, I do not attempt to evaluate the interventions; instead, I discuss particular aspects of interventions to support the elucidation of leverage points and their influence on the broader system.

At points in the analysis, I refer to the three stories of governance (Village, Catchment, or Broader [Section 5.2.1]) in order to describe the levels at which different interventions engage. I discuss scales and levels in relation to systemic transformations as part of the concluding discussion (Section 7.5).

The findings are structured according to Meadows's (1999) 12 places to intervene in a system; the numbers in the sub-headings of this section correspond to Meadows's list (Textbox 16). As I have done

throughout the thesis, I present the leverage points in descending order, starting with the points of highest leverage.

The highest leverage point: The power to transcend paradigms (1)

Paradigms are the influential ideas, worldviews, or mindsets that shape how people act and, therefore, how society functions and impacts the natural world. As individuals, we often act according to dominant paradigms without necessarily being aware of them (Meadows, 1999).

While I have defined paradigms here, this highest leverage point is not, in essence, about paradigms. It is about moments of transcendence – the transcendence of all aspects of a system (including paradigms). The prefix ‘trans-’ refers to moving *across or beyond*. I follow Meadows (1999) by describing transcendence as understanding and embodying the fact that any worldview is necessarily an incomplete understanding of the vast and humbling universe. Another definition of transcendence considers it ‘a relative term, referring to the human capacity to overcome some existing state or level of consciousness, including knowledge. In such basic terms, transcendence is everywhere and for everyone’ (Archer et al., 2004, p.27). Therefore, ‘the power to transcend paradigms’ refers to the ability actually to see paradigms and to see them for what they are (i.e., not ultimately and objectively ‘true’). As a leverage points, transcendence opens the possibility for more open and pluralistic approaches, which might be necessary for systemic transformations (Scoones et al., 2020; Vogel & O’Brien, 2022). Indeed, transcendence is often associated with religious experiences and moments of insight (Archer et al., 2004) – rare moments that allow for a view beyond the immediate challenges.

Transcendence, as introduced above, forms part of personal human experiences which can form part of broader societal transformations. The personal and subjective nature of transcendence experiences, and the challenges of analysing these experiences in relation to broader social transformations, mean that I have used a particularly personal analytical lens to analyse this leverage point. The philosophical framings I have adopted for this thesis align with the leverage point framework, as they promote ideas in line with the target of transcendence.

- The critical complexity ontology highlights the need to be reflexive and to make modest assertions in line with the understanding that our knowledge, and the worldviews in which it is embedded, is necessarily incomplete (Section 4.1.1).
- Similarly, the transdisciplinary framing highlights the necessity of transcending multiple paradigms (Vogel & O’Brien, 2022), such as the conception of separate disciplines in academia, and the separation of theory and practice (Lang et al., 2012; Wolff et al., 2019). Transdisciplinarity also attempts to unify studies across and between the levels of knowledge (i.e., value-based, normative, pragmatic, and empirical) (Section 4.1.3) (Max-Neef, 2005).

- Furthermore, the complex social-ecological systems framing is designed to support the transcendence of the paradigm that social and ecological systems are distinct and separable, and thereby advance the integrated analyses of social-ecological systems (Section 3.1).

These framings are designed and promoted to support the transcendence of problematic paradigms. However, insofar as these framings have been defined and delineated, they are merely the creation of new paradigms. Furthermore, and most importantly, the intellectual recognition of their validity does not necessarily translate to moments of transcendence. How, then, does an individual facilitate the emergence of moments of transcendence in their own experience and in the lives of wider social groups?

On a personal level, I have explored the practice of meditation as a method for attaining moments of transcendence (Section 4.4). Meditation can come in many forms, but can be understood as a process that enhances awareness and equanimity to allow for enhanced self-observation (Rosch, 1997). I have also attempted to promote moments of transcendence by reflecting on my experiences as an action researcher (Appendix A4) and being reflexive about my positionality (Section 1.3). Ongoing reflexivity was one of the guiding principles I derived from my methodology (Section 4.2), and it was embedded in the Tsitsa Project, where regular group reflections were promoted (Cockburn et al., 2018b). I enter into times of reflection and meditation of my own volition. The outcomes of these exercises can only have broader systemic impacts insofar as they change my thoughts, words, and actions. Meditation is a deeply personal activity that must be self-driven; similarly, reflection aimed at personal transformation cannot be forced (Hobbs, 2007). Therefore, forcing groups of people to meditate or to become involved in any other activity to promote transcendence is unlikely to succeed.

Two key moments from my fieldwork stand out as instances of momentary transcendence in a group. I do not suggest that everyone in these sessions had a transcendent moment. I can only say that I experienced moments of insight during these sessions – ‘aha’ moments (Palmer et al., 2015) – and discerned, from the words and actions of the people in these sessions, that a shift in thinking had taken place.

The first session was an introductory ice-breaker exercise at the Tsitsa Project’s science-management meeting in 2019. The simple ice-breaker spontaneously transformed into an engaging storytelling session in which each of the roughly 40 participants from the Village, Catchment and Broader Stories told the group a little bit about their background (Textbox 13). The session was calm and quiet as we listened to one another. My personal insights came from seeing the other participants as deeply human: not as researchers or managers, but as complex, multifaceted humans. The ice-breaker was not an isolated intervention, and it emerged spontaneously through skilled facilitation and session

planning informed by the Tsitsa Project's broader framework of principles, which prioritises interpersonal connections, and allows for adaptability and flexibility (Section 2.2.2). While it is difficult to pinpoint what enabled the transcendent characteristics of the session, it is clear that a rigid facilitation technique or strict adherence to predetermined timing would have removed the potential for such an emergence.

The second session occurred towards the end of 2021 when I joined a meeting between DFFE officials from the Broader Story, 'Working for' implementing agents from the Catchment Story, and organisations working alongside the 'Working for' programmes (14th Narrative in Section 6.4.7). The majority of the meeting involved a detailed exploration of the problems faced by actors from all three stories in relation to changes in procurement protocols. My moment of insight came late in the day, when I was finally able to grasp the complexity of the challenges faced by each participant. I felt a similar shift in the group as the antagonism that had been so tangible at the beginning of the day dissolved. The final discussion about ways forward became surprisingly simple, as it was founded on a deeply shared understanding of the problem. In this meeting, the open approach and social learning framing was complemented by skilled facilitation that allowed the group to explore the perspectives.

I attribute these two transformative moments to the supportive frameworks that informed the interactions, and the facilitators' skills in 'letting go' of the process, or, rather, following through on the process design principles of openness and adaptiveness. Indeed, 'process facilitation' which necessarily allows for emergence, is distinctive from a more closed conception of 'project management' (De Bruijn et al., 2010). It is also important to note the extensive interactions between the groups from different stories in the above examples, which had built up a large stock of trust and shared understanding that could frame these sessions.

Identifying a definite causality between individual moments of transcendence and actual effects in the real world is impossible. It might well be that any paradigm shift results from moments of transcendence that enable individuals to see beyond their own paradigms to glimpse other paradigms' potential value. My understanding is that moments of transcendence that are experienced by individuals and in groups contribute to the paradigm shifts in such individuals and groups. These localised shifts, in turn, contribute to broader societal paradigm shifts (the second-highest leverage point). The effects of the shifts then cascade down through the other leverage points until the system has changed at multiple levels.

The actual paradigms that shape system functioning (2)

Below transcendence, the fundamental paradigms from which a system arises are the second-highest leverage point. Shifting paradigms can enable rapid system change, as 'people who have managed to

intervene in systems at the level of paradigm have hit a leverage point that totally transforms systems' (Meadows, 1999, p.18).

A foundational premise of my research is that land and water governance in the TsRC requires a participatory paradigm shift. The participatory paradigm suggests that people should be involved in governance (Section 3.3). The participatory paradigm has been formally acknowledged by global governing bodies (UN, 1986) and within the Broader Story of governance in South Africa (Section 1.2.1). The influence of the participatory paradigms can be seen in high-level changes in goals and rules, which I explore later as a lower leverage point. However, the formal promotion of a paradigm does not necessarily translate into a fundamental paradigm shift. Paradigms already permeate every aspect of system functioning, some of which contradict the participatory one. While participatory governance has been recognised as an ideal worth striving for, its promotion has not yet become a dominant paradigm.

Paradigms that perpetuate boundaries between actors and groups oppose the participatory paradigm. One prevalent example is racism, which has created, and continues to perpetuate, divisions between social groups. Racism, as a paradigm of supremacy, is relevant in the TsRC (Section 2.1.2). Although state-sanctioned racism in South Africa has been formally abolished, boundaries along racial lines continue to inhibit collaboration in the Catchment and Village Stories (Section 6.4.6). The paradigm continues to have influence after the rules have been changed.

Separate groups hold different forms of knowledge (Tengo et al., 2014). In land and water governance, scientific and technical knowledge, which aims to be universal and objective, is often privileged over local and indigenous knowledge, which is often relational and sensitive to context (Raffles, 2002; Berkes, 2018). This paradigm, which prioritises scientific knowledge, can inhibit meaningful engagement between managers from the Catchment Story and local communities living in the Village Story, as the value of indigenous knowledge is underappreciated.

There is another dominant paradigm: the one that underpins the division between academics and practitioners (Cockburn et al., 2018b), and that inhibits meaningful collaboration when solving complex problems. Despite the acknowledgement of the complexity that characterises the relationship between science and management, there is widespread recognition of the need to move from a one-directional flow of information from science to practice to a more reciprocal, two-way interaction (Roux et al., 2006; Vogel et al., 2007; Nel et al., 2016; Van Vuuren, 2016; Tsitsa Project et al., 2021f).

One paradigm introduced in the conceptual overview (Section 3.1.1) is the conception of social and ecological systems as separate. This paradigm is evident in the divisions in academia between the

study of social systems and the study of ecological systems into discrete disciplines. Although, there is an increasing recognition of interconnectivity between disciplines through the lenses of inter- and transdisciplinary research (Wolff et al., 2019; Biggs et al., 2021; Sellberg et al., 2021). Indeed, my framing highlights the understanding that social and ecological systems are structurally coupled and co-evolving (Section 3.1.1). The paradigm which divides social and ecological systems is also found in the governance of land and water resources. One example explored in this thesis is the division between water resource management and water service provision to people (Section 5.4.2). The separation between these two realms of governance allows for the prioritisation of service provision in a way that ignores a fundamental reliance on well-managed water resources (Section 5.7.1).

One characteristic of meaningful participatory governance is that it requires time and resources (Cvitanovic et al., 2016; Nguyen et al., 2019). This is particularly true in contexts without existing institutions for participation or in contested contexts. The benefits of participatory governance are often slow to come to fruition. (I discuss *leverage inherent in delays* in more detail later.) While some immediate value might be gained from pleasant participatory interactions or insights that shift the thinking of groups and individuals (as described above in the examples related to transcendence), the tangible benefits of increased participation are generally over long timescales.

Meaningful participatory governance, therefore, conflicts with paradigms that promote efficiency in resource use, the fast rates of decision-making, and short-term outcomes. Naturally, it would be faster to make decisions if fewer perspectives were considered (Newig & Fritsch, 2009; Sattler et al., 2016). Therefore, the focus on efficiency contributes to the dominance of a centralised governance system, and contrasts with the participatory paradigm. I have already highlighted the challenge of thinking long-term in a resource-constrained context that is characterised by reactive governance, such as the Catchment Story in the TsRC (Section 6.4.4). Under these conditions, participation in governance is often considered an additive, tick-box activity rather than a core process – which exacerbates the negative attitudes towards these processes, as they become meaningless for all involved.

So how does one intervene at the level of paradigms? Meadows (1999, p.18) draws on Kuhn (1962) to suggest that:

‘You keep pointing at the anomalies and failures in the old paradigm, you keep speaking louder and with assurance from the new one, you insert people with the new paradigm in places of public visibility and power. You don’t waste time with reactionaries; rather you work with active change agents and with the vast middle ground of people who are open-minded.’

In this section, I have explored a few of the paradigms that influence participatory governance in the TsRC. I do not suggest that paradigms that oppose the participatory paradigm are all negative. Indeed,

they have become dominant paradigms because they bring benefits. However, they have negative implications, and I suggest that the participatory paradigm represents a potential paradigm shift to balance these paradigms.

Promoting a more participatory paradigm was central to the work of the Tsitsa Project, through the participation of local people in decision-making, the improved relationships between researchers and managers, and the consideration of both social and ecological indicators (Cockburn et al., 2018b; Wolff, 2018; Tsitsa Project et al., 2021a; Weaver et al., 2021). The Tsitsa Project has contributed to the efforts to create paradigm shifts in the Broader Story by working in different ways. Part of the Tsitsa Project's work has been to explore ways for the DFFE programmes to adopt the CSES framing. A breakthrough came in 2017 in the Management, Research, and Planning (MaReP) Forum when key actors recognised the fundamental importance of local people to the restoration process. This breakthrough led to further training in CSES thinking and the co-development of an objective hierarchy. The shift in the thinking of influential individuals' views impacted DFFE's involvement in the Tsitsa Project.

Demonstrating the value of a new paradigm, even with strong evidence, is not always effective. As shown, even when novel paradigms influence formal governance institutions in the Broader Story, they do not necessarily translate meaningfully into action in the Village Story. Our mental models and worldviews are influenced by what we have experienced and by how many people in South Africa have never meaningfully participated in governance processes (Section 6.5.3). Therefore, creating opportunities for people to build new mental models through their experiences of new ways of working is one key leverage point for promoting the participatory paradigm.

Out of the paradigms in a system emerge the system's purpose and goals.

The system goals (3)

Shifting the goals of a system is the third-highest leverage point (Meadows, 1999). It is necessary to differentiate between stated goals and system goals. An actor might state a particular goal that they do not necessarily achieve or are not necessarily striving for at all. On the other hand, system goals are an emergent property of a system – what the system actually does. The Tsitsa Project, as a land and water governance actor in the TsRC, has goals that are not the same as the system goals. The stated goals of the Tsitsa Project could influence the system goals; but these two sets of goals must not be confused.

Changing actors' goals does not necessarily change what the system produces (Figure 7.4). However, consciously redirecting actors' goals in a system can be powerful, especially if the actors have real framing power over the actions of actors in the system (Section 3.3.1). I have already mentioned the

Tsitsa Project promoting the CSES framing, which was then adopted by some DFFE officials, thereby influencing the goals they set. Shifting the goals of DFFE's large national programmes would have practical impacts at multiple levels.

Furthermore, there are system goals at multiple levels because there are sub-systems within systems. For example, there is a disjunction between the goal of water resource protection and that of water service provision (Section 5.7.1). The broader water governance system goal might be to manage water sustainably; however, the sub-system goal to provide water services could undermine the broader system goal. The potentially adverse effects of conflict between system and sub-system goals highlights the need for multilevel governance, thus enabling some level of coherence (Cash et al., 2006; Armitage, 2008).

In South Africa, goals in line with the participatory paradigm are enshrined in the Constitution, which lays the foundations for a participatory democracy (RSA, 1996). These stated goals are important, as they enable participatory interventions to receive support. However, the persistence of centralisation and exclusive decision-making at multiple levels reveals that the participatory paradigm does not underpin the actual system goals. The exclusion and marginalisation of rural residents from governance could be considered a system goal because it is what the system produces. The dominant governance and management paradigms founded on centralisation and hierarchy tend to create systems that aim for control as a goal (Meadows, 1999).

The paradigms and system goals are the highest leverage points; shifting them can either enhance or constrain the conditions for self-organisation and empowered participatory governance.

The power to self-organise (4)

Self-organisation is the emergence of new patterns from a defined set of elements. Evolution is a process of self-organisation, as is the growth of a seed (Meadows, 1999). Self-organisation is an inherent part of complex systems that are characterised by emergence (Preiser, 2019); however, self-organisation is not always present. Self-organising systems are distinct from systems that lack organisation and from systems in which organisation is forced by an external actor (Folke, 2006). Self-organisation contributes to resilience, as self-organising systems can adapt to shocks without external support (Armitage et al., 2009). Notably, the leverage inherent in the ability to self-organise lies in the fact that highly complex arrangements can emerge from seemingly simple parts (Meadows, 1999); therefore, solutions to complex problems can emerge without external intervention.

Self-organisation can be enabled or constrained by the goals and paradigms that shape the system. Therefore, self-organisation in sub-systems of governance can be either supported or hindered by the larger governance systems in which they are embedded (Ostrom, 1990). Openness to experimentation

and to a diversity of perspectives is crucial for facilitating self-organisation (Meadows, 1999). Self-organisation is more often associated with networks than with hierarchies. Therefore, adopting the participatory paradigm, which promotes bridging links between diverse actors and engagement with diverse perspectives, could create a conducive environment for self-organisation. Conversely, paradigms and corresponding system goals that tend to separate systems by grouping similar components or shutting down experimentation in the name of efficiency would tend to limit self-organisation. One emerging governance approach is polycentric governance, which is characterised by multiple independent authorities at different scales who cooperate to achieve a common governance goal (Morrison et al., 2019). In a polycentric governance system, local authorities have independence to self-organise and adapt rules and norms to suit a specific context (Ostrom, 2010).

One example from my research illustrates the potential power of creating an open system for self-organisation. Key Informant #7 described how DFFE's 'Working for' programmes had supported the emergence of many small implementers in the Catchment Story. However, inconsistent funding created an unstable working environment. While many small implementers failed because of inconsistent funding, a subset of them were forced to search for other work opportunities, and built crucial skills in the process. In this narrative story, the instability forced implementers with the right skills to self-organise, find other work, and emerge as functional stand-alone enterprises.

Many interventions state their intention to enable the ability of actors in sub-systems; this is often framed as 'capacity development', 'empowerment', or 'creating a sense of ownership', which would allow them to create new structures and processes to navigate complex problems (Motteux et al., 1999; VeneKlasen & Miller, 2002; Hill et al., 2020). In order genuinely to empower people, these interventions need to create the conditions for self-organisation. Unfortunately, the governance institutions founded in the paradigms associated with centralised governance and hierarchical control do not create such conditions.

In the TsRC I observed a few of these interventions that aimed to enable self-organisation. One example was the ward-based planning process (11th Narrative). Unfortunately, constrained budgets meant that residents were not provided with transport, and only a few ward representatives could attend. The initiative's purpose was stunted by creating an 'invited space' in which participants' agency was controlled rather than enabled (Gaventa, 2019; Cornwall, 2008). Furthermore, the process required that the ward representatives report their progress to the municipality in a way that was reminiscent of more hierarchical governance, which is characterised by command and control. Finally, all of the attendees were already employed full-time in formal governance roles, and this initiative did not include any new perspectives and it was simultaneously additive in nature; so these actors were expected to self-organise in their communities on top of their full-time working commitments.

There are myriad potential problems with enabling self-organisation, such as the potential for corrupt (or self-serving) local actors to take control of a process and the available resources. Another challenge is that the self-organisation of lower-level actors could lead to sub-system goals that conflict with the larger system goals (Section 6.5.4); being genuinely open to the possibility for self-organisation as an external intervenor relies on the actual release of control and power over lower-level actors (Section 6.5.4).

System goals that aim for control would tend to limit self-organisation; but this does not mean that support is unnecessary. Indeed, institutions that are designed to be citizen-led can fail if there is insufficient institutional support; the local environmental forum under DFFE and the catchment management forums under DWS are examples of this from the TsRC (Section 5.7.1). Opening the potential for self-organisation might not be an appropriate leverage point in every case, but it remains a powerful one.

One key role for sustained local self-organisation seems to be the presence of a system convenor. System convenors are important in creating the potential for self-organisation by accessing external resources (i.e., financial, physical, human, social) (Section 5.5.4).

The rules of the system (5)

Rules ‘include norms of behaviour and social conventions, as well as legal rules’ (Hodgson, 2015, p.501) and can, therefore, be formally created and codified by actors with recognised authority – or they can be more informal agreements. Rules largely define a system, its boundaries, and the interactions (Meadows, 1999). Rules are designed or emerge from the paradigms and goals that shape a system. Formal rules backed by legally binding contracts are generally considered stronger than informal rules founded on social agreements (Hodgson, 2015).

Rules are important because they have real implications for how systems operate. In the communal areas of the TsRC there are nuanced rules about who has access to what resources (Section 5.6.2). Local rules in the Village Story dictate how and who benefits from land and water resources. Rules are vital for managing common property resources and ensuring healthy landscapes (Ostrom, 2009, 2015). The grazing associations, initiated by the Tsitsa Project’s Fire and Grazing CoP, are an example of an attempt to incentivise the creation of locally relevant rules relating to livestock grazing (Section 5.5.2). The establishment of the associations and the drafting of grazing agreements involved the cooperation of traditional leaders and livestock owners, and therefore required engaging with different understandings of livestock management (Figure 7.7). The establishment of grazing associations currently relies on substantial support from external entities. Future benefits will depend

on livestock owners self-organising beyond the bounds of the external intervention and taking ownership of the grazing rules.



Figure 7.7. Mobile livestock auction in Matatiele with the Umzimvubu Catchment Partnership. In exchange for adhering to grazing agreements, livestock owners are allowed to sell their cattle to farmers in this mobile auction – thus reducing their transport costs and increasing the potential value of their cattle. This auction was one that I attended in a neighbouring catchment, but since my fieldwork, there have been cattle auctions in the Tsitsa River Catchment. (Photo: Anthony Fry)

One example that illustrates the power of rule changes is explored in Section 6.4.7, in which I discuss some of the problems resulting from a change in procurement rules in the DFFE’s ‘Working for’ programmes. The rules changed from a special arrangement in terms of which implementers were paid before doing work to one in which implementers had to do the work before being paid. This change in rules negatively impacted the small implementing agents who did not have the necessary start-up capital, or access to credit in order to cover the costs of doing the work before getting paid.

High-level rule changes are often considered the most crucial leverage point when attempting to make systemic changes (Meadows, 1999). The Constitutional Court in South Africa is the highest authority when it comes to interpreting and implementing the Constitution – the supreme set of rules guiding South African society. However, as I conclude in Chapter Five, changing local participatory governance requires the analysis of local interactions.

Given the influence of informal rules, formal rule changes do not always result in the desired system changes (Lowndes et al., 2006). I have already described how changes in the South African legislative framework have not resulted in meaningful local participatory governance. In the TsRC, one example of how the local and informal rules create deviations from the formal rules is in the role of the traditional leaders. There are socially embedded rules related to the historical role of traditional leaders in local participatory governance, which has meant that many communities tend to consult

traditional leaders on issues that the local government actors are supposed to address; this has been observed in the TsRC (Section 5.5.3) and more broadly across the former homelands of South Africa (Tlou, 2020).

There are also explicit or implicit rules in participatory interactions (rules of engagement), such as engaging respectfully or allowing everybody a chance to speak. Rules of engagement can be shifted by a facilitator in order to support more participatory interactions (Section 6.4.3). Local customs or dominant religious practices often influence implicit rules. In the TsRC, meetings often begin and end with a prayer, reflecting the influence of Christianity in the area and in formal governance in South Africa. In the Tsitsa Project, we often followed such implicit rules, as establishing rules can help people to feel comfortable, and they require less mental energy to participate (Cleaver, 2012). However, new rules can provide an opportunity to shift the dominant participatory practices. For example, we often arranged chairs into circles rather than in rows to open opportunities to speak to one another rather than listen to presentations.

Any intervention that engages with rules in a system should be aware of and understand the existing rules (Lowndes et al., 2006; Cleaver, 2012). It is also crucial to know who is making the rules and where the decisions are being made. The local government, and particularly the municipal council, is the main decision-making body at the local level (Section 5.4.4). However, the actual day-to-day participation in rural areas is influenced much more by traditional leaders (Section 5.5.3); this is particularly important to note, as the ways in which traditional leaders work is shifting over time (Beall et al., 2005; Mathonsi & Sithole, 2017; Tlou, 2020).

The structure of information flows (6)

‘Information flow’ refers to the movement of information through a system, and dictates who has access to information. I understand ‘information’ to be an umbrella term that includes raw data, knowledge in the form of interpreted information, and wisdom, which is the ability to use information and knowledge in meaningful ways (Vervaeke & Ferraro, 2013). While simple information can be communicated fairly reliably, more complex knowledge requires a higher quality of information flow.

Information flows are dependent on connectivity in a system. I use three characteristics to describe connectivity: (1) in a group (bonding links) or between groups (bridging links); (2) vertical (between stories) or horizontal (between clusters in stories); and (3) unidirectional and bidirectional connectivity (Section 5.2.4). I use these dimensions of connectivity again to support my analysis.

Information informs the decisions that actors make daily, and access to information, or the lack thereof, can influence whether an actor can solve and adapt in response to a particular challenge (Olsson et al., 2004a; Vogel & O’Brien, 2006; Dorninger et al., 2020). Once again, the goals and

paradigms shape who has access to information and who is included and when. The participatory paradigm promotes the inclusion of a broad set of actors in the flow of information. In contrast, more centralised decision-making models would generally only include one-dimensional flows of information away from the influential decision-makers.

The leverage available in changing the structure of information flows is the ability to create new connections between elements and new feedback loops in a system without necessarily having to make any significant physical alterations to how the system functions (Meadows, 1999). Restructuring information flows also connects to deeper leverage points. For example, bridging links can enable access to novel information, self-organisation, or even paradigm shifts through exposure to new ideas.

I observed multiple examples of interventions that engaged directly with information flow. One essential restructuring of information flows to rural areas is the inclusion of people who have previously been isolated from governance processes. Examples of radically inclusive interventions include (1) the Tsitsa Project shifting engagements from central locations into small villages, and (2) CDWs leaving their offices and going door-to-door to speak to individuals (Section 5.5.2).

One Tsitsa Project-related intervention that shifted the structure of information flows was the series of Learning Words workshops (Section 5.3.4) (Figure 7.8) that formed part of the implementation of the governance capability pathway as part of the Governance CoP's work (Palmer et al., 2022). By explicitly focusing on overcoming a lack of understanding, which had been identified as a barrier to participation, the Learning Words workshops aimed to build foundational listening and speaking skills. Emphasis was placed on participatory learning modes in which knowledge is co-created and all knowledge is valued equally (Sfard, 1998). The Learning Words workshops were able to restructure the connections and system structure (away from unidirectional connections to bidirectional connections), and might even have been paradigm-shifting, as they explicitly engaged with local meaning and understandings without assuming the supremacy of scientific terminology.



Figure 7.8. Discussion circle at a Learning Words workshop in February 2018. Facilitators encouraged contributions of the knowledge held by all of the participants, including researchers, gardeners, livestock owners, and other local governance actors. (Photo: Nosiseko Mtati)

The medium of communication is important to consider. The rapid development of information communication technology, such as smartphones, has significantly impacted the number of connections between actors and the amount and quality of transferred information. One potential problem is that increased connectivity might increase information quantity rather than quality. Increased connectivity also increases the potential that harmful information can spread more easily.

My research affirms the literature that suggests the power of face-to-face interactions. Face-to-face (in-person) dialogue that allows for in-depth communication is required for collaboration in CSEs (Ansell & Gash, 2008; Newig & Fritsch, 2009; Gerlak et al., 2020), and is particularly useful in contested places, as it can support the breaking down of biases and schisms in understanding (Bentrup, 2001). Indeed, Newig and Fritsch (2009) found that the prevalence of face-to-face dialogue positively influenced the ecological standard of decision-making – more so than in situations where merely a two-way exchange of information (i.e., not in person) occurred. The importance of face-to-face interactions became clear during the COVID-19 pandemic, when face-to-face interactions became illegal. As Tsitsa Project researchers, we struggled to maintain reliable contact with catchment-based actors (Kulundu-Bolus et al., 2021).

I identify participatory governance roles that could create novel links to improve information flow. I describe boundary spanners who create horizontal bridging links between groups and system convenors who have strong intra-connectivity in their story, but who can also create vertical connections beyond the sub-system in which they operate (Section 5.2.2).

Restructuring the flow of information is undoubtedly an important leverage point when examining participatory governance, and provides numerous options for intervention. It is important not to become preoccupied with information flows; this warning is particularly relevant for academics, who are in the business of generating information (Dorninger et al., 2020).

The strength of reinforcing feedback loops (7)

Reinforcing feedback loops (or positive feedback loops) happen when a change in a system leads to a further change in the same direction, amplifying the initial change; ‘the more it works, the more it gains power to work some more’ (Meadows, 1999, p.11). Increasing or decreasing the speed of reinforcing feedback loops potentially creates change in a system. In participatory forms of governance, multiple feedback loops can be strengthened to enable participation, including:

- Learning how one learns – both the theoretical knowledge of how it happens, and the skills required to learn – can enable a feedback loop in which learning opens the potential for more opportunities to gain experience, thus enabling more learning. Figure 6.8 includes *proactive skills development* as the foundation of a potential positive feedback loop.
- Active participation in governance processes can increase an actor’s ability to participate, enabling future participation. This feedback loop could link to others, such as an increasing confidence feedback loop, which could also increase participation.
- Shared understanding has the potential to enable communication and support collaboration; collaboration can then support the building of deeper shared understanding (Figure 6.12).
- Another example of a reinforcing loop is shown in the collaboration model developed by Ansell and Gash (2008). In their collaborative process, face-to-face dialogue leads to trust building, which enables a commitment to the process, leading to a shared understanding of the situation and enabling intermediate outcomes that support reinitiating face-to-face dialogue in a way that supports trust building (Ansell & Gash, 2008). This collaborative process forms part of collaborative governance. I present a similar feedback loop called *work done to improve trust* (Figure 6.12).

The Tsitsa Project conducted a capacity development short course aimed at building the capacity of local actors to understand local land and water governance and to contribute to planning and decision-making, thereby creating the potential for empowered individuals to become more active in land and water governance. This reinforcing feedback loop links to the self-organisation leverage point described above. One inherent risk is the flux of people – most notably the rural-urban migration of young and skilled individuals who leave rural areas to find opportunities in urban centres (Section 6.4.2), thereby breaking the feedback loop. While there is real value in providing people with

experience and skills that make them more employable, upskilled individuals leaving the area is a balancing effect that slows the speed of any efforts to create and maintain skills in rural areas.

There is an opportunity for long-term gains as positive feedback loops strengthen over time. However, to strengthen all of these feedback loops would require substantial investment.

The strength of balancing feedback loops (8)

Balancing feedback loops (or negative feedback loops) exist when a change in a system leads to an opposing change that helps to stabilise or balance the system. Balancing feedback loops are often invisible or counterintuitive. They are often underappreciated, partly because their invisibility; however they play a significant role in by creating stability within a system (Meadows, 2009). In my analysis presented in Chapter Six, the interviewees' mental models were based on linear chains of causality and sometimes on reinforcing feedback loops. Balancing loops did not emerge from the interview analysis data, instead, I had to insert balancing feedback loops as a later analytical step (Section 6.3.2).

One balancing feedback effect that participatory governance attempts to enable is the accountability of governance actors to the people they are responsible for serving. Well-designed accountability mechanisms help reduce corruption and abuses of power (Ribot, 2002; Ntsebeza, 2004). Increasing the strength of accountability feedback loops in a situation characterised by corruption would be desirable, although incredibly difficult given the likelihood of actors with a vested interest in opposing change which might result in accountability. The rampant corruption that characterises governance in South Africa indicates the missing accountability feedback mechanisms (Section 6.5.1).

One key consideration is that the strength of a balancing loop is 'important relative to the impact it is designed to correct' (Meadows, 1999, p.10). Accountability through participatory governance can be a weak balancing effect in comparison with the entrenched power structures and the reinforcing loops that keep people with power in power.

Another balancing feedback comes about as a result of change resistance, which tends to oppose a shift in a system. For example, change resistance from powerful actors might oppose the distribution of decision-making power that is promoted by the participatory paradigm. As community group in the Village Story gain power, the people already in power will tend to start pushing back; I call this balancing feedback *power structure threatened* in Figure 6.15. It is, therefore, important to find leverage points which do not generate large amounts of change resistance – I will discuss the importance of finding political windows of opportunity when change resistance for certain interventions is low (Section 7.5.3).

One balancing loop that emerged from the systemic analysis was the limiting impact of time and resources. Any time spent doing one type of activity means that there is less time for another. This time limitation is part of the reason that prioritising participation is so difficult, as so much time is spent managing daily crises. Slowing the effect of this feedback could be achieved by gaining access to more resources; however, merely increasing resources is unlikely to create a fundamental system change.

The length of delays relative to the rate of system change (9)

Delays are the times between a cause and an effect. Delays related to physical changes are hard to interfere with – for example, grass's growth rate or the construction time for a road cannot easily be changed. Delays are potentially less difficult to change in governance systems that are based on interpersonal interactions and information flows. As already noted in the information flow subsection, information communication technology can influence information flows and create the potential for a more adaptive system that can spread information with fewer delays.

However, many of the variables that influence participatory governance are characterised by delays. Interpersonal variables such as trust and shared understanding take a long time to build and can be quick to lose. There are delays in the building of these social and interpretive resources, but there are no delays when they collapse (I will discuss trust in more detail in Section 7.4.2). Furthermore, even once they are built, their tangible impact on the system can take time to become evident, and it can be difficult to identify the benefits of these deeper and more intangible aspects of the system.

The structure of material stocks and flows (10)

I now move into the material parameters that characterise a system. The parameters in a system are the easy-to-access and relatively mechanistic characteristics, which are most commonly the focus of policy and practice (Abson et al., 2017).

'Stocks are the elements of the system that you can see, feel, count, or measure at any given time... Stocks change over time through the actions of a flow' (Meadows, 2009, p.18). Stocks and flows are often physical entities, such as the population in an area or the financial resources held by an actor. Birth, death, and migration are flows related to population, whereas investment and spending are flows relating to the stock of financial resources. Meadows (1999) suggests that there is leverage in influencing how these stocks and flows are designed, but that, once they are in place, they can be difficult to change.

While the emphasis of this leverage point is on material stocks, stocks and flows can also be intangible, such as a stock of social or human capital. Human capital and skills development is a leverage point

that is often engaged. Building capacity in isolation is low leverage, as it requires immense resources to educate people and provide them with the necessary experience to contribute to system improvement. However, an intervention to build skills can have a more sustained impact if it engages with deeper leverage points – for example, by creating positive feedback loops or increasing the potential for self-organisation.

Other types of intervention that tinker with parameter characteristics are those that focus on financial incentives and purely material interventions – for example, large-scale job creation programmes that employ a large number of people at a prescribed (and lower-than-minimum wage) remuneration rate for workers who are designated as ‘beneficiaries’ rather than ‘workers’. The ‘Working for’ programmes under DFFE are one relevant example of such a large-scale job creation programme. While these programmes have an explicitly transformative agenda to reduce poverty, such interventions in the TsRC were often characterised by regular interruptions in work and pay (Wolff, 2018), and tended to contribute to the lack of faith in government programmes to enable change in the Village Story (Section 6.4.5). The transitory nature of the social benefits in the TsRC seems to align with the programme’s implementation across South Africa (Buch & Dixon, 2009; van Wilgen et al., 2022).

The size of buffer stocks relative to their flows (11)

Buffers are the redundant stocks in a system that can provide stability; however, if the buffers are too big, a system will be inflexible (Meadows, 1999). Highly networked governance systems, which consist of a large number of connections, can be inflexible because there are many connections in the system that need to be managed. I have already discussed the challenges of overconnectivity in the information flow subsection. However, the value of buffers is that if some of these connections are disrupted, the system can remain connected. I discuss the overlap between the traditional and democratic systems in the Catchment Story that creates some redundancy; however, this overlap also create the potential for conflicts over who holds which kind of power (Section 5.5.4).

There can be leverage in shifting buffers. The power of buffers is often overlooked because their role is predominantly providing a stabilising effect and are therefore only utilised in extreme circumstances. That being said, buffers are often difficult to shift in relation to their potential impact on the system and therefore remain low leverage points.

The lowest leverage point: The parameters and material characteristics (12)

Finally, the lowest leverage points are the system’s numbers. In participatory governance, it is easiest to look at the number of meetings or of people attending them. One could suggest that having more meetings or including more people in decision-making would improve participation. While deciding

how many meetings and workshops should be conducted and how many people should be involved seems to be an essential consideration, it is, in fact, low leverage. Changes in these parameters are unlikely to have any real impact without interacting with higher leverage points.

I have not explored these lowest leverage points in as much detail as I have the higher leverage points. This is partially because participatory governance, by its very nature, does not deal directly with material system characteristics. Another reason is that I am explicitly looking for high leverage points. That being said, material interventions can engage with higher leverage points – for example, the importance of tangible intermediate outcomes in the reinforcing loop that propagates collaboration. In the case of the Tsitsa River Catchment, where many of the residents are vulnerable and underserved, an intervention that provides material outcomes might be necessary for accessing higher leverage points that grapple with the less tangible. I discuss this dynamic in more detail below (Section 7.5.2).

7.4.2. *The five-point framework – towards meaningful participation*

The five-point framework for enabling meaningful participatory governance (Figure 7.9) identifies the system characteristics and arranges them in order to support the design and evaluation of participatory governance interventions. The five-point framework aims to make the generic leverage point framework (Section 3.4) more appropriate for promoting participatory governance. I introduce the five-point framework and then discuss each point in more detail.

Starting with the highest leverage points, the five-point framework includes: (i.) multidimensional trust, (ii.) shared understanding, (iii.) participatory interactions, (iv.) governance capacity, and (v.) tangible benefits. These leverage points are not interventions – the lever is not the leverage point (Chan et al., 2020). The five points are the existing characteristics of the system that can be engaged or modified through an intervention.

A succinct explanation of the five-point framework can be given by extending the popular ‘teach a person to fish’ allegory, which traditionally includes the two lowest leverage points: give a person a fish, and you feed them for a day (*v. tangible benefits*), but teach a person the skills to fish, and you feed them for a lifetime (*iv. governance capacity*). If the allegory is extended: connect the person with other fishers to pool resources, and increase resilience (*iii. participatory interactions*); and connect them with shared understandings of how ecosystems function to enable a fishing practice that is socially and ecologically sustainable (*ii. shared understanding*). Finally, intervene by building trust (*i. multidimensional trust*) so that the understanding can be operationalised to enable *some fish, for all, forever* – to adapt the catchy phrase (‘some water, for all, forever’) that summarised the intention of the current South African water legislation at promulgation (Palmer et al., 2002).

The five-point framework is ordered according to leverage and the power to effect change, and is not in order of importance. Indeed, tangible benefits and improvements in people's lives must be a core governance objective. Similarly, governance capacity and capabilities are a central goal of development rather than just a means to an end – as suggested by the people-centred capabilities approach (Section 3.6).

FIVE POINT FRAMEWORK FOR MEANINGFUL PARTICIPATORY GOVERNANCE

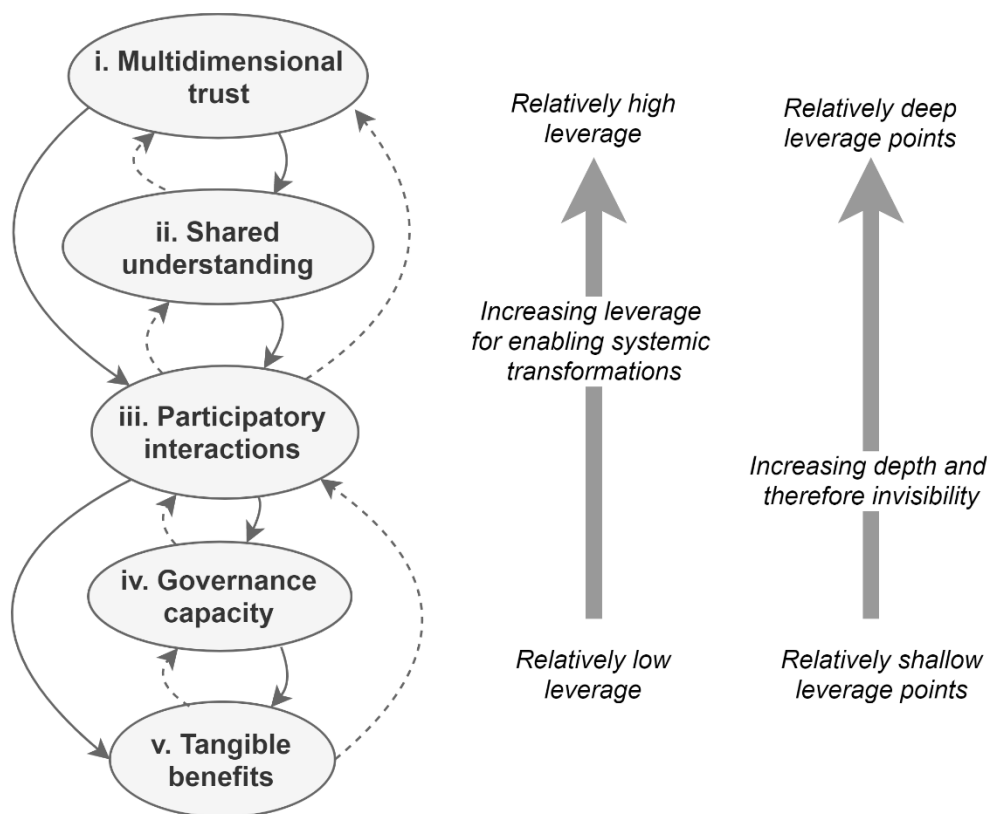


Figure 7.9. The five-point framework for meaningful participatory governance.

The arrows on the right indicate that the leverage points at the top of the list have the highest leverage and are the most invisible and difficult to engage. The arrows between the leverage points indicate influence (high to low) and feedback (low to high). The high leverage points interact with the low leverage points through interactions – the mid-range leverage point.

The arrangement of the five-point framework can be described using leverage point metaphors – i.e., the lever, the iceberg, and the onion (Section 7.2.1). Using the lever metaphor, multidimensional trust and shared understanding are high leverage points when attempting to overcome systemic inertia (Figure 7.10.A). Using the iceberg metaphor, the short-term tangible benefits at the tip of the iceberg are obvious and draw attention, while the body of the iceberg, which includes the high leverage points, remains untouched (Figure 7.10.B). Finally, the onion metaphor illustrates the nested nature of the

leverage points (Figure 7.10.C), with the onion bulb representing the function of the onion plant, which is to sustain the life of the onion and the interdependent ecosystems (Davelaar, 2021).

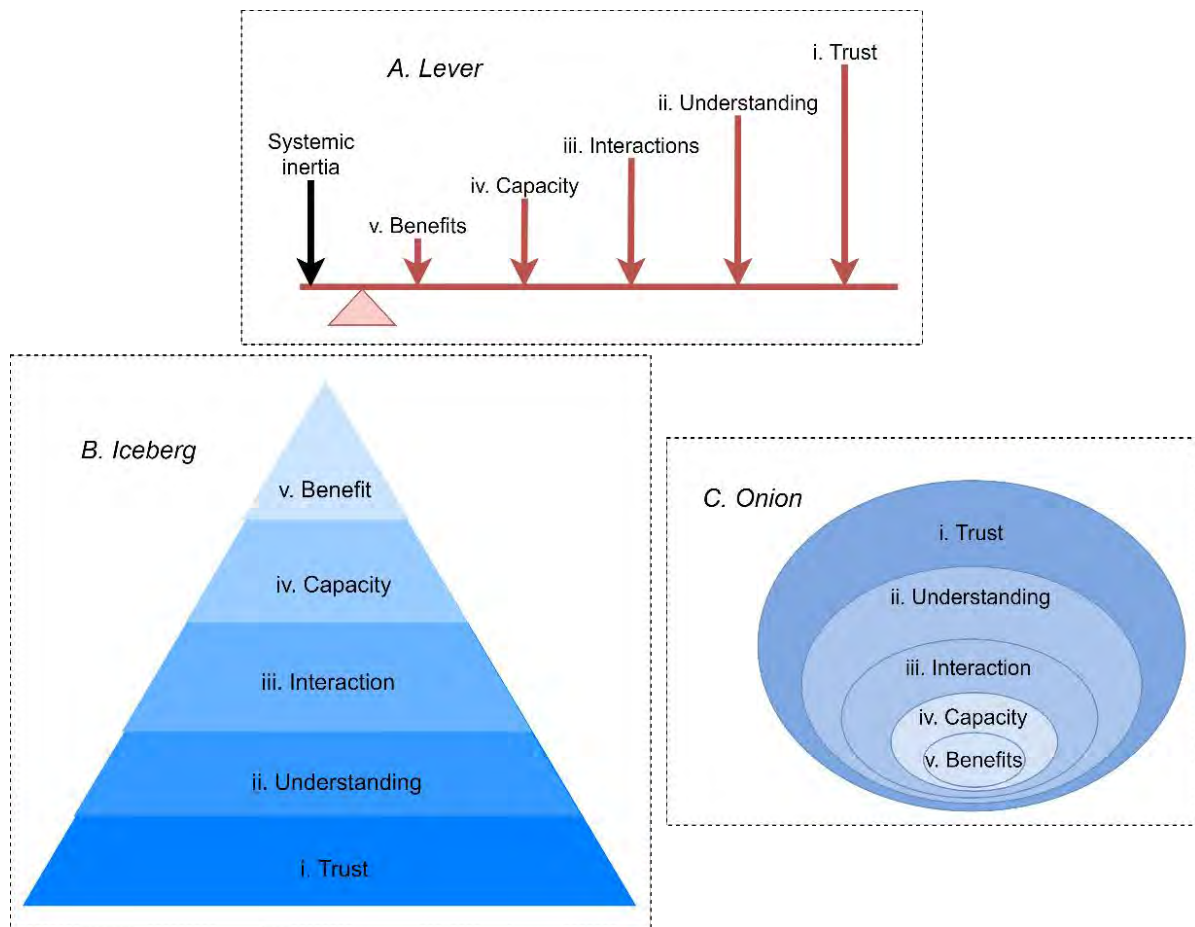


Figure 7.10. The five-point framework represented by the three metaphors.

The lever metaphor (A) suggests that the further away from the fulcrum that a leverage point is, the more leverage is available for overcoming systemic inertia. In the iceberg metaphor (B), benefits and capacity form part of the 'tip of the iceberg'; moving down towards trust at the base of the triangle, the mechanisms become increasingly invisible and increasingly powerful for enabling systemic change. Applying the onion metaphor (C), benefits are nested in capacity, interactions, understanding, and trust.

i. Multidimensional trust

At the base of the iceberg, trust is high leverage but intangible and difficult to monitor and evaluate. Trust can be considered a 'psychological state in which an entity (a trustor) accepts some level of vulnerability based on a positive expectation of another entity (a trustee)' (Stern & Coleman, 2015, p.119) and a 'psychological state within the trustor that is characterised by a willingness to accept vulnerability in interactions with the trustee, and that is driven by relevant antecedents that either decrease the perceived vulnerability or increase its acceptability within the trustor' (Hamm et al, 2016, p.4). Trust has been identified as a mechanism for reducing conflict and uncertainty, encouraging cooperation and cost efficiency, and improving the navigation of diverse interests (Sharp, 2013), and

could therefore be influential in areas where there is a history of resentment (Murdock et al., 2005), as in the case of the TsRC.

In their exploration of the role of trust in collaborative natural resource management, Coleman and Stern (2018) highlight four forms of trust:

1. *Dispositional trust* is a general, context-dependent tendency to trust others (Siegrist et al., 2005). In a particular context, certain people are trusted on the basis of their positions. Norms in a context might also influence dispositional trust (Stern & Coleman, 2015).
2. *Affinitive trust* is based on emotional experiences, which could be influenced by implicit biases. Coleman and Stern (2018) suggest that affinitive trust is crucial in the early stages when catalysing collaborative work.
3. *Rational trust* is based on experiences of the reliability and consistency shown by the trustee. Ansel and Gash (2008) argue that rational trust is built up through cycles of successful interactions.
4. *Procedural trust* is based on a trustor's positive perception of the rules that are in place. Procedural trust is key to Elinor Ostrom's work on the successful governance of shared resources (Ostrom, 2015).

For every type of trust there is a corresponding type of distrust. A trustor may be naturally drawn to a trustee in the case of affinitive trust, but this pre-existing type of trust could also manifest as distrust, and a trustee might be unfairly judged before there is any opportunity for rational trust to build up.

Trust is not always desirable; as Kramer (1999) suggests, certain levels of distrust are not intrinsically negative and might be well-founded and rational distrust. I have specified multidimensional trust because trust building cannot be one-sided; both sides must trust and be trustworthy. My consideration of both trust and trustworthiness was guided by Sharp et al. (2013), who found that it was helpful to differentiate between the two, as that allows for a more nuanced understanding of trust. Sharp et al. (2013) found that differentiating between the terms helped to highlight the fact that it was not only *what actors do* that is relevant to consider, but also *how they do it*. From a systemic perspective, highlighting the importance of trust and trustworthiness helps to shift the burden from the *trustor needing to trust* onto the *trustee needing to be trustworthy*. There is a reflexive element of aiming to be trustworthy, and understanding that building trust through honesty is a better long-term strategy than winning favour to provide short-term material benefits.

It might seem evident that trust between actors is essential for participatory governance, but it is easy for perverse incentives and the drive for short-term solutions to deprioritise and unintentionally undermine multidimensional trust. Some manifestations of trust described in Chapters Five and Six

are a lack of trust between governance actors, which hinders cooperation between institutions (Section 6.4.6); historical neglect and lack of services, leading people to distrust institutions (Section 6.4.5); distrust between organisations based on a historical lack of reliability (Section 6.4.7); and distrust between traditional leadership and municipal leadership structures (Section 5.5.3). The identification of trust as the highest leverage point in the five-point framework highlights the futility of collaborative work that does not address pervasive distrust.

Enabling systemic transformations towards more participatory forms of governance will require trust among and between actors; however, there are significant challenges. Six (2007) identifies three primary challenges: (1) *Trust is inherently relational*; it requires at least two interacting actors. (2) *Trust is often thought of as asymmetrical*, – i.e., trust is much harder to build than to collapse. An alternative phrasing is that ‘negative events have a bigger impact on trust than positive events’ (Poortinga & Pidgeon, 2004, p.1484). (3) *Trust is uncertain*; whether through unfortunate circumstances or malintent, trust can be broken at any moment. Although these challenges exist, trusting relationships can survive when many other parts of a system have collapsed. Other leverage points can support trust building; shared understandings and regular interactions can ensure that the hard gains of a trusting relationship are maintained.

ii. Shared understanding

Within the five-point framework, generating shared understanding, or ‘creating common ground’ as some research participants referred to it, is a high leverage point for enabling meaningful participatory governance. I refer to an individual’s ‘understanding’ as comparable to their mental model (Section 6.3.2) – the set of assumptions and observations gained from experience that they use to make sense of the world and to decide on actions (Forrester, 2009; Carley & Palmquist, 1992). Mental models are well-recognised as a mechanism for enabling collaborative work, and can be shared in order to enable learning (Denzau & North, 2000). Shared understanding is, therefore, the similarities and overlaps between actors’ mental models that are necessary for people to work together across boundaries to enable sustainable ecosystem management (Roux et al., 2006). Shared understanding is commonly referred to as part of collaborative and participatory governance (Ansell & Gash, 2008). Indeed, Lam et al. (2020) consider goal sharing and efforts to reduce differences in worldviews as the most profound form of collaboration – equivalent to the highest leverage points (Abson et al., 2017).

‘Shared’ understanding does not connote consensus. Processes for enabling consensus are important for navigating social and political fragmentation (Innes & Booher, 1999). However, the problem with pushing for consensus is that it can enable existing power imbalances to be reinforced, as one form of knowledge might dominate. It is more important to recognise that ‘consensus building processes are

not only about producing agreements and plans but also about experimentation, learning, change, and building shared meaning' (Innes & Booher, 1999, p.412). Engaging at the level of understanding does not require consensus, but can embrace a pluralism that values multiple ways of knowing (Turnhout et al., 2020). In fact, actors in a system can have different goals that operate harmoniously alongside one another (Ostrom, 2005).

Only multidimensional trust is considered higher leverage than shared understanding, because the engagement that is necessary for generating shared understanding can only be effective if there is a level of trust that can enable participants to engage genuinely with their ideas (Lynam & Brown, 2012). There is also a link between understanding and procedural trust: procedural trust is based on the trustor's understanding of the rules and regulations, and relates to people's perceptions of the governance system. Therefore, variations in procedural trust do not necessarily influence the probability of a desirable outcome. However, improved procedural trust reduces the probability of an outcome that is perceived to be unfair (Hamm et al., 2016).

In my research, the Learning Words process was aimed directly at supporting the creation of shared understanding (Section 5.3.4) (Palmer et al., 2022). Another example is the integrated planning processes, convened by the Tsitsa Project, that brought researchers, restoration implementing agents, and DFFE managers together to increase their shared understanding and to enable collaborative planning (Tsitsa Project et al., 2021a).

The next section explores participatory interactions as leverage points. Shared understandings must be the outcome of a participatory interaction, while pre-existing shared understandings are required if an interaction is to be successful.

iii. Participatory interactions

In this context, 'participatory interactions' refers to the interactions between actors in formal and informal land and water governance. Interactions can be within or between groups. My research has found a lack of bridging links between groups; descriptions of disconnections and difficulties with inter-organisational work are common throughout Chapters Five and Six. Theories that analyse governance as networks highlight the value of a balance between bonding links (connections within a single group) and bridging links (interactions between groups) (Newman & Dale, 2005). Rydin (2006) proposes promoting networking activities (such as site visits and learning exchanges) that make resources available, develop shared understanding, and build norms of trust and reciprocity.

One of the challenges in creating meaningful participatory interactions is overcoming boundaries. Social boundaries can form around differences in race, culture, and language; political boundaries can be between traditional and democratic governance; and there can be physical distances between

actors who lack adequate communication technology. One crucial aspect of participatory interactions is the rules of engagement that dictate how these interactions happen. Facilitation is key to shifting the rules of engagement (Section 6.4.3).

Participatory interactions represent the interplay between the tangible and the less tangible system characteristics, as shown in Figure 7.9. Through interactions, rational and procedural trust can be built; tacit knowledge can be shared and made explicit; and shared understandings can be generated. At the same time, participatory interactions can be used to build capacity or to provide tangible benefits.

iv. Governance capacity

Governance capacity includes the capacity of both formal and informal governance actors. The term *capacity* is closely related to terms such as *skills* and *capabilities*. *Skills* refers to human capital, the stock of skills that an actor or system possesses (Goldin, 2016). An actor's *capacity* is the maximum amount achievable by an actor (Brinkerhoff & Morgan, 2010), and is based on the available human capital and resources. Both *skills* and *capacity* refer to the characteristics of an actor rather than to the structure in which an actor exists. The term *capabilities* connotes the consideration of broader systemic constraints; an actor's capabilities are their substantive ability to achieve what they would like to do or be (Sen, 2002; Nussbaum, 2003) (Section 3.6).

Inadequate governance capacity in the rural TsRC L&WGov system was a theme throughout my time in the field (Section 6.4.4), and is well-acknowledged in the literature as a problem across South Africa; authors refer specifically to skills related to administration, technical knowledge, computer literacy, and financial management (Dassah, 2012; Clifford-Holmes et al., 2015; Ainslie & Kepe, 2016).

Many of the interventions I observed in the TsRC were aimed at increasing governance capacity. For example, in the work of the Tsitsa Project and the GovCoP, the Capability Pathway (Textbox 4) emphasises governance capacity building at multiple levels. As capacity increases, the expectation is that a range of benefits will come to fruition – including the increased quality of the interactions and the services being provided. Furthermore, one assumption is that building capacity will result in positive reinforcing loops in which basic skills beget additional capacities as actors become more skilful and confident. Unfortunately, these positive potential outcomes are tempered by a range of balancing feedback loops, such as these:

- Outsourcing work to external consultants exacerbates financial stresses, breeds dependence, and undermines local learning and problem-solving (Section 6.4.4).
- Skilled or capable people tend to access opportunities that remove them from the local system or from change resistance (Section 7.2.1).

While building governance capacity can enable systemic change, it can also fall within the realm of *doing things right* instead of *doing the right things*. If skills are built to *get things done* in the existing system structure, they will likely contribute to maintaining the existing system rather than shifting its functioning to more desirable trajectories. For actions to change, novel capabilities are required.

v. Tangible benefits

A tangible benefit is what people can point at and say they have received from an intervention. Tangible benefits, such as the material improvement of people's lives, are 'the thing' that governance systems attempt to achieve. Material benefits that are the outcome of engagement with higher leverage points are what interventions are aimed at; in the case of the Tsitsa Project, these tangible benefits would be healthy restored landscapes that deliver ecosystem services and livelihoods. The reason that tangible benefits are low leverage is that providing benefits that do not engage with the higher leverage points is unlikely to make a long-term and sustainable impact. We claim the promise of tangible benefits because it is what our institutions do - projects, programmes, policies demand their expression, but we rarely reflect on whether the espoused tangible benefits are actually realised in ways that meet their espoused (or implicit) purpose.

One result of tangible benefits receiving so much attention, especially financially based benefits, is that they are hotly contested. Fabricius and Collins (2007) found benefits to be the primary source of disputes in their review of community-based natural resource management interventions in rural contexts in South Africa. Benefits must be considered beyond monetary terms (Murphree, 2009; Masterson et al., 2019); a more comprehensive range of benefits could include those that interact with cultural, social, human, and natural capital.

One problem with land- and water-related interventions is the long delays inherent in these systems; ecosystems take time to recover, and grass takes time to grow. These constraints bind even an intervention based on agricultural output. Delayed benefits are particularly challenging, because it is not only the existence of benefits but the perception of benefits that influences perceptions of an intervention (Section 6.4.5). People are more likely to participate when they are satisfied with the level of benefits (Lendelvo et al., 2012). An intervention's benefits depend on the perception of benefits by the people who are involved in and impacted by the intervention, as opposed to an external evaluation of the benefit (Murphree, 2009). Thus projects aimed at providing long-term sustainable benefits rely on procedural trust for people to cooperate; people must believe that they will receive benefits in the future. Short-term benefits are often used as incentives to manage buy-in while long-term benefits are coming to fruition. However, using short-term benefits can have unintended consequences, as trust becomes dependent on the reliability of the short-term benefits,

such as low-wage employment – which, in the case of large-scale job creation, can be unreliable. Any income is undoubtedly helpful, but when the work stops, the system remains unchanged. In fact, such an intervention can leave the system worse than before – for example, if people get into debt because they have taken out loans in the expectation of a sustained income.

Material service provision and infrastructure in the TsRC are poor; thus material implementation might be a crucial aspect of building trust and repairing the relationships that are needed for participatory governance.

7.5. Discussion

I have used the findings in this chapter to explore the leverage points that are available to create transformations towards more participatory forms of governance. I have then synthesised the identified leverage points into the five-point framework, which could support the design, implementation, and evaluation of interventions that aim to improve and sustain participation in land and water governance.

This discussion illuminates the findings and deepens the insights through four key areas that emerged during the process of identifying and crafting the five-point framework:

- Important considerations when applying the five-point framework (Section 7.5.1),
- the spectrum of potential trajectories towards big transformations that engage with high leverage points (Section 7.5.2),
- the importance of being aware of windows of opportunity when attempting to engage leverage points (Section 7.5.3), and
- the how meaning is the key leverage point around which the framework was designed (Section 7.5.4).

7.5.1. *Applying the five-point framework*

The five-point framework brings the simplicity of the leverage points framework into the messy context of participatory governance in the TsRC. By defining a specific list in a specific context related to a specific problem, the five-point framework brings the generic and theoretical ‘12 places to intervene in a system’ defined by Meadows (1999) to a more practically applicable level. The five-point framework is a step towards addressing a practical societal problem, but does not prescribe set interventions. The result is a relatable and adaptable five-point framework that governance actors could use to plan and evaluate interventions.

The five-point framework is not a step-by-step guide, and requires a critical and reflexive application (Section 4.2). Anybody applying the five-point framework must understand the inherent shortcomings and weaknesses; as with Meadows's (1999, p.19) framework, 'it is tentative and its order is slippery'. Context is important. The five-point framework has emerged from my analysis of participation in land and water governance in the TsRC and is, therefore, most applicable to this context; however, it might also apply to actors working in similar rural landscapes in South Africa and in other developing countries.

7.5.2. Trajectories towards large, deep transformations

I have noted the importance of scales and levels in land and water governance (Sections 3.2 & 5.2.1). My research focuses on the Village and Catchment Stories, which are relatively localised governance levels. I am interested in broader systemic changes. At the beginning of this chapter, I pose the question: How do we make the large-scale and desirable systemic changes that can be sustained over time?

The challenge is to find pathways towards deep systemic changes. What are potential trajectories towards high leverage points at large governance levels? Here I briefly expand on the transition theories already introduced (Section 7.1). The multilevel perspective (Geels, 2002) highlights the fact that transitions move from niches (the locus of innovation) to regimes (the established practices that stabilise a system) and, ultimately, to the landscape level (the broader context) (Van den Bosch & Rotmans, 2008). Göpel (2016) suggests that a system goes through four stages of development: from (1) a pre-development stage, in which the impact is low, to (2) a take-off point, in which some momentum is gained; the system change then enters (3) an accelerated stage, in which change is visible but hard to control, and then finally into (4) stabilisation, in which a new dynamic equilibrium is established. This four-phase model was initially observed in natural systems, but is also used to analyse social changes (Göpel, 2016). There are also more complexity-sensitive theories of system change, such as the theory of panarchy (Section 3.5), which highlights cyclical dynamics by including phases of growth and development as well as phases of decay and re-orientation (Gunderson & Holling, 2002; Cosens & Gunderson, 2018).

Insights from transition theory reveal that transformations are not stable or permanent, and can sit anywhere on a spectrum, from a genuine transformation through a collective paradigm shift to a relapse back into the pre-existing system should the new stabilising stocks and feedback loops be insufficient to sustain the change (Grin et al., 2010). Furthermore, the panarchy theory highlights the fact that systems naturally have phases of growth and decay, which should not prompt ambivalence or apathy towards the potential of desirable change, but should prompt an expectation of setbacks and challenges or phases of stagnation.

Necessary trade-offs depend on the size of the system that an intervention intends to impact. To deepen the five-point framework theoretically, I elucidate a spectrum of potential trajectories by introducing two approaches that sit in tension with each other; I summarise them as (1) *small and high leverage interventions* versus (2) *large and low leverage interventions*.

- The first approach aims for high leverage points at low levels of governance with the aim of scaling up. Under this approach, innovative niches would be developed in order to support broader systemic change by going directly for high leverage points – often in the form of pilot projects (Vreugdenhil et al., 2010). Most of the work done by the Tsitsa Project CoPs could be classified as pilot projects, as novel approaches are being trialled in a defined context to learn about the novel approach and influencing practices and policies. Pilots are characterised by substantial flexibility compared with more routine activities.
- The second approach aims for low leverage points at high levels of governance, on the assumption that deeper systemic shifts will emerge through the intervention. Large-scale and low-leverage interventions are inevitably more routine interventions that are implemented in line with the dominant system paradigms. A change in response to low leverage interventions would depend on trickle-down benefits that enable tipping points towards system transitions. The land restoration overseen by the ‘Working for’ programme is more in line with routine management projects, which follow conventional development trajectories and daily management. The restoration work is a national programme that is bound by existing policies and guidelines.

Between these two approaches is a spectrum of middle-ground approaches that engage with both high and low leverage points in a more patchwork approach (Section 5.6.6) to work towards large, deep transformations. The next section explores the importance of alertness to windows of opportunity at multiple levels as key to navigating within the spectrum.

7.5.3. *Windows of opportunity*

I have already introduced the impracticality of aiming indiscriminately for high leverage points (Section 3.4) and the potential of a middle-ground approach that engages multiple leverage points. For example, high leverage interventions will necessarily disrupt systemic patterns and will not align with the dominant mental models held by actors in the system. Another concern is that a focus on high leverage points might miss opportunities when the system is amenable to change through engagement with lower leverage points that are related to points of low change resistance (Harich, 2010) or windows of opportunity (Olsson et al., 2006). In isolation, low leverage interventions might be ineffective at creating systemic transformations; however, they could open windows of opportunity for higher leverage interventions.

A key objective of the Tsitsa Project was to find ways of involving residents in governance processes. One pathway to achieving this objective was by building on the large and established ‘Working for’ programmes, which do not conventionally provide opportunities for meaningful participation in governance processes related to the programme. As has been assertively argued, the ‘Working for’ programmes have generated a range of practical land and water management challenges that have enabled the development of substantial landscape management expertise and a large body of research – particularly on the dynamics of biophysical systems (Van Wilgen et al., 2020; van Wilgen et al., 2022). The importance of government-funded programmes that explicitly acknowledge the value of the services that ecosystems provide, and that recognise that money spent on ecosystem restoration is a worthwhile investment (Turpie et al., 2008) is crucial in a context where the majority of local governance actors are focused on service provision (Section 5.7.1). Therefore, while the ‘Working for’ programmes do not solve all of the problems that they set out to, they do employ a large number of people and generate a large amount of restoration work that reveals the challenges related to land and water resource protection, and opens opportunities for complementary projects to build on and potentially to access deeper leverage points. Key examples of the Tsitsa Project building on the ‘Working for’ programme include the participatory planning processes that involved community members in mapping priority areas for restoration (Tsitsa Project et al., 2021a); the *Vetiver* nurseries that were established to supply ‘Working on Dryland’ restoration teams (Conde-Aller, 2020); and grazing associations that were established to protect restored areas (Tsitsa Project et al., 2021c).

Therefore, my results suggest the necessity of concurrently engaging with multiple points across the five-point framework to access high leverage points. Indeed, careful preparation for change and alertness to opportunities for practical action, reframing of an idea, or shifting of the collective mental models is, therefore, a helpful habit for building towards higher leverage interventions in CSEs (Olsson et al., 2004b; Senge, 2006; Biggs et al., 2008a; Rogers et al., 2013).

7.5.4. *Engaging meaning to reshape power structures*

In Chapter Three I introduce meaning as a vital leverage point for enabling shifts towards sustainable participatory governance systems that can change and adapt but that continue to function despite inevitable discontinuities and unpredictable cycles of growth and decay (Allen et al., 2014). I then use the term *meaningful participatory governance* throughout the thesis to emphasise the relational and contextual aspects of participatory interaction, which make them understandable and significant to participants as well as relevant to and consistent with a broader multilevel governance system (Section 3.3.2). I have not included meaning as part of the five-point framework, preferring to keep meaning as a ‘higher leverage point’ that provides an overarching orientation for the framework.

Along with meaning, power is a social dimension that influences participatory governance. In Section 3.3.1, I compare power typologies that are relevant to this study (Gaventa, 2019; VeneKlasen & Miller, 2002; Lukes, 2005; Boonstra, 2016). These conceptions of power are complementary to the leverage points framework. Using the iceberg metaphor to help to explain what I mean by this: (1) the deep power at the base of the iceberg is the power to shape paradigms; (2) then there is the ability to shape the agenda; (3) the context in which decisions are made; and finally, the tip of the iceberg is the pragmatic power of being able to decide what happens. Pragmatic power is therefore nested in more invisible forms of power.

The power literature is often framed around imbalances, such as in Chambers's (2006) polycentric power typology, which describes power as the 'uneven capacity to influence the goals, process, and outcomes of polycentric governance'. Indeed, power imbalances influence all of the points in the five-point framework, as I outline below.

- Power differences influence *multidirectional trust*. An actor with power is less dependent than a powerless actor, who is more likely to be forced into trusting – or, at least, acting as though they are trusting. Rural residents might be distrustful, but they have limited choices. I have discussed the instances of protest and push-back (Section 6.4.5); however, in the initial interaction, they have to act as though they trust.
- Developing a *shared understanding* is negatively impacted when one person's knowledge dominates another person's knowledge in an interaction.
- Power imbalances in *participatory interactions* can dictate who can speak and what is said.
- Actors with power have more control over resources, and can decide how the available governance capacity is utilised.
- Actors with everyday decision-making power dictate how tangible benefits are apportioned.

It is necessary to acknowledge power imbalances and the abuse of power; in fact, accountability to reduce the abuse of power is a central justification for participatory governance (Schneider, 1999; Heinelt et al., 2002). However, power is often incorrectly regarded as sinister or unchanging (VeneKlasen & Miller, 2002; Chambers, 2006). Including *power with* in some power typologies is a clear recognition of the potential for collaboration and participation (Chambers, 2006; VeneKlasen & Miller, 2002). As VeneKlasen and Miller (2002, p.39) explain, '*Power with* can help build bridges across different interests to transform or reduce social conflict and promote equitable relations'. Indeed, there are many distinct types of power that participation can aim to leverage. Some authors argue for participation that is aimed at enabling transformations by engaging the *power within* each individual (Cooke & Kothari, 2001; Williams, 2004; Cornwall, 2008).

Power and meaning are dynamically related. I have described power's influence on the five-point framework and, therefore, the influence of power on meaning. However, I also propose that meaning is a leverage point that can shift situations that are characterised by power imbalances to ones in which *power with* is realised through meaningful participation and *power within* as participatory processes become meaningful and align with the values and principles of individuals.

7.6. Conclusion

In this chapter I have used the leverage point framework to synthesise my research findings (presented in Chapters Five and Six) in order to link them back to the practical challenges introduced in Chapters One and Two. I have done this by elucidating leverage points in the system of interest and presenting a novel leverage point framework with a practical orientation – the five-point framework. This framework was crafted to support the design, implementation, and evaluation of interventions that aim to improve and sustain participation in land and water governance.

At the heart of the leverage point framework, particularly when conceptualised using the onion metaphor, is that lower leverage points are nested in higher ones, and are only effective insofar as they influence deeper leverage points. Genuine systemic transformation needs to be coupled with a change at the level of paradigm. However, it is also evident that high leverage points might be inaccessible and that alertness to diverse interventions that engage multiple leverage points concurrently could enable access to high leverage points. Therefore, it is necessary to be aware of potential windows of opportunity to access all leverage points while ensuring that higher leverage points, such as trust and shared understanding, are prioritised. Furthermore, I highlight that the five-point framework is oriented towards *meaning*, which, although difficult to access directly, is a 'higher' leverage point for grappling with power dynamics and for creating sustained transformations towards more participatory governance systems. I explore specific recommendations in Chapter 8.

CHAPTER EIGHT | Contributions, recommendations, and conclusion

In this concluding chapter I return to my personal motivations and reflect on the importance of my research (Section 8.1). I then give an overview of my research contributions (Section 8.2). After that, I describe the engaged research outcomes (Section 8.3), outline the main research findings (Section 8.4), and propose the recommendations emanating from the findings (Section 8.5). Finally, I detail the methodological insights (Section 8.6) and suggest future research avenues (Section 8.7).

8.1. Reflective introduction

My research journey, the results of which are contained in this thesis, began to take shape in 2018 while I was living and working in Zithulele – a small rural village along the Eastern Cape coast of South Africa. As with the Tsitsa River Catchment (TsRC), Zithulele sits in the former Transkei homeland (Section 2.1.2). During my time in Zithulele I became concerned about the future development of the area. I sensed that, despite the new government regime in South Africa, which is striving towards a substantively participatory form of democracy (Section 1.2.1), the development of the former Transkei would be directed by external intervenors in a way that would entrench the poverty and disenfranchisement of the rural populations and exacerbate ecological system breakdown.

I was also convinced of the profound economic, social, cultural, and spiritual value of the former Transkei for the amaXhosa population across South Africa. While there is substantial migration to urban centres, many people still consider the former Transkei to be ‘home’, a multidimensional safety net to which they periodically return and in which they often invest for the future (Njwambe et al., 2019). This is not only true for the former Transkei and the amaXhosa, but for all of the former homelands in South Africa (Shackleton & Shackleton, 2004; Giannecchini et al., 2007; Mbiba et al., 2019). These rural areas, which seem to have so little economic value, hold substantial value for the roughly 17 million inhabitants (Punt et al., 2005), as well as for the millions more who live in urban centres but still rely on the connection to ‘land’ that is available in these rural former homelands.

The proliferation of research into complex social-ecological systems (CSEs) (Lejano, 2019; Chan et al., 2020; Biggs et al., 2021) and the relationship between humans and nature (Russell et al., 2013; Ives et al., 2017; Pérez-Ramírez et al., 2021) has identified the transformation of this relationship as a high leverage point for sustainable development that is socially and ecologically just (Ives et al., 2018; Swilling, 2020; Bainton et al., 2021). Some argue for a shift from being stewards to being partners with

nature (Cockburn et al., 2020; Davelaar, 2021) because we need to recognise our dependence on nature to change how we interact with it. Through this place-based case study, I seek to contribute to these global discussions.

I see the development of the former Transkei as a high leverage point for the sustainable development of the Eastern Cape and as a practical case study for understanding the development of other former homelands in South Africa. Beyond the social and cultural importance of the former Transkei, the potential of the land and the water to enhance the lives of its inhabitants is not being realised. In the TsRC, governance actors with distinct agendas, including agriculture, forestry, mining, ecotourism, and subsistence farming, have different objectives (Bäse et al., 2007; Cockburn et al., 2018b). I do not explore which land use should take preference, but I affirm that this change process must be founded on the meaningful participation of the rural residents. Furthermore, given the past injustices and the ongoing neglect suffered by rural populations (Section 2.1.2), the process of participation must necessarily go beyond mere involvement. The emphasis on meaning is vital (Section 3.3).

Having identified the problem of the ongoing exclusion of rural residents from the governance processes that influence their lives and their land, my research began to take shape. I formulated an early version of my research question: *How could people living in the former homelands have more ownership over the developments that influence their lives?* Having conceptualised a research question, I was fortunate to have the opportunity to research the land and water governance system (L&WGov system) in the TsRC (Section 2.2) as part of the Tsitsa Project.

8.2. Overview of research contributions

In this thesis, I seek to make practical, empirical, theoretical, and methodological contributions at multiple levels (Table 8.1), which I discuss in this chapter.

I seek to make the most substantial practical and theoretical contributions to local efforts to improve land and water governance in the TsRC – the focus of my research. The practical contributions relate to my involvement in participatory processes and governance capacity development in the TsRC. The empirical and theoretical contributions are the findings and framings that I have developed in this thesis that could be used in future participatory governance interventions in the TsRC. Localised efforts to improve land and water governance in the TsRC form part of the broader drive to improve land and water governance in the former Transkei homeland, in the rest of the former homelands, and in South Africa more broadly. By working with the Tsitsa Project and the national Department of Forestry, Fisheries and the Environment, I have contributed to the promotion of the CSES framing and, I hope, to the (inevitably slow) transformation of natural resource governance in South Africa.

I aim to contribute to the theoretical conceptions of meaningful participation and the participation of marginalised rural communities in land and water governance and to the broader understanding of the complex interactions between traditional and democratic governance systems. I build on participatory governance research conducted in other rural and developing contexts. For example in Malawi (Adams & Zulu, 2015) and Uganda (Hassenforder et al., 2015a, 2020) and Sub-Saharan Africa more broadly (Nelson & Agrawal, 2008) as well as in India, Bolivia and Mali (Rist et al., 2007).

I seek to make contributions through my transdisciplinary methodology, my detailed multilevel mapping of the governance system, and my novel application of the leverage point framework to identify context-specific leverage points. My application of the sits with an increasing interest in and application of the leverage point framework in the study of sustainability transformations in CSEs (Abson et al., 2017; Chan et al., 2020; Leventon et al., 2021; Ola & Victoria, 2021)

Table 8.1. Levels and spheres of research contributions.

My research contributes at multiple levels: most specifically to the Tsitsa River Catchment, more generally to South Africa, and most generally to other rural complex social-ecological systems. I also contribute to multiple spheres, which I have divided into (1) practical and engaged, (2) empirical and theoretical, and (3) methodological.

Levels	Practical and engaged (Section 8.3)	Empirical and theoretical (Sections 8.4 & 8.5)	Methodological (Section 8.6)
The Tsitsa River Catchment (TsRC), a complex social-ecological system.	I was involved in practical actions to promote participatory governance as part of the Tsitsa Project in the TsRC.	My findings build on the growing body of knowledge about the TsRC, and could inform future land and water governance praxis in the TsRC.	My methodological insights are relevant to future research that aims to: • apply a transdisciplinary research methodology, • map a heterogenous and multilevel governance system, • model complex social dynamics using systems diagramming, or • search for context-specific leverage points.
The former Transkei and surrounding areas in the Eastern Cape.	My contributions to the Tsitsa Project informed recommendations emanating from the Tsitsa Project through its relationship with the national Department of Forestry, Fisheries and the Environment.	I aim to contribute to multiple broader academic streams informing land and water governance – most prominently: • the meaningful participation of marginalised rural communities in land and water governance, and • interactions between traditional and democratic governance systems.	
The rest of the former homelands and South Africa more generally.			
Contested rural landscapes in developing contexts.			
Rural complex social-ecological systems more generally.			

8.3. Engaged research outcomes

My methodology has highlighted the necessity of becoming involved in the research context, and therefore participating in the problem dynamic rather than remaining external to it (Ison, 2008). Becoming immersed in a problem context can make drawing neat conclusions and recommendations difficult: the more immersed in the TsRC I became, the more overwhelmingly complex the problems revealed themselves to be. I found myself navigating between the *boisterous optimism* of an outsider with potential solutions, and the *confused pessimism* of an insider with an awareness of the intractable challenges.

I was embedded in the Tsitsa Project as an engaged researcher. The Tsitsa Project was a pilot project with a research focus aimed at contributing to the application of CSES thinking in land and water governance in the South African context; therefore, the systemic benefits of the Tsitsa Project might not have been felt directly by the residents of the TsRC. One strength of the Tsitsa Project was its close working relationship with DFFE (Section 2.2.1), which created the potential to influence national-level DFFE policy and practice, including having a direct impact on the implementation of rehabilitation and development programmes such as the internationally recognised ‘Working for’ programmes (Section 5.4.3).

The project’s main body of insights and recommendations is captured in a report entitled ‘The Tsitsa approach to sustainable land management and rehabilitation’ (Tsitsa Project et al., 2021a) and in a set of policy and practice briefs (available at <https://www.ru.ac.za/tsitsaproject/resourcesresearch/>). I coordinated the GovCoP’s contributions to the ‘Tsitsa approach’ document, and was a co-author on two of the policy and practice briefs, in particular leading an exploration of boundary work in natural resource management (Tsitsa Project et al., 2021f, 2021d). The synthesised learnings of the Tsitsa Project contribute to the tradition of adaptive governance research in CSES in South Africa (Pollard & Du Toit, 2008; Rogers & Luton, 2011; Grecksch, 2015; Biggs et al., 2017; Palmer & Munnik, 2018; Roux et al., 2021).

The Tsitsa Project did also make progress in the Village and Catchment Stories. For example, the project promoted green livelihoods, which built on the DFFE restoration implementation work (Tsitsa Project et al., 2021c), and conducted extensive biophysical mapping, which enhanced the integrated planning of restoration work (Tsitsa Project et al., 2021b) (Appendix A3). I regard the role that the Tsitsa Project played in the lives of the catchment-based employees as the most significant contribution. The monetary compensation provided some tangible benefit; however, through their training and work experience, many employees grew and felt a sense of purpose through meaningful participation in the project activities (Mtati, 2020; Palmer et al., 2022). I do not suggest that these relationships were all positive; undoubtedly, both sides had bitter disappointments, such as

catchment-based employees abandoning the project without any communication, and multiple instances of delayed payments, which frustrated the employees.

My engaged research activities primarily contributed to the work of the GovCoP, which works in local communities to build the capabilities that are necessary for engagement with participatory land and water governance institutions. Living and working in the TsRC enabled me to explore the context and to create connections with local actors, thus expanding the Tsitsa Project's network and playing a boundary-spanner role between the Makhanda-based academics at Rhodes University and the catchment-based actors. I participated in the training of catchment-based employees working in the Tsitsa Project, including an actor mapping session building on my research, which facilitated discussions about local-level governance relationships (Section 5.7.2 & Appendix D9).

I engaged in two processes in the late phases of my research, through which I could use the methods I had learned to support the impact of the Tsitsa Project. The first was an actor mapping process to support the work of the Umzimvubu Cluster in the Living Catchment Project, which includes the Tsitsa Project and the Umzimvubu Catchment Partnership. The Living Catchments Project aims to improve water governance at multiple levels, and is being implemented by the South African National Biodiversity Institute in partnership with the Water Research Commission and the Department of Science and Innovation. In the words of the Tsitsa Project's project manager, the mapping process was an attempt to untangle the 'networks, within networks, within networks' in order better to 'keep track of who is connected and should be connected and where and how' (Appendix D10). The second process was conducted in a meeting in Matatiele between officials from DFFE national and local implementing agents and DFFE-affiliated organisations. The purpose of the meeting was to discuss the negative impacts of high-level instability and changes in DFFE's procurement and contractual processes, which had led to widespread delays in their programmes and had a range of severely negative impacts – including the collapse of several small implementing agents (Narrative 14 in Section 6.4.7). From my observations, I developed a causal loop diagram in collaboration with four of the meeting participants. The diagram and its accompanying notes (Appendix E3) were later shared more widely in DFFE, including with the Director of Operational Support and Planning at the national level.

I immersed myself in the Tsitsa Project's network of relationships. I knew when initiating the research that the Tsitsa Project was likely to be a short-term intervention, as I had seen in so many projects in the former Transkei homeland. I was also aware of the instability in the Broader Story (e.g., Figure 5.10) that would inevitably influence the project. I discuss my concerns about the project contributing to this trend in a reflective essay entitled 'An ethical dilemma' (Appendix A4). While the main drive behind the Tsitsa Project began slowing down after six years of investment (Section 2.2), some ongoing interventions were built on the foundations it had laid. My experiences within the Tsitsa Project bring

into question the sustainability of government funded projects that are constrained by the structures as well as susceptible to the shocks – for example the rippling effects of the changes in procurement (Section 2.2.1 and 6.4.7). For my part, I know that a small group of people have greater capabilities to participate in land and water governance and have been exposed to new ways of participating.

Despite the engaged research outcomes, I am undoubtedly the person benefitting most significantly from my research process, through gaining skills and the possibility of a qualification. I hope that, through the skills gained, I will take part in enabling future benefits for the people living in the rural areas of South Africa. There is substantial work to do in directly supporting and, more systemically, in affirming the value of rural landscapes and livelihoods in the former homelands and articulating their multidimensional contribution to the lives of millions of South Africans.

8.4. Summary of main research findings

8.4.1. Findings in response to Objective One

The first objective of my thesis was to *map the complex social-ecological system (CSES) of interest*, namely the social and ecological elements and their interactions that constitute the land and water governance (L&WGov) system in the Tsitsa River Catchment (TsRC). I achieved Objective One by addressing four research questions. I summarise my findings below in response to these questions.

RQ1a. What institutions, at multiple levels, influence the TsRC L&WGov system?

At the core of the mapping was the recognition of three distinct governance stories (the Village, Catchment, and Broader Stories). These three stories divide the system vertically. The recognition of these stories emerged from embedded fieldwork and were designed to support a locally focused analysis that took the perspective of a locally based actor (Section 5.2.1). The use of ‘governance stories’ as a narrative-based conceptual scaffolding builds on the more conventional representations of institutional levels as introduced in Section 3.2.1.

There are also horizontal groupings that I described as clusters. The national government departments in the Broader Story predominantly shape the governance clusters in the Catchment Story (e.g., water, environment, agriculture) (Section 5.2.1). Although there are also private clusters, there is a clear divide (for example) between private and commercial agricultural actors and the government-run agricultural actors who work in the former homeland areas and who have close connections to the traditional leaders (Section 5.5.1).

The overlapping traditional and democratic governance systems is a key characteristic of governance in the TsRC (Section 2.1.2). The current governance system is complex and has emerged through the

interactions between actors and the piecing together of institutions. The colonial and apartheid institutions still linger as the contemporary actors attempt to overcome (but in some cases exacerbate) the daunting governance challenges.

There are high-level debates about the role of traditional leaders in a democracy. However, the local and short-to-medium term reality is that traditional leaders are crucial, given their embeddedness and the inability of the democratic system to sufficiently govern in the rural areas (Section 5.5.4). It is necessary to emphasise the involvement of traditional leaders in local collaborative governance initiatives as was done by the Tsitsa Project (Section 2.2.1) and in the uMzimvubu Catchment Partnership (Snorek et al., 2022) as well as providing support for community members attempting to hold corrupt traditional leaders accountable, as has been done in other areas (Zamchiya, 2019; Mustasilta, 2021).

RQ1b. Which social and ecological elements are important in participatory governance in the TsRC L&WGov system?

I identified the social and ecological elements involved in land and water governance in the three stories. The Broader Story involves national and provincial government departments (Section 5.4); the Catchment Story consists of actors involved in local government and project implementation (Section 5.5); and the Village Story is where rural residents cooperate in livelihood activities (Section 5.6).

Governance mapping enabled the identification of participatory governance roles, such as *boundary spanners* with social networking skills and *system convenors* with the ability to access resources from broader systems (Section 5.5.4). I also identified that certain ecological elements sit at boundary points between groups and are, therefore, sites for collaboration (Section 5.6.6). I identified the actors and elements playing these roles as necessary for participatory governance. One example is the local community development workers who span all three stories, with a strong presence in the Village Story (Section 5.5.2). Another important actor is the district municipality, which is central to local-level planning and development and has key land and water governance responsibilities (Section 5.5.4).

RQ1c. How do the social and ecological governance elements connect?

My findings suggested that the tendency towards top-down unidirectional connections dominates the system. However, actors in the Catchment and Village Stories feel that they are unsupported by higher levels of governance (Section 5.6.5). In the village story, the elicitation of a helpfulness rating, rather than influence, reframed the mapping to more explicitly elicit community opinions and clarify the feeling of interdependence within the Village Story. These findings contrast with the literature, which suggests that rural communities are highly dependent on external support. What is clear is that there

are substantial disconnections that are related to misalignments of expectations held by community members and the amount of support being provided.

I also distinguished between bonding (within a group) and bridging links (between groups), suggesting the need for balance within a governance system (Section 5.7.1). My findings suggest an excess of bonding links and connections within groups; but poor connectivity between groups.

Influence and accessibility emerged as key variables influencing interactions. I focused on traditional and democratic governance in rural areas. While most of the formal influence has been given to local government institutions, they often remain inaccessible, and as a result, the accessible traditional leaders tend to hold on to more influence than they are formally allocated (Section 5.5.3). The importance of accessibility was also linked to physical presence and the power of face-to-face interactions for building trust and common understanding as was explored as part of the systemic analysis (Section 6.4.2).

RQ1d. At what governance level should the systemic analysis focus on identifying leverage points that enable local-level participatory land and water governance?

The increasing instability in the Broader Story and the lack of trickle-down to the Village Story highlights the necessity of finding local leverage points for interventions and pilot projects that could generate lessons to inform the refinement of broader policy and legislation (Section 5.7.3). Indeed, I agree with Snorek et al. (2022, p.14), who suggest that, while ‘top-down governance is an intuitive place to look for large-scale change, we need to remember to look at specific times and places for “smaller” victories’; particularly in rural or developing context where ‘path dependence has less of a hold and progress can be made.’

8.4.2. Findings in response to Objective Two

The second objective of my thesis was to conduct a systemic analysis of participatory governance in the TsRC L&WGov system. I summarise my response to the first two research questions, and then discuss the third.

Research Questions One and Two under Objective Two (RQ2a & RQ2b)

Research Questions One and Two under Objective Two can be summarised as: ‘What variables influence meaningful participatory governance in the TsRC L&WGov system (RQ2a)’, and ‘What patterns emerge from the interactions between these variables (RQ2b)?’ I clustered the results into six sections to reflect the identification of six sets of variables (Section 6.4) that I used to structure the summarised results in Table 8.2

Table 8.2. Summary of the findings under Research Questions One and Two under Objective Two. RQ2a is the first research question under Objective Two, and RQ2b is the second research question under Objective Two.

Variable set (RQ2a)	Dominant pattern (RQ2b)	Emerging pattern (RQ2b)
Rural area accessibility, infrastructure, and mobility were linked to the accessibility and physical presence of formal governance actors (Section 6.4.2).	Rural areas are inaccessible to governance actors. Governance actors are inaccessible to rural actors. There are negative impacts that arise from increased rural-urban connectivity.	There were instances of moving meeting locations into rural areas to enable participation.
Language use and shared understanding were linked to participatory interaction facilitation (Section 6.4.3).	There are tangible knowledge barriers that inhibit active participation. There is a dominance of archaic forms of facilitation (e.g., unidirectional flow of information).	There were instances of actors spending time together and learning from one another. There were instances of interventions directly addressing gaps in understanding.
Governance capacity and capabilities were linked to the use of governance resources (Section 6.4.4).	There is a tendency towards a reactive use of governance resources (e.g., reliance on expensive external consultants) rather than proactive activities (e.g., skill building and problem-solving).	
Participation and the motivation to participate were linked to the real and imagined benefits and incentives provided by a project (Section 6.4.5).	Historical broken promises negatively impact participation. Divisions in communities make effective communication and inclusive processes difficult. Local governance actors do not prioritise participatory processes; they become tick-box exercises.	
Trust and mistrust were linked to the building of interpersonal relationships (Section 6.4.6).	Ongoing instances of mistrust are linked to past and ongoing negative experiences. Rapid turnover in local-level actors disrupts working relationships.	There were instances of actors acknowledging boundaries and attempting to collaborate across them.
The buy-in of actors was linked to the mechanisms put in place to enable accountability (Section 6.4.7).	Local-level processes do not have legitimacy and potency when higher-level actors do not buy in. There is a dominance of upward accountability (i.e., lower levels held accountable by higher levels) with ineffective tools for downward accountability.	There were positive instances of higher-level actors choosing to buy in, be physically present, and be held accountable.

RQ2c. Why do the dominant patterns of interaction between participatory governance variables in the TsRC L&WGov system recur?

While the emerging patterns suggest that there are ways to overcome the dominant patterns, the prioritisation of participation still comes up against deeper systemic structures and systemic inertia, which perpetuate more centralised forms of decision-making (Section 6.5). Some of these systemic structures are the following:

- There is pervasive inequality in access to resources, which entrenches power imbalances in participatory interactions.
- Resource constraints across South Africa are linked to COVID-19 and the economic recession.
- Actors in power tend to resist change, and are unwilling to share decision-making power.
- There is a dominant paradigm that focuses on economic efficiency and short-term benefits.
- There is rampant corruption at multiple levels in the South African government.
- Dominant mental models reflect and reinforce dominant, shallow forms of participation.

Building on the potential leverage points identified under Objective One, the systemic analysis highlighted the importance of building trusting networks by local governance actors playing participatory governance roles at local levels that can withstand the instability in higher levels of governance.

Emergent synthetic outcome

In the conceptual overview in Chapter Three, I explored the use of ‘meaning’ and ‘meaningful’ in the participatory governance literature. ‘Meaningful’ is generally used to connote higher levels of power sharing, and is often used when referring to the inclusion of marginalised groups (Section 3.3). Meaningful participation does not necessarily refer to interactions that are high on the ladder of participation (Table 3.1); for example, instances where delegation of decision making to experts is based on trust and shared understanding may well be meaningful without requiring collaborative processes. Furthermore, I highlighted the socially derived and context-dependent nature of meaning in participatory interactions.

I then built on the general framing by elucidating what might constitute meaningful participatory governance in the L&WGov system in the TsRC. The need for this context-specific framing emerged during my research process as it became clear that I would need to answer the question, ‘Leverage towards what?’ In answering this question, I highlighted specific aspects of governance that might constitute meaningful participatory governance in the TsRC (Textbox 15). I reproduce the list below.

- Meaningful participatory interactions are *accessible*, do not restrict the *agency and confidence of disempowered actors*, and open the possibility for participants to become *actively involved* in organisation and facilitation.
- Participants are or can be enabled to communicate so that *all participants understand* what is being communicated.
- Reducing misunderstandings requires *creating a shared understanding* that draws on the *knowledge of all participants*.
- Meaningful engagements are promoted through *balanced facilitation* that allows *open dialogue* but does *not lose touch with the broader objectives of the process at hand*.
- Participation processes allow for the emergence of *interpersonal relationships* within and between levels of governance.
- *Inter-story relationships* are enabled by *higher-level actors supporting* interactions that are organised by lower-level governance actors.

My general and context-specific framings of meaningful participatory governance drew on the critical institutionalism literature and on the increasing assertion of the necessity of embedded governance systems (Cleaver & Whaley, 2018; Cleaver et al., 2021; Bussu et al., 2022). Cornwall (2002, p.29) calls for a situated form of participation ‘that locate[s] spaces for participation in the places in which they occur, framing their possibilities with reference to actual political, social, cultural and historical particularities’. I hope my contributions to the framing of meaningful participatory governance will support the use of meaning as an analytical lens through which to understand participation in the governance of CSEs.

8.4.3. Findings in response to the Central Aim

In Chapter Seven I present the five-point framework, a context-specific set of leverage points designed to inform interventions that are aimed at promoting meaningful participation in land and water governance. The five points in the framework are listed below, starting with the highest and most invisible leverage and moving down to the lowest and most apparent leverage.

- *Multidimensional trust* is difficult to monitor and evaluate, but its presence – or the lack thereof – can completely transform a system. Trust is hard-earned, but can lay the foundations for sustained, meaningful participatory governance. The positive message of this thesis is that actors at multiple levels believe in and value trust (e.g., Figure 6.12). Trust can open windows of opportunity and cut through practical obstacles and survive despite unexpected disruptions (Tsitsa Project et al., 2021f)..
- *Shared understanding* refers to the overlaps of actors’ mental models. Building shared understanding refers to increasing the common ground between divergent ways of thinking

and knowing in order to co-construct the collective interpretive resources that can reduce the instances of injustice (Fricker, 2007) and enable actors to engage in meaningful discussions and negotiations. Some level of shared understanding is essential if diverse actors are to collaborate in meaningful ways. Increasing this shared understanding can dramatically open up potential collaborative planning and action options (see the example of transcendence at the beginning of Section 7.4.1).

- The formal and informal *participatory interactions* between actors (individuals, organisations, and institutions) are fundamental to system functioning. Participatory interactions include one-on-ones, casual chats, resource exchanges, field trips, meetings, workshops, and training. The ‘what’, ‘when’, and ‘how’ of these interactions is key to enabling transformative participatory governance interventions. Participatory interactions are where the intangible and the tangible intersect.
- *Governance capacity* is fundamental to system functioning; nothing happens unless capable actors are in the system. However, increasing governance capacity can also reinforce existing system patterns rather than generate new patterns for systemic transformations. In my research, I identified boundary spanning and system convening as two key governance roles that are necessary for localised participatory governance (Section 5.5.4). My findings support existing research that promotes supporting and formalising these participatory governance roles (Clark et al., 2016; Safford et al., 2017; Coleman & Stern, 2018a).
- Tangible benefits are the leverage point that we tend to use the most; however, when used in isolation, they will inevitably reinforce power imbalances and patterns of dependency. Tangible benefits are a vital governance goal, and can enable access to higher leverage points.

A key insight from the leverage point analysis is the value of having a variety of interventions that engage with different leverage points. While interventions aimed directly at high leverage points might be difficult to communicate or contextualise, ‘low leverage’ interventions could enable short-term buy-in and generate crucial windows of opportunity for higher leverage interventions (Section 7.5.3).

The envisioned systemic changes that participatory governance can enable are not rapid revolutions. The required transformations are radical, but they must happen incrementally (Swilling, 2020) – as there are many balancing effects that stabilise the system (for better and worse) (Section 6.5.2). These transformations will also not emerge as constant processes of improvement, and must be considered within a context where growth and development happen in cycles of renewal and collapse (Chaffin & Gunderson, 2016).

The search for meaningful participatory governance is fundamentally influenced by power structures (Section 7.5.4). However, I propose that analyses that focus on power, and especially its sinister nature, miss the opportunity to realise the potential of *power with* (in collaboration) and *power within* individuals (VeneKlasen & Miller, 2002; Chambers, 2006). My focus on meaning supports the recognition of the positive potential of participatory processes to be sites where power structures are incrementally, but fundamentally reordered.

8.5. Recommendations

In this section, I present five broad recommendations that follow directly from the five-point framework, under which I provide more specific and practical recommendations. These recommendations are for all governance actors who are interested in supporting systemic transformations towards more participatory forms of governance in the TsRC L&WGov system, from the Village Story to the Broader Story. However, these recommendations might also apply to other, similar contexts (Table 8.1).

8.5.1. *Think long-term by prioritising multidimensional trust building*

I outline three practical recommendations to support trust building.

Buy-in by being physically present. Actors from broader governance stories can show support by spending time with local actors, either by ‘showing up’ and being physically present, or by inviting more local governance actors to enter governance spaces that they would not usually penetrate. The benefits of face-to-face dialogues include breaking down divisions and biases, improved interpersonal connections, and improved decision-making (Ansell & Gash, 2008; Newig & Fritsch, 2009; Gerlak et al., 2020). I emphasise the necessity of physical presence in a rural context such as the TsRC, where physical distances separate people and information communication technology is not well-developed. Furthermore, the traditional style of governance to which rural people are accustomed is founded on the physical presence of actors in positions of legitimate power (Section 6.4.7).

Pay attention to the development of new interpersonal relationships beyond formal activities. Trusting relationships are the bedrock of collaborative and participatory forms of governance, as they can be sustained long after funding has run out, and can lead to unforeseen benefits and opportunities. Creating an environment in which trusting relationships can flourish is an intentional process. One practical recommendation is not to rush things; for example, plan in-field site visits and activities to include meals together, and allocate free time generously. The Tsitsa Project, through the Participatory Monitoring Evaluation Reflection and Learning (PMERL) framework, foregrounded the value of reflection and reflective spaces as opportunities to get to know one another in an informal setting. Reflection spaces can be fun and informal while having a cup of tea or carpooling. Boundaries

between groups can also be loosened by meeting in neutral spaces (such as a coffee shop) or in spaces that invert existing power structures (such as a rural village community hall or a local town hall) (Tsitsa Project et al., 2021e).

Meaningful forms of participatory governance do not conform to paradigms that are preoccupied with economic efficiency in the short term (Section 6.5.1). Trust building takes time. The *funders of interventions need to make longer-term funding commitments* to ensure stability for the long, slow, and messy work of collaboration (Tsitsa Project et al., 2021f). At the same time it is important to be aware of what is possible when funding such interventions. Externally driven projects, such as the Tsitsa Project (Section 2.2.1), are likely to play an innovative or catalytic role rather than becoming a core governance actor over the long term (Section 5.5.4). These experiences highlight the need for locally based convenors who have ‘skin in the game’ (Taleb, 2018).

Short-term ‘surface-level’ work is not only inefficient, but also breaks trust and contributes to the long legacy in which external actors ‘pop’ in and out of rural areas without grappling with sustainability challenges in a sustainable way.

8.5.2. *Continually build shared understanding*

Developing a shared understanding (from basic vocabulary to understanding goals and values) among actors is time-consuming. The knowledge held by groups and individuals changes over time as situations change; therefore, shared understanding cannot be ticked off a to-do list, but must be continually built as part of a complexity-sensitive and adaptive governance approach. I outline three practical examples below.

Include activities in participatory engagements that address language differences; these activities should aim to build a common vocabulary and to alert participants to contradictions that might lead to misunderstanding and conflict. Indeed, acknowledging and building on contradictions can lead to generative dialogue and learning on all sides (Lotz-Sisitka, 2012; Palmer et al., 2015; Fam et al., 2018). A relevant example from my research is the Learning Words workshops piloted by the Tsitsa Project’s GovCoP, which helped to raise differences in understanding and supported the negotiation of meaning at the beginning of an interaction rather than one group providing definitions (Section 5.3.4) (Palmer et al., 2022). The intentional drive to generate common understandings supports the calls for climate literacy and the need for improved communication between scientists and society.

Collaborate around nexus elements. Landscapes, such as the TsRC, are made up of a patchwork of actors who work with different ecological elements in different ways. I identified water, alien invasive plants, livestock, and soil erosion as four ecological elements in the TsRC being used to collaborate around (Section 5.6.6). Building collaborations around specific ecological elements might not provide

system-level forums for engaging with land and water governance issues. However, it seems to be a way to bound a collaborative effort and to ensure that the substance of the interactions is meaningful to the participants. This recommendation is particularly for areas with weak institutional structures; starting small and specific might lead to more systemic approaches.

Assert the value of existing knowledge and practice by building on existing institutions rather than intervening through formal authority and incentive structures that ‘tend to overlook the complex dynamic nature of local institutions’ (Cleaver, 2012, p.2), and that might act to delegitimise existing, less formal participatory mechanisms (Cornwall, 2008). By borrowing from the old institutions in the process of bricolage, participants need not process completely new rituals and rules, thereby minimising the mental energy required to participate (Cleaver, 2012). For example, use local customs (such as song and prayer) and run workshops primarily in the local language (Palmer et al., 2022). As Harich (2010) suggests, imposing new ideas and structures is bound to lead to change resistance; therefore, interventions should find leverage points that build on existing institutions and that relate to matters of interest to local people.

Shifting power imbalances is central to concerns about the efficacy of participatory governance (Gaventa, 2019; Cooke & Kothari, 2001; Fricker, 2007; Ansell & Gash, 2008). By shifting from ‘*What can I, as an external actor, provide?*’ to ‘*What are the understandings of local actors, and how can these be supported?*’, there is the potential to go beyond participation in pragmatic decision-making to participation in agenda-setting and problem framing. For example, Tsitsa Project researchers and local governance actors co-producing a catchment vision and list common concerns that informed subsequent research (Palmer et al., 2022).

8.5.3. *Carefully design participatory interactions*

Careful planning to make interactions more meaningful starts with overcoming tangible barriers such as physical distances and language barriers (Section 6.5.1), and includes careful consideration of the interaction procedure. I outline four practical considerations below.

Invest in skilled facilitators who can expose participants to more meaningful ways of engaging in governance processes. Facilitators might be able to make interactions more meaningful by:

- including local practices in interactions,
- taking account of different languages,
- watching out for and tempering dominant actors, and
- respectfully encouraging the participation of quieter people while being ready to allow each individual to participate in whatever way is comfortable for them.

Design interactions to encourage the co-creation of knowledge, which overcomes the tendency of one group's knowledge to dominate another's (Leibowitz, 2017; Van Buuren et al., 2019). Linked to the investment in facilitation, the move towards co-creation is a move away from conventional unidirectional presentations to more engaging activities. Diverse activities can expose participants to new ways of participating, and allow them to learn about a subject through different media. The suggestion to invest in facilitation and use diverse approaches does not imply that interaction needs to be complicated. The Net-Map method, which I adapted and applied in my research, is an example of a simple and engaging learning activity (Section 5.3.3) (Schiffer & Hauck, 2010; Hauck et al., 2016; Metelerkamp & Schiffer, 2020). Social learning in rural contexts is one approach to support the co-creation of knowledge to inform natural resource governance (Rist et al., 2007; Cundill et al., 2014).

Align monitoring and evaluation with high leverage points. Monitoring and evaluation are essential for adaptive management, and are the foundation of the reflection and learning that are necessary for system improvement (Kusters et al., 2016; Trimble & Plummer, 2019). Simplified indicators are often easier to see and measure, and therefore become go-to ways to monitor and evaluate – for example, the number of people at an interaction or the number of interactions. While these might be useful to record, they do not track engagement with high leverage points. I have already introduced the importance of foregrounding interpersonal relationships in monitoring and evaluation (Section 8.5.1). Another method could be to use simple actor mapping techniques to track network growth and cross-boundary interactions as an evaluative technique that helps actors to visualise and think systemically about their networks and influence. Ongoing mapping could support tracking of connections to ensure that key stakeholders are engaged or in the identification of actors playing key roles. For example, the mapping exercise presented in Section 5.5 supported the identification of boundary spanners – particularly those creating connections with community members. These evaluation techniques could help to reinforce the 'participatory' and 'learning' elements of participatory monitoring, evaluation, reflection, and learning (Tsitsa Project et al., 2021e).

Design participatory interactions to encourage self-organisation. Monitoring and evaluating interactions must create the potential for self-organisation by giving processes more flexibility. However, institutional support still needs to be sustained over long periods to foster contextually nuanced institutional arrangements (Wyatt et al., 2018; Tsitsa Project et al., 2021f). In the context of local government, Mubangizi (2019) argues for more accessible forms of monitoring and evaluation that are formed on an *ad hoc* self-organising model – including novel techniques to suit resource-constrained environments. Involving a wider variety of actors (including local) in monitoring and evaluation could facilitate a clearer understanding of what is happening on the ground and create the

opportunity for co-learning (Vernooy et al., 2006). Localised monitoring processes could be more meaningful in the specific context in which they are designed and implemented.

8.5.4. Build new skills for new ways of working

A transformed, more participatory system would require actors with new skills and capabilities. Important skills related to participatory governance include technical competencies in multiple arenas of knowledge, relational skills for crossing boundaries, care-based leadership, and the ability to envision and move towards a new future (Wiek et al., 2011; Rosenberg & Kotschy, 2020; Snorek et al., 2022).

The first task is to identify the governance actors who naturally fulfil these participatory governance roles. Once identified, these actors could be supported in their work and included in efforts to formalise these participatory governance roles. Formalisation is necessary to secure funding for, and to increase the legitimacy of, these participatory governance roles (Tsitsa Project et al., 2021d). One example of the formalisation of participatory governance roles from the South African context is the appointment of ‘catchment convenors’ in the Living Catchments Project (Section 5.5.4). The Living Catchments Project supports existing system convenors through formal recognition, support, increased exposure, and networking opportunities (<https://www.sanbi.org/biodiversity/science-into-policy-action/mainstreaming-biodiversity/living-catchments-project/>). Monitoring and evaluation are a clear challenge for the formalisation of participatory governance roles, as they require time and resources without necessarily resulting in clear and quantifiable outcomes. The formalisation process would require finding innovative ways of monitoring and evaluating that do not constrain work on the ground while still allowing adequate accountability – and they need to align with high leverage points.

Supporting the dynamic work of integrated natural resource management would require extensive research to codify the work of participatory governance roles in order to inform education curricula and professional development building skills for participatory governance. I suggest that transdisciplinarity methods might be helpful, as the formalisation and promotion of these roles would need to be theoretically sound and based on experience.

8.5.5. Use practical activities as the foundations for high leverage interventions

High leverage interventions might be out of reach, and might be more accessible by building on low leverage interventions that focus on the provision of tangible benefits (Section 7.5.2). An important prerequisite for creating windows of opportunity is that the provision of tangible benefits does not undermine the achievement of higher leverage points. For example, reliability is key to building rational trust. While the practical ideas given below are both from the Village Story, this recommendation is also for actors collaborating and intervening in the Catchment Story.

Practice collaboration and working together when engaging in processes that have tangible outcomes.

Meaningful participatory planning and decision-making about complex ideas can raise challenges. I recommend using practical tasks where the outcomes are clear to practise working together – whether practising communicating and building shared understanding, or improving interpersonal relationships. For example, spending time in a community garden often requires group activities, and the practical benefits are easy to see and explain (even if they can be difficult to achieve). Another example is the restoration work conducted by the ‘Working for’ programs, as explored in Section 7.5.3, these practical restoration activities provided windows of opportunity to enable more collaborative working arrangements.

Align practical benefits with local practices. As far as possible, any novel intervention should be integrated with local livelihoods (Tsitsa Project et al., 2021c). The potential for collaborating around objects that are meaningful to diverse actors has been introduced at multiple points (e.g., Section 5.6.6), and I raise it here again to highlight the potential value of tangibly supporting existing livelihoods and daily activities to gain buy-in and build trust. I find the combination of soil erosion control and the construction of soccer fields to be a potentially helpful and counter-intuitive example (Textbox 17).

Textbox 17 | An unexpected soccer field

I was talking to a restoration implementing agent about the options for slowing erosion. He showed me a picture of a gabion structure built across a gully. The area behind the gabion had filled up with eroded soil, and there was now grass growing on the flat land behind the gabion. He then said that it was a waste because it could no longer collect sediment, and that it was merely ‘an expensive soccer field’.

Having lived in the former Transkei, I know that a flat piece of land on which to play soccer is very valuable. Soccer is often played on terrible terrains, but it is an engaging activity for young men in rural areas, where they are often bored, lack purpose, and are susceptible to crime and drug abuse (Section 6.4.2).

Turning the filled gully into a usable soccer field would inevitably be complications – for example, managing stormwater to ensure that children playing on the field were not in danger. However, the example illustrates how knowledge of a system and consideration of local dynamics might better align external interventions with internal priorities.

8.6. Methodological insights

There is an increasing emphasis in scientific research to adopt engaged and action-oriented methodologies that foreground the importance of participatory research processes that substantively grapple with complex problems in adaptive ways (Roux et al., 2017; Lang et al., 2017; Liehr et al., 2017; Wolff et al., 2019). My complexity-sensitive, transdisciplinary methodology sits in this growing

landscape of methodologies that balance the need for conventional scientific rigour with societal relevance and engagement – a type of political rigour (Temper et al., 2019). In the next section I discuss my navigation of these tensions in my research journey before discussing the more specific methodological insights.

8.6.1. Plotting my research journey

My research journey was characterised by a tension between engagement in the TsRC and time spent reading the literature and analysing data in isolation. Careful reflection, adaptation, and iterations were balanced with the need for consistency and coherence across data collection, analysis, and presentation. McGowan et al. (2014) argue that a research journey involving multiple research approaches and grappling with complex problems in adaptive ways should be carefully designed to provide an overarching structure. McGowan et al. (2014) posit a research landscape with the *role of information* (from theorising to participation) on the x-axis and the *purpose of the research* (from specific to general) on the y-axis (Figure 8.1). I use this to describe my research journey.

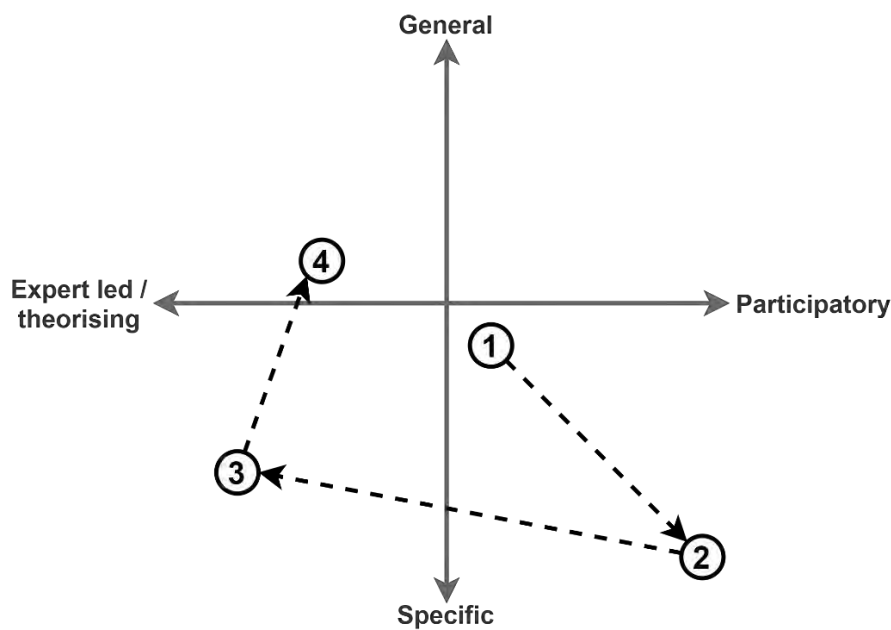


Figure 8.1. The research journey landscape includes my four-phase research journey.

The research landscape has the form of practice (from theorising to participatory) on the x-axis and the purpose of research (from specific to general) on the y-axis. My four research phases were (1) research initiation, (2) collaborative fieldwork, (3) data analysis, and (4) thesis write-up and feedback.

The *first phase* of my research was informed by my personal experience of living and working in the former Transkei, as well as my general understanding of South African history and the developmental context of rural South Africa. Once I joined the Tsitsa Project, the detailed conceptualisation of my research was informed by broader academic and theoretical pursuits while being deeply grounded in the specific context of the TsRC. The *second phase* of my research was profoundly collaborative and

participatory. I intentionally moved away from the general theoretical literature to immerse myself in the research context and to collect grounded data that could support a primary analysis founded on inductive reasoning. This research phase coincided with more practical involvement with the Tsitsa Project and with supporting on-the-ground activities. The *third research phase* focused on data analysis, and was aimed at theory generation; and while I was still involved with Tsitsa Project activities, the research became less participatory. The *fourth phase* of my research involved writing up the research, and was focused on iterative and synthetic analytical processes in order to construct a coherent thesis. The iterations in the third and fourth phases were key to generating a coherent thesis; however, the iterative process can be endless, and I had to be vigilant to avoid time-consuming tasks that did not contribute to the core aims and objectives of the work.

Plotting my research journey on the research landscape illuminates the focus on the place-based case study approach (Section 4.3.1), which enabled an in-depth engagement with the research context but limited the applicability of my findings to other contexts. Phases one and four linked my research to more general trends, and ensured that the research was well-placed to make contributions to broader academic pursuits. Phases one and two were more participatory, while three and four were essentially individual-learning and theory-building processes. The stark difference between the participatory phase two and the individual theorising in phase three was partially by design; however, the onset of COVID-19 and related lockdowns towards the end of phase two exacerbated the divide between these phases as, unfortunately, it limited the amount of group-based and participatory analysis that I was able to conduct.

Establishing methods and protocols for moving between modes of research is a key challenge of transdisciplinary research. My approach combined ethnographic and system dynamics methods with institutional analyses and governance mapping. Together these tools have great potential for supporting the analysis of governance systems in more engaged ways; however, there are challenges of taking these methods to scale and using them within project constrained by short timelines. In my case, it can be said that too much data was collected. Part of the reason for this was the nature of the methods used and another was the evolving process that intentionally took a broad range of contextual factors into account. In this regard, I reiterate the need for tight and careful system bounding as researchers applying comparable methods must be conscious of the tendency for the research to snowball.

In the sections that follow, I briefly reiterate some of the methodological insights already detailed in the substantive Chapters Five, Six, and Seven. I will also introduce a few of the more explorative aspects of my methodology.

8.6.2. *Transdisciplinary governance mapping*

Chapter Five presents a three-story governance map. While the Broader Story was predominantly mapped using online sources, I recognised that actors in the Catchment and Village Stories are ‘managing in the muddled middle’; thus the formal rules do not necessarily manifest as described (Clifford-Holmes et al., 2016; Mehta et al., 2016). I therefore used primary data collection in the form of interviews in the Catchment Story and focus groups in the Village Story. The engaged mapping methods were mainly influenced by the Net-Map toolbox (Section 5.3.3), which was created as a transdisciplinary actor mapping tool for low-resource contexts and that balances structural and network analyses with in-depth qualitative data and collaborative learning (Schiffer & Waale, 2008). My experiences aligned with research that suggests that learning-centred mapping can also generate data and knowledge about a governance system, elicit team mental models, and promote systems-thinking skills among participants (Schiffer & Waale, 2008; Metelerkamp & Schiffer, 2020).

The innovative and explorative tri-mode method created challenges for integrating and comparing the findings derived from diverse data sets. The conceptual framing for the governance mapping supported coherence between the three story-specific sets of findings (Section 5.2). One innovation in the tri-mode method was the ‘influence and accessibility’ mapping, which focused on key emergent variables in the Catchment Story (Section 5.3.3). Another innovation was eliciting a ‘helpfulness’ rating to support a reframing focus group mapping to consider the views of Village Story actors more explicitly (Section 5.3.4).

The governance mapping was focused on the social elements of the CSES of interest, an extension of the tri-mode method could include a more thorough analysis of the ecological system elements (e.g., quality and quantity as well as distribution), in relation to the requirements for land and water resource governance.

Another emergent insight outlined in Chapter Five is the governance mapping principles and related dialectic tensions to guide the mapping of CSEs across multiple levels of governance (Table 5.7). These include tensions relating to what should be mapped (relationality versus individual characteristics, contextual specifics versus general trends, and informal versus formal institutions) and how the mapping should be conducted (engaged versus detached, and collaborative versus isolated). These mapping principles and tensions built on the overarching guiding principles that characterised my methodology (Section 4.2) and Aligica’s (2006) framework for institutional and governance

mapping. Rather than providing a prescriptive methodology, the focus on principles and tensions illuminates the entire methodological landscape in which design decisions are made (Figure 5.31). Future research that is designed with the entire landscape in mind could better articulate the tensions associated with each principle.

8.6.3. Searching for clarity of perspectives in a systemic analysis

The rigour of the systemic analysis presented in Chapter Six is founded on my consideration of multiple perspectives (Section 6.3.1). I drew on the experiences of local governance actors and on my observations, which were enriched through my extended fieldwork and collaborative research approach (Clifford-Holmes et al., 2018; Lamé et al., 2019).

In the systemic analysis method, the key variable diagramming method (Section 6.3.1) builds on qualitative system dynamics in the analysis of soft systems. One criticism of systems diagramming is its inability to capture the motivations, intentions, and actions that shape social systems (Jackson, 2019a). These objections are fair, as systems diagramming in the system dynamics tradition is used to gain explanatory power by including many variables and feedback loops. There is a tendency to represent highly abstracted systems that remove individual perspectives. The key variable diagramming method was designed to support a level of abstraction that maintained the actor perspectives of a particular key variable.

I did not, therefore, create an overarching diagram to support a systemic view. I created a coherent picture by embedding the key variable diagrams in a multi-method systemic analysis that included personal narrative accounts; and this helped to ensure that the system diagramming was not overly mechanistic. However, I do not reject the utility of large and high-level diagrams, and suggest that there is work to be done in finding a balance between small models that represent easily traceable perspectives and larger models that support synthesis.

Mental model elicitation through individual interviews enabled the exploration of profound experiential knowledge among the governance actors; however, I did not conduct any group model building or post-analysis ‘member checking’ verification of the diagrams because my ability to conduct these processes was hampered by COVID-19. In future applications, the key variable diagrams generated from individual interviews could support group modelling exercises through the creation of models as boundary objects for collaboration (Star & Griesemer, 1989; Mollinga, 2010; Cuppen et al., 2020), especially in contested contexts where bringing actors together without a clear understanding of the systemic structures would be undesirable. Applying the method in this way would build on the growing body of research on collaborative systemic analysis methods for wicked

problems that are embedded in CSES (Kelly et al., 2013; Inam et al., 2015; Halbe et al., 2018; Jean et al., 2018; Perrone et al., 2020).

8.6.4. *An innovative application of the leverage point framework*

Although clearly elucidated by Donella Meadows in 1999, the leverage point framework has only recently seen a proliferation of use in the academic literature, especially that about sustainable development (Abson et al., 2017; Tourangeau & Sherren, 2020) and sustainability transformations (Abson et al., 2017; Bryant & Thomson, 2020; Lam et al., 2020b; Davelaar, 2021). This thesis builds on the proliferation of the leverage point literature and, to my knowledge, is the first application of leverage point framing in a developmental context of CSES on the African continent. Furthermore, I would argue that my application of the leverage point framework has novel aspects.

Several authors have theoretically reworked the leverage point framework (Abson et al., 2017; Davelaar, 2021). My framing builds on this literature by integrating the insights from three prominent metaphors (i.e., the lever, the iceberg, and the onion). I explored the idea of the cabbage as a more complexity-sensitive metaphor (Figure 8.2); however, I was unable to articulate sufficiently the rich theoretical realm that this novel metaphor might allow. The complex layering the cabbage is potentially more reflective of real-world systems than the onion. Furthermore, the differences between the two cross-sections is fascinating – the vertical cut (on the left) shows how everything is connected to a core origin from which it grows, while the horizontal cut (on the right) shows the fractal and complex layering within the cabbage. Like the onion, the cabbage is a plant with soil – a sub-system coupled to contextual conditions. This is an area for future thought.



Figure 8.2. *The cabbage is a beautiful, complex, nested system – artwork by Danielle Shay.*

The leverage point framework has been used to identify specific interventions in a context (Nguyen & Bosch, 2013; Rhoades et al., 2014). The novelty of my application is the generation of an intermediate

framework that brings the general leverage point framework contextually and conceptually closer to the problem at hand. My application is coherent with that of Chan et al. (2020), who outline a set of eight overlapping and interacting leverage points to be used as a framework to inform interventions toward transformations within CSEs, thereby creating a new framework particular to an area of study from the more general leverage point framework. My five-point framework goes a step further as it is context specific and specifically directed towards participatory governance within the TsRC. In my method, I identified the need for such a framework to consist of a wide range of leverage points, which are distinct from each other, and understandable and relatable within the specific context. These criteria can support future research which aims to craft a comparable framework. The advantage of my application of the leverage point framework is that it makes progress towards addressing a real-world problem, but does not prescribe set interventions. The result is a relatable and adaptable five-point framework that governance actors could use to plan and evaluate interventions.

The five-point framework includes a wide range of leverage points (from tangible benefits to trust), which could increase applicability of the framework in situations where high leverage points are out of reach and where windows of opportunity are needed (Kingdon, 1995; Olsson et al., 2006). In discussions with collaborators, a typical response to the five-point framework was that I was missing the deeper ‘consciousness’ of paradigms that influence our actions. This is a substantive critique of my list – especially given the reference to paradigm transcendence in Meadows’s list. I was hesitant to include this ‘highest leverage point’ because the five-point framework is a necessarily grounded set of leverage points that are tied to the practicalities of governance. However, future research could focus more explicitly on these highest leverage points in more depth than I was able to do in this thesis.

8.7. Critical reflections and future research

While I intend to contribute on multiple levels, the implication of the place-based, single case study research approach is that my research is hyper-focused on the TsRC, and that this limits its broader applicability. Therefore, my research findings must be considered in relation to the context from which they arose. The limitations of the study predominantly result from choices made while bounding the analysis – an ongoing and challenging task, given the open and evolving transdisciplinary nature of the research.

A vital next step would be to use the research to benefit the Tsitsa River Catchment. One process would be to apply the five-point framework and the context-specific framing of meaningful participatory governance to support the planning and implementation of participatory governance

interventions, thereby linking the framework derived from engaged research back to the practice. The framework would be best applied in the TsRC before being applied across the former Transkei and other rural CSEs. In particular, the five-point framework should be adapted in collaboration with local actors to suit the application. On a more theoretical level, my findings could be used to deepen the Tsitsa Project GovCoP's theoretical explorations of what constitutes meaningful participatory governance and the theories underpinning the governance capabilities pathway (Textbox 4) (Palmer et al., 2022).

Despite the social-ecological framing of my research, the bulk of my analysis explicitly focuses on the social system and the social elements. My engagement with ecological elements is restricted to the Village Story mapping; even there, I only refer to ecological elements in relation to social elements. My focus on the social system in the TsRC was necessary, given the open land and water governance system being considered. An important next step would be to link meaningful participatory governance to ecological outcomes. The Tsitsa Project, which studies social and ecological indicators, would have been a good vehicle for such a study. Any smaller project attempting to explore these social-ecological connections would need to be tightly bounded.

It seems almost inconceivable that, in the information age, I could write a thesis about participation without substantially analysing the use of social media and online participation in the TsRC. Some of the reasons for this specific bounding decision are the currently poor communication infrastructure, the value of face-to-face interactions, and my lack of interest in and participation on these platforms. It is a potential area for study, and the rich literature on socio-technical transitions (Geels, 2010; Grin et al., 2010; Loorbach et al., 2017) would likely be a valuable framing for such an analysis.

The systemic action research approach and the transdisciplinary methodology necessitated focusing on both academic and real-world contributions (Chapter Four). There are numerous strengths in the chosen approach (Section 4.1), not least the rigorous way that it enables the study of complex problems while remaining relevant and meaningful. There are compromises, however (Section 8.6.1). For example, I was not the lead author of any peer-reviewed academic journal articles during my research. I was also unable to conduct the multiple engaged feedback, mirroring, and analysis sessions that I had hoped to conduct. I was also unable to remain engaged in capacity development in the TsRC. I echo other authors who suggest that transdisciplinary theses might require more time than conventional studies, and funding should therefore be allocated to avoid disincentivising transdisciplinary work (Cockburn, 2018; Weaver, 2018). Indeed, the dominant criteria for measuring academic research criteria discourage deeply engaged research and partnerships that respond to community-identified research priorities (Claassens & Sihlali, 2022).

The critical complexity framing highlights the need to make modest assertions (Cilliers, 2005; Brock & Carpenter, 2007). As the researcher, I have had substantial influence over the research findings. The findings must therefore be interpreted with an understanding of my positionality in relation to the system of interest (Section 1.3) and my role in the Tsitsa Project.

Finally, one of the key future areas of research I hope to be involved in is the deepening of meaning as an analytical lens. While there is an increasing interest in power analyses, I think that meaning provides an equally rich lens through which to view participatory governance and participatory development initiatives more broadly.

8.8. Conclusion

My research journey began with a desire to study how rural actors in the former Transkei could have more control over the natural resources on which they depend. This journey led to a theoretically informed and practically engaged exploration of the role that meaning plays in participatory governance. In the context of land and water governance, the focus on meaning and on an appreciation of complexity reframes participation from being a technical problem with a solvable solution to being a social-ecological challenge in which contextual nuances, relationship dynamics, and actors' mental models are the fundamental driving forces of system functioning. Grappling with these driving forces (which are high leverage points) is dangerous work, as the potential for unintended consequences looms large, and the systemic inertia tends towards existing patterns of injustice.

In the coming years, river catchments in South Africa will either be integral to social-ecological flourishing or continue to be degraded, polluted, and unusable. Our rivers and surrounding communities bear the heavy burden of ongoing ecological degradation, an increasing population, and deteriorating infrastructure. Attaining more just futures that hold meaningful participation to be a foundational principle can only be realised in an organisational and institutional context that considers seriously the long timelines required for the realisation of social-ecological justice. If the actors in the Broader Story of governance continue to undermine these long-term commitments, then it is the work of the Catchment- and Village-based actors to establish resilient local institutions in the face of external flux.

My research journey has burdened me with the knowledge of these challenges and of their intractability. However, I have also been inspired through exposure to the emerging participatory governance actors who, with commitment and creativity, have taken personal responsibility for the catchments in which they live.

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LEVERAGE POINTS FOR MEANINGFUL PARTICIPATORY GOVERNANCE:

Lessons from the Tsitsa River Catchment,
South Africa

APPENDICES

In support of
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Appendix A. General supplementary material

This appendix includes key supplementary material which supports my entire thesis, including the following:

- A full research timeline
- A description of the research collaborators.
- Extra details of the Tsitsa Project.
- A set of reflective essays.

A.1 Full research timeline

Table A.1. Full research timeline.

The blocks shaded in grey indicate the period in which I lived in Nqanqarhu (formerly Maclear) and engaged in intensive fieldwork and data collection.

Date	Activity	Purpose
Aug-17 to Nov-18	Before starting my doctoral research journey, I lived and worked as a teacher with an education organisation on the Wild Coast in the Eastern Cape.	To improve my teaching abilities and learn isiXhosa and about the former Transkei.
Dec-18	I joined the Tsitsa Project and attended the Science-Management Meeting in East London.	To land in the Tsitsa Project and meet the team.
Jan-19	I arrived at Rhodes University in Makhanda (former Grahamstown) and joined the Tsitsa Project Governance Community of Practice (GovCoP).	To start my Master of Science degree in the Institute for Water Research (IWR).
Feb-19	I attended and co-facilitated the first 'Learning Words' workshop in Nqanqarhu, in the TsRC (TsRC) with the GovCoP (Palmer et al., 2022).	To contribute to developing participatory governance capabilities and do initial scoping fieldwork.
Mar- 19 and Apr-19	I attended a short course titled: An Introduction to Systems Thinking and Modelling Using System Dynamics organised by the Tsitsa Project Systems Praxis CoP	To gain an introduction to systems thinking and the available tools and methods.
	I compiled and presented my research proposal to the IWR and the Tsitsa Project.	To comply with my contractual agreements and obtain ethical clearance for data collection.
	I began mapping governance relations in the TsRC using the Tsitsa Project's stakeholder analysis reports (Sisitka et al., 2016; Rivers et al., 2018).	To gain an overview of the relevant actors and their connection to the Tsitsa Project.
May-19	I moved to Nqanqarhu (formerly Maclear) while LIMA Rural Development Foundation (LIMA) joined the Tsitsa Project. I joined a field trip conducted by the Tsitsa Project Catchment Coordinator introducing LIMA to the Tsitsa Project's collaborators in the TsRC.	To begin my action research process and embedded fieldwork.
	I attended an integrated planning meeting in East London - between the Tsitsa Project, the Department of Forestry, Fisheries, and the Environment (DFFE), and DFFE implementing agents (DFFE IAs).	To represent the GovCoP in a planning event and collect observation data.
	I attended the Umzimvubu Catchment Partnership (UCP) quarterly meeting in Matatiele. This visit included a series of two actor mapping activities with researchers for the University of KwaZulu Natal and a Meat Naturally cattle auction.	To meet UCP as research collaborators working in the same catchment and collect observation data. To observe and learn about actor mapping with focus groups conducted in practice.
Jun-19	I conducted the first set of interviews with local governance actors – community development workers (CDWs) and headmen.	To map actors and elicit mental models toward achieving research objectives.

Table A.1. Full research timeline.

The blocks shaded in grey indicate the period in which I lived in Nqanqarhu (formerly Maclear) and engaged in intensive fieldwork and data collection.

Date	Activity	Purpose
	From this stage on, I conducted ongoing in-field data analysis.	To analyse data collected for rapid feedback into data collection and work as part of the Tsitsa Project.
Jul-19	I attended the South African Program for Ecosystem Services (SAPECS) introductory course to Complex Social-Ecological Systems (CSES) (15 – 19 July 2019), hosted by the Centre for Complex Systems in Transition at Stellenbosch University.	To learn about CSESs, network, and check understanding with other researchers.
	I joined the restoration methods field trip organised by the Sediment and Restoration CoP and attended by DFFE regional managers, DFFE IAs, and Tsitsa Project team members.	To meet stakeholders involved in restoration implementation and learn about the practicalities of landscape restoration. I collected observation data on the messy process of establishing norms collectively.
Aug-19	I attended the Local Municipalities Integrated Development Planning communicators forum and the Municipal Ward Based Planning.	To meet local governance actors and collect observation data on a municipal participatory activity.
	I attended the funeral of a senior traditional leader.	To represent Tsitsa Project and DFFE.
	I attended a meeting between the Tsitsa Project and the local Department of Rural Development and Agrarian Reform (DRDAR) office.	To meet and fill them in on Tsitsa Project work, specifically with the livestock and grazing agreements. I collected observation data.
	I conducted follow-up interviews, including influence and accessibility mapping with CDWs and headman.	To enrich the data collected and 'mirror back' findings to research participants.
	I assisted and co-facilitated a village-level planning process with the Tsitsa Project's Livelihoods CoP and the Sediment and Restoration CoP.	Village-level planning supported the inclusion of community voice in landscape management. I collected observation data.
Sep-19	I formed part of the interview panel hiring Community Liaison Officers (CLOs).	CLOs were hired as part of increasing local governance capacity. I collected observation data.
	I organised and facilitated a discussion entitled: <i>The Ethics of Engaged Research: the logistics, barriers, and relational dilemmas</i> at Rhodes University, in the IWR.	To help me explore some of my experiences and provide a platform for other researchers to explore their challenges.
	I presented a poster entitled: TAPPING INTO GOVERNANCE: Institutions for participation in land and water governance, a case study on communally owned land in the Eastern Cape of South Africa, at the Society for Ecological Restoration 2019 in Cape Town.	To present the findings of my first data collection phase and get feedback from researchers and practitioners.
	Nelson Mandela's Institute for Coastal and Marine Research (CMR), in collaboration with the South African Institute for Aquatic Biodiversity (SAIAB) and the Norwegian Institute for Nature Research	To get trained in qualitative research methods and network with other researchers.

Table A.1. Full research timeline.

The blocks shaded in grey indicate the period in which I lived in Nqanqarhu (formerly Maclear) and engaged in intensive fieldwork and data collection.

Date	Activity	Purpose
	(NINA) hosted a short course on Qualitative research methodologies (Two-day course)	
Oct-19	I joined a field Trip to the Chevy Chase LandCare Project run by the DRDAR.	To network with another landscape restoration project and collect observational data.
	I co-organised and co-facilitated to Tsitsa Project Roadshow 2019 with Tsitsa Project CoPs, LIMA, and CLOs.	To spread knowledge of the Tsitsa Project and provide a platform for residents to engage. I collected observation data.
	I presented at the Tsitsa Project's 2019 research colloquium a talk entitled: TAPPING INTO GOVERNANCE: Institutions for participation in land and water governance, a case study on communally owned land in the Eastern Cape of South Africa.	To share my findings with the Tsitsa Project team and get input on my next research steps.
Nov-19 and Dec-19	I co-organised and co-facilitated Module One of the Capacity Development Short Course: <i>Learning Words and Tsitsa Project Orientation</i> . The module took place in Nqanqarhu with the Tsitsa Project catchment-based monitors. It was organised as a collaboration between the GovCoP and the Knowledge and Learning CoP.	To building relationships between the catchment-based employees and the academic team while developing a shared understanding of the Tsitsa Project.
	I co-organised and co-facilitated the series of three Learning Words expansion workshops and village-level actor mapping focus groups.	To expand the Learning Words workshops to rural villages and collect focus group data about actors at the village level.
	I attended a meeting between the water service authority under Joe Gqabi District Municipality (JGDM) and the Elundini Chamber of Commerce (ECC).	To network, understand the challenges of water provision faced in the local municipality, and collect observational data.
	I attended the Tsitsa Project Science-Management Meeting 2019 in Qonce (Formerly King Williams Town). I co-facilitated and presented a talk entitled: <i>Community Engagement and Governance Activities 2019</i> with a colleague from LIMA.	To build relationships between the Tsitsa Project researchers and the DFFE managers
Jan-20	I conducted the second set of interviews with governance actors.	To continue mapping local governance actors and elicit mental models.
	I attended a community meeting with the Tsitsa Project in a rural village, Qulungashe, in the Lower Sinxako area.	We discussed conflicts about the hiring of an eco-ranger. I collected observation data.
	I attended the Tsitsa Project climate change workshop with municipal officials in Mount Fletcher. Organised by the Climate Change CoP.	The event built local climate change capacity. I collected observation data.
Feb-20	I attended a Wetlands Day organised by the provincial Department of Economic Development, Environmental Affairs, and Tourism.	The event raised awareness about the importance of wetlands. I networked and collected observational data.

Table A.1. Full research timeline.

The blocks shaded in grey indicate the period in which I lived in Nqanqarhu (formerly Maclear) and engaged in intensive fieldwork and data collection.

Date	Activity	Purpose
	I co-organised and co-facilitated Module Two of the Capacity Development Short Course: <i>Monitoring Module to build skills among CLOs and monitors</i> . The module took place in Nqanqarhu with the Tsitsa Project catchment-based monitors. It was organised as a collaboration between the LIMA, GovCoP, Knowledge and Learning CoP, and Fire and Grazing CoP.	This module focused on the techniques and skills required to monitor (e.g., data gathering methods) and make sense of the social and biophysical environment and processes.
	I conducted a collaborative reflection with Tsitsa Project Catchment Coordinator.	To check my understanding by drawing on the experience of the Tsitsa Project Catchment Coordinator.
Mar-20	I moved to Makhandu. From this stage on, I spent most of my time analysing data and writing up my findings.	To give me distance from the field to enable final analysis and write-up.
	Tsitsa Project meta-reflection workshop.	
ONSET OF COVID-19 – all fieldwork on hold		
April to July-20	I was collaboratively writing papers with GovCoP.	
Aug-20	I moved to Cape Town for the remainder of my thesis write-up.	
	ONLINE: IWR Strategic Adaptive Management planning process.	
Sept-20	ONLINE: I co-organised and co-facilitated Module Three of the Capacity Development Short Course: <i>Building listening and speaking skills</i> . The module was held in Nqanqarhu with the Tsitsa Project catchment-based monitors. It was organised as a collaboration between the LIMA, GovCoP, Knowledge and Learning CoP.	To develop capabilities to listen and engage meaningfully with governance actors.
	I successfully applied to upgrade from an MSc to a PhD.	
	I entered Rhodes University's 3-minute thesis competition.	To share my research with the Rhodes University community.
Oct-20	ONLINE: I presented a talk entitled: Cultivating Participatory Land and Water Governance in a Complex Social-Ecological System at the Tsitsa Project's research and policy colloquium.	To share policy recommendations from my research with the Tsitsa Project and DFFE partners.
	I submitted my eighth and final Student Progress Report to DFFE.	To fulfil my contractual obligation under my MSc funding contract.
	I began my role as Governance CoP Coordinator.	To convene the contributions of the Governance CoP to the Tsitsa Project's concluding documentation to DFFE.
	ONLINE: I began the Training of Trainers: Introductory Course to Stakeholder Engagement in Natural Resource Management Contexts. I was both a participant in the course and an assistant tutor. The course consisted of four modules, beginning in October 2020 and the final course ending in June 2021.	To increase my knowledge of and exposure to stakeholder engagement activities and network with other practitioners.
Nov to Dec-20	I contributed to the development of <i>The Tsitsa Approach</i> document.	To create a synthesised document that describes the Tsitsa Project's

Table A.1. Full research timeline.

The blocks shaded in grey indicate the period in which I lived in Nqanqarhu (formerly Maclear) and engaged in intensive fieldwork and data collection.

Date	Activity	Purpose
		way of working to inform DFFE's work.
	ONLINE: Elundini Local Municipal IDP representative communicators forum.	To collect observational data.
Jan to Feb-21	I conducted Actor mapping with the Living Catchments Project (Appendix D.10).	
	ONLINE: Presented the Tsitsa Project as a case study at the summer school on Analysing Transformative Processes for the Management of the WEF nexus and the Advancement of the Sustainable Development Goals in Sub-Saharan Africa.	
Mar to Jul -21	I worked with Community Liaison Officers on understanding and feeding back social survey data.	To support the CLOs in providing feedback to their communities on the data they had collected as part of the Tsitsa Project's social survey.
	ONLINE: I completed the Training of Trainers: Introductory Course to Stakeholder Engagement in Natural Resource Management Contexts course.	
	I co-authored two policy briefs in a series of Tsitsa Project Policy Briefs (Tsitsa Project, Fry, et al., 2021; TP, Palmer et al., 2021).	
Aug-21	ONLINE: I presented a talk entitled <i>Learning about the foundational participatory governance capabilities in a dynamic rural landscape</i> at the Environmental Education Association of South Africa Conference.	
Sept-21	ONLINE: I presented a talk at the National Green Skills Summit, <i>Building Capabilities for Adaptive and Systemic Governance of Ecological Infrastructure</i> , with Dr M. Weaver.	
Nov-21	I attended a field trip to the UCP quarterly meeting in Matatiele. The visit included a meeting between DFFE and local partners about contractual challenges and delays.	To reconnect with local actors and discuss ways to maintain relationships in difficult times.
	I helped organise and attended the Tsitsa Project monitor certification for the Capacity Development Short Course.	To provide monitors with evidence of their training. I also had the opportunity to say goodbye to the monitors.
Jan-22 to July-22	I co-authored a policy brief entitled: <i>Transformative social learning driving sustainable integrated natural resource management</i> as part of a policy dialogue being put together by a Transformation Social Learning CoP under the National Research Foundation (NRF).	To share insights from the Tsitsa Project about applying social learning in natural resource management contexts.
July-22 to Jan-23	Move to Cambridge, Massachusetts. I worked on my final thesis write-up.	

A.2 Research collaborators

Research collaborators include academic as well as societal actors. I worked with some collaborators through the Tsitsa Project and connected with others through my work and fieldwork, such as the key informants and interviewees involved in data collection.

Collaborators from within the Tsitsa Project were involved in the academic and the implementation of the research process; The Tsitsa Project management team was housed within the *Environmental Science Department*, including the Project manager and the Catchment Coordinator (Key Informant #4). My research was embedded with the *Tsitsa Project Governance Community of Practice's* (GovCoP) transdisciplinary research into participatory governance within the Tsitsa River Catchment (TsRC). The GovCoP was housed within the *Institute for Water Research at Rhodes University*. My work with the GovCoP included workshop organisation, report writing, and academic paper writing. I also worked with the Tsitsa Project members and other Communities of Practice (Including Key Informant #4 and #5). We collaborated in the organisation and implementation of workshops as well as planning and reflection sessions.

All fieldwork activities and engagements with societal actors were supported by or done in communication with the *Tsitsa Project management team and Communities of Practice* (Table A.2), which different departments at Rhodes University convened. I worked particularly closely with the Systems Praxis CoP, also housed in the *Institute for Water Research at Rhodes University*. Collaborators from the field who supported and participated in practical action and data collection are listed below:

- *LIMA Rural Development Foundation* (LIMA) collaborated with the Tsitsa Project, supporting on-the-ground social facilitation. LIMA's senior social facilitator supported my formal data collection through translation and co-facilitation.
- The Tsitsa Project Community Liaison Officers who worked under the Tsitsa Project.
- 'Working for' implementing agents, DFFE (including Key Informant #). The Tsitsa Project collaborates with the implementing agents in community engagement and informing restoration work. Part of the Tsitsa Project's role was to integrate landscape restoration planning to inform DFFE work in the TsRC; including collaborating with the 'Working for' implementing agents (Key Informant #7).
- Community Development Workers (CDWs) working under EC CoGTA (including Key Informants #1, #2, and #3).
- TsRC residents and traditional leaders (including Interviewees #1, #2, #3)
- Members of the Umzimvubu Catchment Partnership (UCP) and Environmental and Rural Solutions (ERS).
- Local tour guides working under the provincial Department of Economic Development and Environmental Affairs (DEDEAT).
- Members of the Elundini Chamber of Commerce.

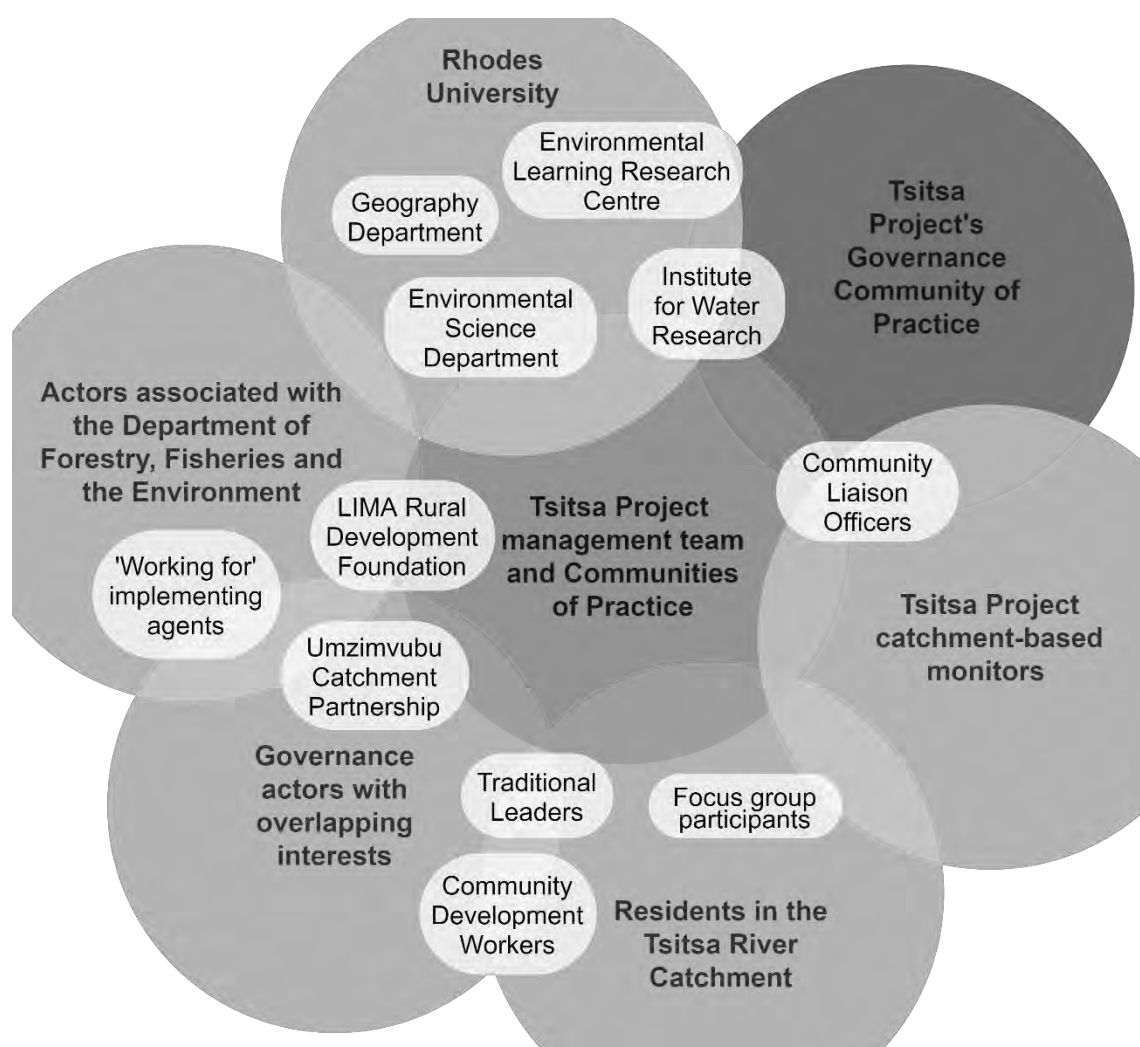
I also worked closely with the GovCoP, LIMA, and the Tsitsa Project's Catchment Coordinator to support the work of the Community Liaison Officers (CLOs) who formed part of the *Tsitsa Project's catchment-based monitors*. The CLOs were hired as an entry point and communication channel into rural communities and, once established, could provide feedback on activities and changes in their communities, thus informing my work.

*Table A.2. General list of research collaborators.**Each group of collaborators contributed different theoretical and practical knowledge and expertise.*

Research collaborators	Description of collaboration	Practical and theoretical areas explored
Governance Community of Practice	My doctoral supervisor sits within the GovCoP. All my research activities were planned with the GovCoP - from the early conceptualisation of research aims and objectives to the final write-up. We co-wrote various reports and publications and co-presented at conferences and summits.	Participatory governance, epistemic justice, ecological infrastructure, Transdisciplinarity
Systems Praxis CoP	My co-supervisor sits within the Systems Praxis CoP. My dominant engagement with this CoP was academic and theoretical.	Systems thinking, causal loop diagramming, system dynamics,
Institute for Water Research at Rhodes University	Seminars and knowledge sharing across disciplines.	Freshwater ecology, hydrology, ethics of engaged research, Transdisciplinarity
Tsitsa Project Catchment Coordinator (key informant #4)	Practical and theoretically supported each other's work.	Stakeholder engagement, rural development, traditional affairs, and isiXhosa culture
Tsitsa Project members and other Communities of Practice (Including Key Informant #5)	The GovCoP's work is embedded within the Tsitsa Project. We collaborated in the organisation and implementation of workshops. We also engaged in multiple planning and reflection sessions.	Sustainable landscape management, participatory governance, reflection, and learning,
LIMA rural development foundation	LIMA collaborated with the Tsitsa Project supporting on-the-ground social facilitation. LIMA's senior social facilitator supported my formal data collection through translation and co-facilitation.	Local agricultural practice, isiXhosa culture, and practice, land restoration,
Tsitsa Project's Community Liaison Officers	Form part of the Tsitsa Project's catchment-based monitors.	Focus group participants and co-facilitators.
'Working for' implementing agents, DFFE (Including Key Informant #7)	The Tsitsa Project collaborates with the implementing agents, supporting community engagement and informing restoration work. We collaborated within workshops such as the Learning Words workshops.	Landscape restoration, community engagement.
Community Development Workers (CDWs), EC CoGTA (Including Key Informants 1,2 & 3)	CDWs facilitate interactions between the government and the people. We collaborated within workshops such as the Learning Words workshops.	Public participation, rural challenges.
TsRC Residents	Roadshow Fieldtrips Mapping focus groups	Rural live and livelihoods, local governance institutions.
Umzimvubu Catchment Partnership (UCP) and Environmental and Rural Solutions (ERS).	UCP and the secretary organisation, ERS, work in the upper Mzimvubu Catchment. I attended multiple meetings and stakeholder engagements hosted by UCP. They were learning from their deep experiential knowledge and careful methods.	Restoration activities, system convening, actor mapping,

*Table A.2. General list of research collaborators.**Each group of collaborators contributed different theoretical and practical knowledge and expertise.*

Research collaborators	Description of collaboration	Practical and theoretical areas explored
Local tour guides working under the provincial Department of Economic Development and Environmental Affairs (DEDEAT).	We explore the TsRC together. They supported my work with informal interviews and answered my questions about local history.	Local history, rural development, environmental degradation.
Elundini Chamber of Commerce	Attended meetings together, and discussed local politics.	Local water management, local politics,

*Figure A.1. Spheres of collaboration.**The spheres show general groups, and the white rounded shapes indicate specific groups. The intensity of the colour of the sphere is an indication of collaboration intensity.*

A.3 Tsitsa Project details

I now provide more detail about the Tsitsa Project. The information for this appendix comes from a document called 'The Tsitsa Approach to Sustainable Land Management and Restoration,' which was collaboratively developed as one of the key handover documents to the Department of Forestry Fisheries and the Environment (DFFE), the primary project funder (Tsitsa Project et al., 2021a). The Tsitsa Approach document is complemented by a set of policy and practice briefs which are available at <https://www.ru.ac.za/tsitsaproject/resourcesresearch/keyinformation/>.

Project team

To achieve the objectives of the Tsitsa Project, a comprehensive governance structure was put in place to ensure cooperation and input across a wide range of stakeholders (Figure A.2). The 'high-level cooperative governance team' consisting of DFFE officials and senior Rhodes University researchers (the 'A team'). The work conducted by the Tsitsa Project was divided into communities of practice, which cover the following realms of praxis: Sediment and Restoration, Grass and Fire, Green Livelihoods, Climate Change, Governance, Knowledge and Learning, and Systems Praxis. Finally, the project's catchment-based monitors played various roles that supported research and implementation (Table A.3).

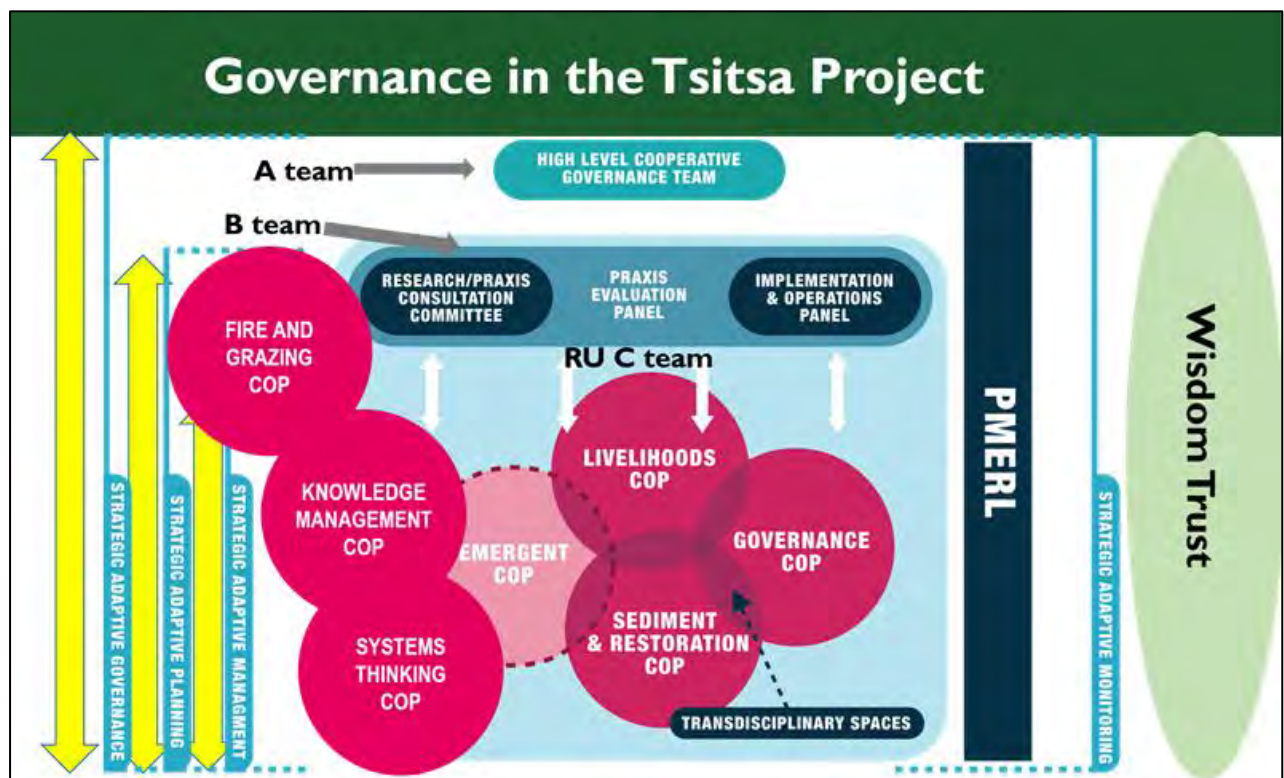


Figure A.2. The governance structure of the Tsitsa Project (Botha et al., 2017)

PMERL – Participatory monitoring, evaluation, reflection, and learning; CoP – Community of Practice.

Table A.3. Tsitsa Project monitor roles.

The different Communities of Practice they are managed by, as well as a brief description of their roles. These monitors are employed by LIMA Rural Development Foundation and supported by the Tsitsa Project.

Monitoring role (#)	Description of role
Community Liaison Officers (CLO) under the Governance CoP (6)	The CLOs live in the TsRC and provide grassroots insights and communication. They also act as bridging agents active in various governance spaces; local workshops and meetings, and municipal and government events (Fry et al., 2019).
Citizen Technicians under the Sediment and Restoration CoP (7)	The technicians use basic equipment and Open Data Kit-enabled smartphones to collect flood-focused suspended sediment samples from 11 sites within the TsRC. The technicians collect high-resolution quantitative and qualitative data about sediment movement and general river conditions (Bannatyne et al., 2017).
Citizen Monitors under the Livelihoods CoP (6)	Citizen monitors have been appointed to oversee the progress of 36 greenpreneurs micro-nurseries growing vetiver grass to supply the DFFE NRM implementing agents undertaking restoration and rehabilitation work in the TsRC (Conde-Aller, 2020).
Eco-Rangers under the Grass and Fire CoP (2)	Eco-rangers are employed to assist in protecting specified areas under rehabilitation as well as monitor livestock, rangelands, and fires.

The Tsitsa Project approach

The Tsitsa Project has developed its approach to enhanced rehabilitation and sustainable land management (SLM) over six years (starting in 2014) with a range of different components that were conducted in increasingly integrated ways over the last two years. Enhanced rehabilitation and SLM is about **integrating rehabilitation and livelihoods** for SLM and climate change adaptation using an approach based on participatory principles (see Section 1 and 2); **being flexible** in terms of activities, timelines, and targets; government funders, implementers, researchers, and catchment residents **working together** to achieve an agreed outcome; and **commitment by all** to long-term investment. The main components of the approach are summarised in Table A.4; addressing the purpose ('why?'), the focus of each component (the 'what?'), and an overview of the component's approach (the 'how?').

Table A.4. Components of the Tsitsa Approach for Enhanced Integrated Catchment Rehabilitation

Component	Why?	What?	How?
Avoided degradation, sustainable land management and rehabilitation convened by the Sediment and Restoration CoP.	Some of the land, while not degraded is at risk but can remain productive or improve if managed sustainably. Sustainable land management is an important component of climate change adaptation and provides limited mitigation through rebuilding soil carbon stocks.	All land users, especially livestock owners, give input to important and sensitive natural resource areas, followed by agreements to sustainable use that includes resting and ways to rehabilitate the degraded portions. The implementer helps with the rehabilitation once the land management improves. Monitoring, maintenance, learning	By identifying areas sensitive to degradation, working together to improve vegetation cover and soil health, resting portions of the grazing land on a rotational basis and rehabilitating land that is degrading.

Table A.4. Components of the Tsitsa Approach for Enhanced Integrated Catchment Rehabilitation

Component	Why?	What?	How?
		and adaptation is an essential part of success.	
Strengthening participatory governance including integrated village-level planning convened by the Governance CoP.	Local communities know their land best and make decisions on a day-to-day basis. By including them in planning and decision making promotes equity and access to resources. They are also the people who are directly impacted by the rehabilitation activities, so they need to (a) benefit directly in a way that is relevant to them and (b) understand why rehabilitation is important.	Develop capability to engage with governance; map with local land users; agree on use and management.	Workshops on natural resource management involving all actors, capability training, mapping, community meetings.
Green economy, rural livelihoods and climate change (CC) innovations convened by the Green livelihoods and Climate Change CoPs.	Livelihood options (e.g. livestock production) are limited in the Tsitsa catchment. Sustainable land management and rehabilitation support current livelihood strategies and provide new opportunities that can provide some income and food even during climatically difficult times.	Residents or 'green preneurs' have multipurpose gardens, growing vegetables and grass plugs. These plugs are sold to the implementer through the SMME. Support grazing management to ensure MeatNaturally approval and access to market. Livelihood interventions are informed by CC adaptation approaches.	Buy grass plugs for vegetation hedges from the local SMME. Support conservation grazing agreement development and integrate with rehabilitation and eco-ranger activity. CC adaptations are integrated into livelihoods strategies.
Local monitoring, evaluation, learning, and adapting convened by the Knowledge and Learning CoP.	Collecting baseline data and monitoring interventions provides valuable data to support learning, both during the contract period and in the longer term. This monitoring needs to connect with the broader catchment-wide monitoring system to build evidence for the cumulative impact of interventions over time. Embedding reflection as a practice within implementing agencies is important as a foundation for learning and adaptive management.	Collaborate with Tsitsa Project on how to monitor the impact of interventions. Help Tsitsa Project community-based monitors to locate and access intervention sites for monitoring. Add a basic reflection element to implementer reporting, and share reports with Tsitsa Project.	Meetings and ad-hoc interactions with Tsitsa Project monitoring & evaluation team. Small modifications to existing reporting templates (e.g. guiding questions to support reflective report-writing); reflection guidelines.

<i>Table A.4. Components of the Tsitsa Approach for Enhanced Integrated Catchment Rehabilitation</i>			
Component	Why?	What?	How?
Capacity and capability development convened by the Knowledge and Learning CoP.	It promotes equity and empowerment to participate in planning and management.	Key processes for shifting towards participatory governance to reach the objectives of more equitable access to, and use of, ecosystem services and the long-term sustainability of rehabilitation practices.	Attending training courses, supporting livelihoods development, involvement in participatory monitoring, be involved in biophysical rehabilitation and practising climate change monitoring and adaptation.
Internal governance of the Tsitsa Project	Effective governance is a crucial component of sustainable land management efforts. Bureaucracy and isolated work processes can lead to low levels of trust, cooperation, and constructive team efforts and do not support cooperative governance.	The Tsitsa Project developed an elaborate internal governance structure to create an enabling environment at various levels of governance. The “internal” governance interfaces and helps promote wider “external” governance.	Improved governance requires good communication and management at all levels. The Tsitsa Project introduced various governance teams (A-team at national government level; B- team at provincial level dealing with praxis issues, and a c-team for internal operational governance) and A strategic advisory structure (the so-called “Wisdom Trust”)

There are specific activities conducted by the Tsitsa Project that I refer to in my thesis. Table A.5 gives more detail.

<i>Table A.5. Description of specific Tsitsa Project activities referred to in the thesis</i>	
Tsitsa Project Activity	Brief explanation
Participatory mapping and village level planning	Local communities know their land best and make decisions on a day-to-day basis. Working in a participatory manner in planning and decision-making promotes equity and access to resources. This can be done by developing local communities' capabilities to better engage with natural resource governance; undertaking participatory mapping and co-learning with local land users, and collaboratively agreeing on resource use and management. The village-level participatory planning workshops are geared towards developing core capabilities for decision-making, governance, and integrated land use management and practices. These local village-level consultations and participatory processes enable catchment residents and stakeholders to identify opportunities and develop specific NRM and livelihoods-related interventions and plans. A participatory planning process typically follows a sequence of activities: 1. introduction to Tsitsa Project and co-knowledge production; 2. mapping of natural resources and key problem areas; 3. prioritization, development, and validation of solutions and innovations; 4. drafting action plans; and 5. establishment of village-level committees/champions and innovation hub or forum.

	This process is followed by implementing the interventions emanating from the local engagements and multi-stakeholder partnerships fostered. At the core of the planning phase lies the opportunity to support and expand local capability towards participatory governance and equity in decision-making as described in the capability development pathway (Figure 8). The planning process also includes an assessment of the resource status, the stakeholders, and their challenges and should result in prioritised strategies for improved and sustainable livelihoods and NRM. This level of intervention allows for high influence on land use practices and optimisation of multi-stakeholder engagement and reach to local communities. The village-level plans also feed into the ongoing development and adaptation of the nodal plan interactions. These planning processes should overlap, inform, and be informed by other catchment planning processes.
Monitor Capacity Development Course	To support Monitor capacity development for the Tsitsa Project. As part of a project that embraces participatory governance, this short course was designed to validate the indigenous knowledge of people in their contexts. It supported the development of community-based researchers who can share culturally and contextually rooted knowledge. As part of supporting a reflexive and applied knowledge creation, the course employed a reflexive ‘work together’ / ‘work away’ structure, allowing participants to apply what they learnt in between course sessions. The course was delivered over three Modules between November 2019 and September 2020.
Vetiver nurseries	To date, a network of green-preneurs (forming an established SMME) focused on home-based nurseries has been established across three nodes in the Tsitsa catchment. The initiative was introduced through the various local leadership structures and stakeholder groups and situated within the integrated catchment planning processes in place locally. These micro-enterprises focus on supplying the restoration work with grass plugs (vetiver grass and indigenous grasses) to implement vegetation barriers or grass hedges as erosion control interventions. In some instances, the nurseries are designed in a way that not only provides the households with an opportunity to generate income from plant sales but also contributes to the improvement of food security through the introduction of rainwater harvesting techniques, soil conservation, and fertility. Integrating rainwater harvesting methods in these multipurpose gardens also helps to control erosion within and around the household gardens and is an important climate change adaptation practice. Central to the business plan of the SMME was the opportunity to sell vetiver plugs to the restoration implementer. Grass hedges in land restoration interventions help to bind the soils, slow overland flow and extract subsurface water to slow erosion and increase infiltration. Vetiver grass is a suitable plant widely used for this purpose, so the local demand for this type of grass is directly linked to the suitability of grass hedges as an effective restoration method.

Grazing management and Meat Naturally	In order to improve the grass cover, a combination of rest and rotation of grazing camps, livestock herding, and high-density kraaling is promoted through the Tsitsa project. Grazing management needs to be integrated with rehabilitation interventions. This requires the development of integrated local plans that align land use management and restoration activities for more effective erosion control interventions by allowing vegetation establishment and seeding. Rangeland management is based on the recognition that local people must have the power to decide how their land is used to encourage sustainable livestock grazing. Therefore, management decisions and interventions are co-created with the community through livestock associations and sanctioned by the Traditional Authority. Community mobilisation and institutional development are important to forming a successful rangeland management system and community buy-in. The assumption is that local people can manage their land through locally planned rules and procedures, forming community (livestock) associations, and negotiating conservation agreements. Adhering to the grazing agreement (sustainable rangeland management) could ensure incentive packages from beef and wool market brokers. Community members and livestock owners are vital to set these rules, guiding their livestock to graze in designated areas, and to the overall success of the process. The rangeland management system is envisaged as a partnership between the livestock owners and the implementer. As laid out in the grazing management and conservation agreements, the herding of livestock and exclusion of these livestock from the rested area is the livestock owner's responsibility. The restoration implementing agent employs herders to assist with this process. In addition, the implementer also employs local ecorangers who play a wider role in ensuring that grazing management implementation runs smoothly. Ecorangers assist in this process by co-creating and negotiating the conservation agreement, monitoring compliance with this agreement, and assessing efficacy of the rangeland management plan and erosion interventions. When ecorangers are not engaging in any of these activities, they assist with implementing erosion control measures. Although employment of herders and ecorangers by the implementer is a realistic short-term solution, strategies and plans to secure continued employment of herders and ecorangers in the long-term need to be factored into the sustainable grazing management plans and conservation agreements that the associations commit to. A Conservation Agreement protects the environment while offering concrete benefits to rural farmers and local communities. The Tsitsa project works with communities who agree to protect their natural resources and the ecosystem benefits they provide in exchange for a steady stream of compensation or incentives. This approach helps to conserve biodiversity while improving the quality of life for local communities. The conservation agreements apply to livestock grazing, hence are grazing agreements, where local people agree to graze and rest their rangelands in rotation. The grazing conservation agreements, in turn, improve the social services of livestock health, land management, and livelihoods through cash income from livestock sales. However, the benefits available to the livestock owners depend on the degree of compliance with the conservation agreements and the improvement of landscape productivity. Meat Naturally Ltd was established by Conservation South Africa (CSA) and partners in 2016 as a social enterprise to support environmental and socially regenerative livestock production in South Africa's communal rangelands. Since its inception, the business has supported training, job creation, and income generation through mobile market access to over 400 households in the Matatiele area under the Umzimvubu Catchment Partnership Programme (UCPP) umbrella. Mobile local auctions in the communities allow livestock owners to market and sell their stock. The local auctions decrease the cost and travel time to auctions. The initiative brings local economic development, improved income, and livelihoods into the rural areas.

Tsitsa Project research nodes

The Tsitsa Project's interventions have focused on six research nodes (Table A.6) as shown by the red stars in Figure A.3. Map of the Tsitsa River Catchment.

Table A.6. The main research activities in the six main Tsitsa Project research nodes. The activities have been categorised by those conducted by me (the researcher), the governance community of practice (GovCoP), and the Tsitsa Project. The star # is related to the numbered stars in Figure A.3. CLO: Community Liaison Officer.

Star #	Research node	Researcher activities	GovCoP activities	Tsitsa Project activities
1	Upper Tsitsana (Tsitsana)	Participant observations	CLO hired	Priority mapping, invasive alien plant clearing.
2	Lower Tsitsana (Tsitsana)	Interviews, focus groups, participant observations,	CLO hired, learning words workshops	Priority mapping, vetiver nurseries, 2019 roadshow, invasive alien plant clearing.
3	Hlankomo (Batlokoa)	Interviews, focus groups, participant observations	CLO hired, learning words workshops	Priority mapping, village level planning, vetiver nurseries, 2019 roadshow.
4	Sofonia East (Basotho)	Participant observations	CLO hired	Priority mapping, 2019 roadshow, wetland restoration.
5	Sofonia West (Basotho)	Participant observations	CLO hired	Priority mapping.
6	Upper and lower Sinxako (Elangeni)	Interviews, focus groups, participant observations	CLO hired, learning words workshops	Priority mapping, village level planning, vetiver nurseries, 2019 roadshow, livestock associations, dryland restoration.

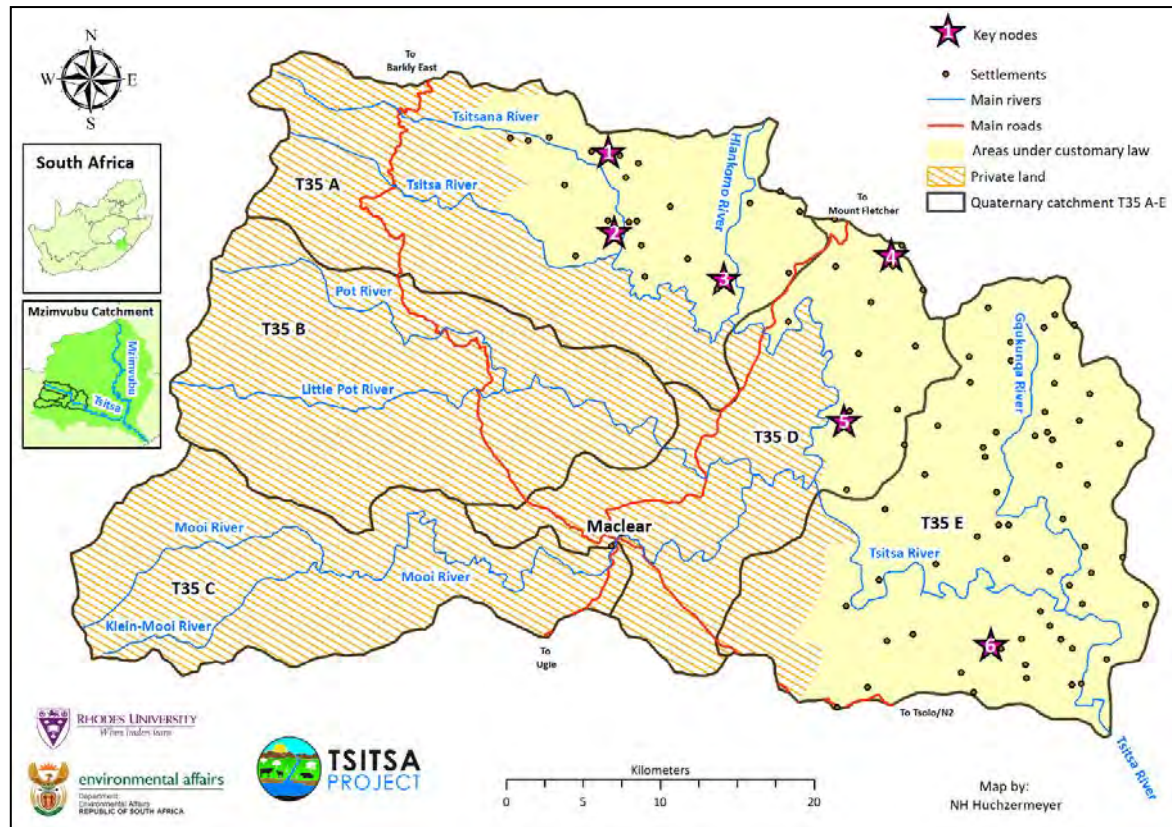


Figure A.3. Map of the Tsitsa River Catchment.

The map differentiates between private land and land under customary law and is administered by traditional leaders. The six stars on the map show the Tsitsa Project's key research nodes.

A.4 *Reflective essays*

This section includes a set of short reflective essays from my research journey.

A reflective research process summary

My initial desire to understand participation in rural governance came from living in an underserved and disempowered rural community in the former Transkei. I observed communities that were disempowered and governance institutions that were absent. I observed people deeply engaged with resource management activities but a deep divide between people working daily in the landscape and the formal governance institutions. The best a resident could hope for from the formal institutions was to be the passive recipient of a specific predefined benefit.

With a background in civil engineering and a particular interest in water management, I was naturally drawn to the challenges associated with resource management and service delivery. The intermittent water supply and lack of access to electricity were two of the main issues in the area. Having spent some time teaching and with a belief in the power of knowledge, I was also driven by the firm conviction that the development of human and social capital is the best place to intervene for long-term sustainable development. At that time, I was best able to articulate my concern as: *'how can people living in the former Transkei have more ownership over the development of the area in which they live?'*

The opportunity to join the Institute for Water Research and the Tsitsa Project emerged as the perfect vehicle for exploring my question. After initial engagements with the Tsitsa Project, I was convinced by the ideas underpinning complexity and systems thinking. I was also attracted to the logic and diagramming techniques associated with System Dynamics as tools for understanding complex problems. Through a review of the relevant literature, I aimed to identify high-leverage points for enabling systemic change in the land and water governance system in The TsRC. I was attracted by the idea of high leverage points and thinking in long time scales as I could see the negative impacts of short-term, symptomatic solutions being used.

My initial interest was in the connection between the local, informal governance institutions and the formal ones. This concept was best encapsulated in the Tsitsa Project as participation. I grappled with the term collaboration, ultimately realising that there are huge overlaps and choosing either would not exclude the other. Initial fieldwork and literature review confirmed my initial thoughts and pointed to participation as a crucial area for exploration, because of the pervasive disempowerment and disconnection within and between the various overlapping governance systems (formal/informal; democratic/traditional).

With an interest that stemmed from lived experience, I was driven by a desire for my research to positively influence or at least be well-connected to policy and practice. I was convinced that I could not adequately study the TsRC from the university in faraway Makhanda, and I thus decided to live in the catchment for as long as possible, given the available time and resources as well as the need to balance different commitments. I was guided by other fields of study that consist of long-term fieldwork, such as ethnographic research associated with anthropology. Part of my motivation to live in the catchment was the necessity of physical presence in a rural space where google does not have the answers, cell phone signal is patchy, and emails do not get answered. You must knock on doors and present yourself. This presence also allowed me to be involved in Tsitsa Project activities beyond the scope of my research project: attending meetings, helping with biophysical data collection, and facilitating workshops. While many of these engagements were useful for participant observation data

collection, the extra time spent in the context also allowed me to build relationships and get to know the area.

The first challenge was to find affordable accommodation in Nqanqarhu, where I was based for ten months, from May 2019 to February 2020. Although I lived in the town at the centre of the TsRC, I prioritised visiting and spending additional time in the Tsitsa Project research nodes. Large spatial scales, inadequate infrastructure, and intermittent cell phone network signal all contribute to the difficulties of living and working in the TsRC.

My involvement in the practical work of the project was informed by the theories of Transdisciplinarity and participatory action research, which provided frameworks for learning while doing. My embeddedness in the Tsitsa Project meant that my research was necessarily validated and enriched through presentations and collaborative reflections with the rest of the project. This practical embeddedness also created a range of challenges, not only in navigating personal relationships but also in balancing the various responsibilities associated with running workshops and writing collaborative documents and papers while needing to keep the core Ph.D. research process moving forward.

I used a series of actor mapping activities as the foundational methodology for exploring the system; doing this highlighted the importance of relationships. These mapping exercises provided a means to talk to people about their relationships and gain an understanding of the system. It also allowed me to identify where the formal rules in form were not playing out in practice.

Through interviews and observations, I began generating theories about the dynamics within the system, representing these in a variety of diagrams. Living in the Catchment, I could talk informally to different actors and corroborate my understanding - remaining open to contradictory evidence. My explorations were necessarily broader than just participatory processes, as I needed to understand the context in which participation happens.

Once my primary data collection was completed, I moved away from the catchment to give myself some space to consolidate my analysis and write my thesis. Coincidentally, this move happened simultaneously as the COVID-19 pandemic arrived in South Africa. While I remained involved in Tsitsa Project meetings, kept up with the Tsitsa Project monitors, and attended Local Municipal forums online; my focus shifted to compiling my research. Around this time, I began to consider upgrading from an MSc to a Ph.D. The fact that I had collected a large amount of engaged data in a reasonable amount of time meant that I was in an excellent position to convert to a Ph.D. I also began realising the limitations of an MSc, which would have meant leaving vast areas I had already begun exploring untouched. Fortunately, the upgrade process ran smoothly.

The three stories of governance presented in Chapter Five were identified from the actor mapping activities. It became clear that these three stories, which are supposed to work together, were incompatible and the links between them tenuous. The three stories are based on different assumptions, have different vocabularies, and operate on different temporal and spatial scales. The disconnection between different institutions within each story was also concerning, especially at the local implementation level, where managers need to engage and adapt practice based on experiences in the field.

The systemic understanding explored in Chapter Six was compiled based on interviews, observations, and informal discussions from my time living in the Catchment. The systemic analysis uses qualitative systems diagrams to explore the interconnectivity of important variables influencing the system and the difficult-to-see feedback loops. My systemic analysis highlighted the influence of the social and

economic challenges on participation and the lack of local capacity to implement policy and guidelines conceptualised at the national level.

My exploration reaffirmed the well-acknowledged disconnections within the governance system. There are, however, ways of enabling participatory processes to enhance governance outcomes. My findings are synthesised into a set of potentially high-leverage points within the system for enabling participatory governance, as detailed in Chapter Seven. In the context of this study, searching for high leverage points means reorientating interventions towards multi-dimensional trust and shared understandings while acknowledging that we need to keep increasing capabilities across formal and informal governance spaces to realise improved lives and livelihoods for the communities living in the former homelands.

Becoming interested in rural resource governance in the former homelands

Before starting my research with the Tsitsa Project, I lived on the east coast of South Africa in a village called Zithulele, about two hours drive from the Tsitsa Catchment. The village developed around a well-functioning government hospital. The hospital receives electricity from the national grid and has its own dam and water reticulation system. I lived in a cottage on a local (amaXhosa) woman's property, where we harvested rainwater and bought a small photovoltaic system for charging cell phones and laptops. We were able to help our neighbours and landlady charge their cell phones. Many households surrounding the hospital have no formal water or electricity provision and are not wealthy enough to privatise their services as I was able to do. Instead, people listen to the radio, and some resort to drinking water from non-potable rivers and springs.

Regular protests interrupted work and life. Protests were held for many reasons, including the lack of reliable water supply, no electricity, increasing taxi fares, or unmaintained roads. One protest stands out during my time in Zithulele. There had been a series of protests regarding the unfulfilled promises of electricity service provision. Tragically, a protester was shot and died, and later in the week, a doctor from the hospital was injured (Maphanga, 2019). This series of events resulted in a visit from the local ward councillor. On the day of the councillor's visit, we woke to rousing songs from the local high school. A large group of community members had marched to where the main tar road had been barricade. As 'outsiders' we were told we could join the march if we wanted to, and despite the young men carrying sticks, the atmosphere was jovial.

About 4 hours after the scheduled time, a fancy 4x4 arrived with a police escort. The ward councillor climbed onto the open back of a police bakkie (or pickup truck) with four armed policemen. The bakkie then reversed up to the crowd. The ward councillor gave a long speech about the protocols and the reasons for delays in the delivery of electricity. Sitting in the hot sun, people grew weary and tired, and after some boisterous questions and answers, the crowd dispersed. We went home. The protest was over, and the barricades were removed.

A few months later, some electricity poles arrived in a pile. Six months after that, the poles were erected. Two years after the protest, the poles still stand as a symbol of unfulfilled promises. The circumstances in which an elected official would need police protection from a group of people with genuine grievances struck me. I started to think about how much influence people had over the inevitable development and change that would engulf these areas. How could participation be facilitated so that people could meaningfully contribute to the governance processes that decided their future?

Adapting to the Tsitsa Project

My experience working with a non-profit educational corporation in Zithulele taught me about the complexities of living and working in a rural space. Thus, when joining Tsitsa Project in 2019, I found adapting to an academic project difficult. Besides being removed from the everyday complexities, I found the academic protocols stifling. The 7-hour drive from the university to the 'field' made everything feel removed and confusing. I came from an organisation with a physical office, daily meetings, clear tasks, and short-term impacts that were tangible and encouraging. Now I was working on a project with no physical space, caught between a distant catchment and an academic institution - it took me months of proactive searching to physically meet the other team members.

Although I trusted the project team, I grappled with the contradiction between tangible outcomes for rural residents and the higher-level project objectives around research and policy. I began asking questions and found that senior project members were willing to listen. I also realised that project critiques must be crystal clear, as miscommunication is inevitable. At that time, academically robust critiques were difficult for me to formulate because I did not come from an academic background, and I struggled to understand the aims of the Tsitsa Project within the broader sustainable land management discourse. I was worried about being absorbed by the 'system' (receiving financial and relational support), which would render me unable to be truly critical at a later stage.

The project spoke about 'paving the road as you walk it,' being adaptive to changing circumstances to cope with the ubiquitous uncertainty in a complex system. I was concerned about the pervasive perverse incentives which make laying a just and sustainable path extremely difficult. Academic pressures to focus on publishing research while short funding cycles incentivise short-term interventions, and rigid reporting structures make building relationships and adapting to circumstances in an ethical way difficult.

This thesis is being done as part of the Tsitsa Project, and completing it will mark three years with the project. Part of my decision to stay with the project has been acknowledging that there are no 'perfect' projects and compromises are necessary. I have also come to acknowledge that I do not dwell enough on the positive aspects of the Tsitsa Project.

An ethical dilemma

Ethics is an essential consideration for all research, and the complexity of ethical dilemmas is significantly increased as research becomes more engaged and transdisciplinary (Cockburn, 2018; Wolff et al., 2019; Sellberg et al., 2021). Trade-offs are inevitable - such as that between real-world impact and research outputs. In this essay, I discuss one foundational ethical dilemma with which I grappled.

I was not convinced that how the Tsitsa Project team was structured and funded could do what we said we would do, yet I supported the Tsitsa Project and acted as though the goals were achievable. It is well acknowledged that the Tsitsa Project's goals are ambitious, and while this was not necessarily something for me (as a student) to worry about, it naturally affected daily interactions with people. I found that there is a fine line between optimism and deception, and finding the balance between these two has implications for what it means to be honest.

I will use a friend's example to help clarify the dilemma. An audiologist friend told me about her struggles during her community service year. She worked in a government hospital, and every day she would test people's hearing, give them a diagnosis and possibly prescribe them a hearing aid. The problem was that her patients were mostly too poor to afford hearing aids, and the health department did not have the budget to give everyone hearing aids. The patients would be grateful to have their

problem described, but there was nothing the audiologist could do about the person's impaired hearing. She was, at the same time, powerful and powerless; what is the point of continuing to test people's hearing under these circumstances? Would her time not be better spent looking for external funding for hearing aids? Or using legal mechanisms to hold the health department accountable?

My research focused on the interactions between formal and informal governance actors - I explicitly conducted my research, giving the formal governance structures the benefit of the doubt. For example, I could have taken an alternative route that focused more on community-based natural resource management, stewardship, and self-sufficiency rather than looking for ways for people to collaborate with public institutions. Another common route used by most of the prominent civil society organisations is to focus on holding governance institutions accountable (Some well-known examples include Equal Education (Equal Education, 2015) and The Treatment Action Campaign (Heywood, 2009)). Accountability could have been ensured by raising awareness about the challenges and injustices of current service delivery. Knowing the history of deception, disappointment, and ongoing dysfunction, either of these routes may have been more ethical.

I acknowledge that there are challenges in the functioning of the South African governance institutions, lack of capacity being the major one highlighted in this thesis and corruption, I believe, being the most destructive at the systemic level. I see both of these problems as symptomatic rather than root causes of our current challenges. There is an excellent argument to be made that working with governance institutions is more effective than attempting to fix them from the outside (Levy, 2014). One way of thinking about it is that 'Good policies and institutions emerge when the collective action that supports them is more effective than the opposition' (Khan, 2020, p.7). Building capacity is best done through collaborative experimentation and learning-by-doing in a way that acknowledges the problems but is not overwhelmed by them (Andrews et al., 2017).

Like any ethical dilemma, it is not cut and dry. I always attempted to be honest with people about my scepticism, from outright telling other researchers what I thought to talking openly with employees and catchment residents about the limitations of what we could achieve. In most cases, my views were affirmed. The latent rational distrust in the ability of all external entities to remain engaged in the long term was an undercurrent of many engagements. I think most people play the game while being fully aware of the limitations of the institutions. In her recent book 'Made in South Africa,' Lwando Xaso describes being South African as *'not for the faint-hearted or the fragile. It is a strong and determined state of mind – it is believing in the improbable. It is being challenged and frustrated to your wits' end but still finding a reason to smile'* (Xaso, 2020, p.i)

When I decided to proceed as though the Tsitsa Project, backed almost solely by a government department, was trustworthy, I realised that there was a high probability that people's hopes and expectations would be tested once again - as the rural populations continue to make their way despite the challenges thrown their way by the outside world. I had to move forward, trusting that the people I was engaging with had similar assumptions about what it means to make your way in South Africa.

I stand by my decision. For one, I may be wrong about the ability of the Tsitsa Project and the government department to seriously engage with these issues in the long term with the best interests of the communities living within the TsRC at the centre of the work. However, beyond the local social-ecological justice, I believe my thesis explores an important area of study that could inform future work and contribute to broader transformations. I made this decision because I was part of a team committed to exploring the potential of participatory governance. With full knowledge of imperfection, we move forward, 'laying the path as we walk it.'

Acquiring Gatekeeper permissions

Abiding by the ethical regulations of Rhodes University (RUESC, 2014), relevant gatekeepers were contacted before the interviews. The process of acquiring gatekeeper permission was an obstacle in conducting more interviews, for which I was eventually grateful. The gatekeeper process forced me to be selective about whom I interviewed and thus avoided collecting too much data, and tracking down gatekeepers forced me to engage with the higher structures. I was appreciative of the gatekeeper process in situations where the interviewee became nervous about the interview, and I was able to assure them that I had their senior's permission.

Sometimes I would get gatekeeper permission only to be told during the interview that I would need to contact another manager in Pretoria or Cape Town. If this were the case, I would call the manager and see if they had any problems. I emailed them the project details but did not get any response. In these cases, I took the initial gatekeeper's note and the verbal acknowledgment over the phone as adequate gatekeeper permission.

In one case, I experienced the process of going through the gatekeepers to impact the interview negatively. The gatekeeper was forceful about whom they wanted me to interview. So, the interview did not emerge from prior interactions and was not agreed upon between the interviewee and me. This sequence of events resulted in a challenging conversation with a stony-faced official. Part of conducting ethical research is ensuring that all participants know the necessary details of the study. Prior consent is secured by signing a consent form before any interview. All my research participants agreed with coercion to be involved in my research and sign the consent form. In the case of the stony-faced official mentioned above, he verbally agreed to conduct the interview and for me to use the information, but he would not allow recording and would not sign the consent form. Although the standard procedure could not be followed, I still used information from this interview because I did receive permission, even if it is not documented.

My most frustrating situation was when I had the opportunity to interview a manager willing to sit down with me, but I could not because I had not yet spoken to their gatekeeper. I could not conduct this interview because I failed to contact the manager again.

An acknowledgement of hardship

In the media or academia, I have rarely found representations of the former homelands of South Africa that meaningfully engage with the complexity of poverty and all the associated social and cultural destruction while acknowledging the depth of the cultural heritage, collective strength, and beauty of the landscape. These are multiple stories that are difficult to hold in one's mind at the same time – as Chimamanda Ngozi Adichie describes in her famous TED talk, it is easy to fall into the trap of a single story (Adichie, 2009). Life in these areas is often romanticised as some relic of a utopian cultural and ecological past when the intention is preservation for tourism. Alternatively, the area is described by such absurd socio-economic statistics that imply complete depravation as if the intention is to motivate economic growth and development without considering the existing local lives. These opposing narratives contribute to the complex tension between development prerogatives and environmental conservation.

I have tried to walk the line between the need for scientific rigour and genuine engagement in the real world, a challenge faced by many researchers looking to promote social-ecological justice. One of the most challenging matters to grapple with is human suffering. I do not begin to suggest that I have the depth of experience nor the literary skill to tell the stories of the former homelands, but I wish to acknowledge the suffering that I have been unable to integrate into the body of my thesis adequately. I have to some extent, been able to include the daily struggles – poor roads, intermittent and poor-

quality water supply, poor health care, poor police support, and so on in the analysis, but I have had to remove the emotions from the story. Above and beyond the daily toils, I have not included the more specific events and trends that have exacerbated the human suffering during my research period. I want to highlight some of the realities in which my research took place.

In 2019, Nkosi Mthandeni Mathandela Mabandla and his wife died in what can only be described as a horrific series of events. Nkosi Mabandla was a senior traditional leader for the Elangeni Traditional Council. He was widely respected across South Africa and was the most prominent traditional leader in the engagements between the national government and the traditional leaders in relation to the infrastructure developments in the TsRC. I was fortunate to attend his funeral. His death destabilised the traditional leadership in the area, which might have detrimental impacts on how the planned Mzimvubu Water Project impacts the local community.

My research can be divided into two halves, 16 months of active and engaged presence on the ground, followed by 20 months of analysing and writing up. This division is fairly standard, but the COVID-19 pandemic exaggerated the divide. The pandemic has had global impacts beyond our current comprehension. In December 2020 and January 2021, the Eastern Cape was rocked by the second wave of the pandemic; with its high percentage of older people and poor health facilities. During this period, the Tsitsa Project's catchment-based monitors were reporting weekly deaths. One example of this was a message from one of the Community Liaison Officers when attempting to set up a meeting. He said:

'situation is not good currently, im even afraid of my phones because once a phone rings or message, its always bad news... But hopefully this time will try to be available, right now we are busy preparing for a funeral tomorrow in the family.'

Among these were the deaths of at least two more traditional leaders in the area due to COVID-19. The South African Medical Research Centre estimated that in 2020 and 2021, the Eastern Cape experienced 526 excess deaths per 100 000 people, making it one of the worst-hit places in the world by mid-2021.

While I had heard about the crime in the lower catchment and the gangs reported to come from the urban centres of Qumbu, Tsolo, and Mthatha, I was shocked at the number of people we worked with who were directly affected by these events during the period of my research. Cases of sexual assault and robbery were a common topic of conversation, not just in the rural areas under customary law, but also in the urban centres and surrounding private farms.

Amid these awful events and the increasing threat to livelihoods, I often wondered about the relevance of participatory governance and a focus on resource management. In these times, I was looking through the lens of the confused pessimist (as introduced in Chapter Seven). All I could think about was the need for proper police support and primary health care. Participation in governance seems like a luxury, something even most middle-class people are not expected to spend time doing. At the same time, I experienced people attending meetings - interested and engaged. Despite the active neglect and centuries of broken promises, I continuously met optimistic people. Ironically, these level-headed insiders often enabled me to access the lens of the optimistic outsider who does not see all the complex layers of interconnected challenges.

Reflecting on vulnerability

Part of my justification for my research and the need for external intervention is that the rural communities living in the former Transkei are vulnerable. It is generally accepted that people are becoming more reliant on government institutions that are falling deeper into debt and on ecosystems

that are increasingly becoming degraded. I do not doubt that people are vulnerable, but there is amazing resilience in other ways. Some of these include:

- The culture is hierarchical, and the youth listen to their elders - although there are signs of change. While hierarchies inhibit innovation, they can provide valuable stability in uncertain times.
- Many residents have been living in the former Transkei for generations, and there are strong bonds to the land - even urban residents send money back to build houses and invest in these former homelands. These investments mean that many people are financially invested in the survival of the former Transkei.
- Every household has an area designated for farming or the right to one, either in use or can be reactivated if the need arises. While self-sufficiency may be slowly declining with the increasing dependencies, the risks take on a different hue in comparison to the volatility in urban centres – the 2021 uprisings in which KwaZulu Natal and Gauteng saw unprecedented violence and looting in cities and peri-urban areas is an excellent example of what I mean (Bhattacharya & Rach, 2021).

When I think about it, it is ironic that I have been calling these communities vulnerable while simultaneously planning a rural life for myself precisely because of the factors which make them resilient, such as the high social and natural capital. That being said, I would not be subject to the same vulnerabilities. For example, I would most likely privatise my electricity, water, and transport and could access private health care if an emergency arose.

‘That’s not a Ph.D.!’

Having started by working towards an MSc, I had not intended to do a Ph.D. The impetus to write a doctoral thesis emerged during the process. My ignorance of what was required made me feel intimidated - I had heard many stories of how difficult a Ph.D. was. These are probably challenges that most people face when writing a Ph.D., especially those who are used to the pass/fail way in which our education system works. So, ‘what constitutes a Ph.D.?’

My natural inclination is to have high expectations of myself and others. My mother tells a story about me in pre-school, where our class is tasked with drawing a bee. Along with my classmates, I create a colourful scribble. As the teacher walked around the class, she commented on what a lovely bee I had drawn. I responded exasperated: ‘that is not a bee!’ I often thought about the bee story on my Ph.D. journey, especially when I doubted my work. Times when I was holding myself up to some self-imagined, unattainable standard of what a Ph.D. is supposed to be. As a child attempting to draw a bee, I had no concept of the skills required to draw a bee or what level of detail I was supposed to achieve with my expertise. All I could see was that I had not drawn a bee – undoubtedly an accurate observation but possibly too harsh for a 4-year-old.

I love the layers of the bee story. Even if I could draw an entirely anatomically correct bee, it still would not be a bee. As in René Magritte’s famous painting – ‘*ceci n’est pas une pipe*’ (this is not a pipe), the drawing of a bee is not a bee. Alternatively, in Alfred Korzybski’s words, ‘the map is not the territory.’ The model is not reality. There is a limit to any analysis - I can create a map but not recreate the territory. The sign of a good map helps us move towards desirable and sustainable outcomes - so that we may meet our needs without compromising the needs of future generations, to use the popular definition of sustainability. As George Box said, ‘all models are wrong, but some are useful.’

We can test a map’s utility by acting *as if* the map is true. If reality responds in the way the map predicts, then our confidence in the map increases. There are unforeseen circumstances, ‘black swans’

as Taleb (2007) calls them - things we could not incorporate into our maps given our range of experience. These happen outside the bounds of even the most detailed maps. In my thesis, I have created a map for finding high-leverage points for enabling meaningful participatory and collaborative governance in a rural system of land and water governance. The map is not perfect, and the territory is continuously changing. However, moving ahead with no map is unlikely to be successful.

To take a step back, we need to create the map and create manuals for reading maps that enable us to interpret the maps with the appropriate level of awareness and self-consciousness. Scientific theories of physical manifestations can reach reasonably high levels of certitude – the current theory of gravity derived through Newtonian physics is undoubtedly good enough to build a bridge! However, when dealing with human subjects and attempting to understand complex systems, our certitude is greatly diminished, and we must proceed with tentative assertions.

This *is* a Ph.D. thesis, as much as my inner critic has denied it. I have grappled with a substantial problem in a rigorous and engaged way. I have drawn conclusions and outlined the limitations of those conclusions.

Appendix B. Human research ethics

Given the adaptive nature of this research, I had to have extensive interactions with the Rhodes University Ethical Standards Committee (RUESC) to keep them up to date with changes in my research and ensure that my research remained in line with the ethical standards of the University.

B.1 Project details

Supervised by: Professor Carolyn G. Palmer

Co-supervised by: Dr Jai Clifford-Holmes

Research was conducted within the Institute for Water Research within the Science Faculty at Rhodes University.

Research was conducted in collaboration with the Tsitsa Project and funded by the South African National Department of Forestry, Fisheries, and the Environment.

Start Date of M.Sc: 01/01/2019

Upgrade to Ph.D. Date: 23/11/2021

B.2 Important research ethics details

Ethics approval for research on human subjects was required from RUESC as data collection involved interviews, focus groups and participant observations.

I received gatekeeper permission to conduct interviews (Appendix B3) from the following actors:

- The director of Human Resources at Rhodes University to conduct interviews with: admin Staff from the Environmental Science Department and researchers associated with the Tsitsa Project.
- The regional manager from the Department of Environmental Affairs to conduct interviews with: implementing Agents, social facilitators, project managers and catchment coordinators.
- The Municipal Manager at Elundini Local Municipality to conduct interviews with: Community Development Workers and facilitators from the Public Participation Unit.
- The Director of Community Services at Joe Gqabi District Municipality to conduct interviews with: The water manager associated with the water services authority and water services provider.

I received gatekeeper permission to conduct focus groups (B5) from the headmen of the following villages: Ntatyani village, Sigoga village, and Lower Sinxako village.

I received full, prior and informed consent from all 15 interviews in which I conducted structured data collection activities. 14 interview participants signed consent forms (B4). One participant gave verbal consent for the interview data to be used. While all participants could speak and understand some level of English, a translator was present and supported interviews with all interview participants not completely fluent in English.

Observations primarily took place in participatory interactions such as workshops and meetings. The participant observations subjects were primarily people living and working in the TsRC who participate in formal or informal land and water governance structures. However, I also observed people working on restoration activities and spent time in the TsRC talking to local people and hiking in the landscape.

My role as participant observer was open and explicit. I never hid my identity as a researcher and took every opportunity to explain my research to participants. I worked closely with the Tsitsa Project's community liaison officers, with whom I did not conduct any formal interviews, but who acted as key informants. Information was also gathered from official documents, newspapers, and newsletters.

Feedback to the TsRC predominantly occurred through the work of the Tsitsa Project with whom I was involved. All future popular and academic outputs from the research will be shared with gatekeepers, interview participants, as well as the broader Tsitsa Project collaboration network.

B.3 Interview gatekeeper letter template

INSTITUTIONAL PERMISSION LETTER

INSTITUTION NAME & ADDRESS:

INSTITUTION CONTACT PERSON:

INSTITUTION CONTACT NUMBER:

INSTITUTION EMAIL ADDRESS:

TITLE OF RESEARCH PROJECT: A case study of participation in land and water governance in the rural Eastern Cape

ETHICS APPLICATION REFERENCE NUMBER: 2019-0463-529

RESEARCHER: Anthony Fry

DEPARTMENT NAME & ADDRESS: Institute for Water Research, Old geology Building, Rhodes University Campus, Artillery Road, Makhanda, 6139

CONTACT NUMBER: +21 81 871 5487

EMAIL ADDRESS: antfry13@gmail.com

Dear.....

We have reviewed your request to conduct a research project involving data related to participation in land and water governance. You have permission to utilize the data for this project as defined in project proposal.

This letter covers permission to interview participants that fulfil the following functions within the Municipality:

-
-

This permission is valid as long as you:

-
-

Sincerely,

Name:

Who warrants that he/she is duly authorised to sign on behalf of

Position:

Date:

Signature:

B.4 Interview consent form template

Consent Form for research about participation processes in rural land and water governance

- ☐ I..... voluntarily agree to participate in this research study. I have marked the points that I do not agree with.
- ☐ Mna.....ndiyavuma ngokuzithandela ukuthatha inxaxheba koluphando. Ndimakishile amanqaku endingavumelani nawo.
- ☐ I understand that I can withdraw completely at any time or refuse to answer any question.
- ☐ Ndiyaqonda ukuba ndinorhoxisa ngokupheleleyo nanini nayiphi na ixesha okanye ndingavumi ukuphendula nayiphi na umbuzo.
- ☐ I understand that participation involves answering questions to assist in the research about land and water planning and decision making.
- ☐ Ndiyaqonda ukuba ukuthatha inxaxheba kubandakanya ukuphendula imibuzo ekucendiseni uphando lomhlamba namanzi, kunye nokuthatha izigqibo.
- ☐ I understand that I will not benefit directly from participating in this research.
- ☐ Ndiyaqonda ukuba andiyi kuzuza ngokuthe ngqo ekubeni ndithathe inxaxheba kolu phando.
- ☐ I agree to my interview being audio-recorded.
- ☐ Ndivuma ukuba olundliwano-ndlebe ukuba malurhekodishwe.
- ☐ I understand that as far as possible my identity will remain anonymous.
- ☐ Ndiyaqonda ukuba lonke ixesha ndakuba ngumtu ongaziwayo.
- ☐ Ndiyaqonda ukuba isazisi sam zakuhlala bungaziwa.
- ☐ I understand that the institution or my position in which I work is referred to.
- ☐ Ndiyaqonda ukuba iziko endisebenza kulo okanye isikhundla sam siyakumane sibandakanyeka.
- ☐ I understand that disguised extracts from my interview may be quoted.
- ☐ Ndiyaqonda kuba izicatshulwa ezifihlakeleyo kundliwano ndlebe zingacatshulwa.
- ☐ I understand that signed consent forms and original audio recordings will be kept at Rhodes University in The Institute for Water research until 2026.
- ☐ Ndiyaqonda ukuba ifom zokuvuma kunye nerekhodi ziyakugcinwa yikwiUnivesithi yaseRhodes kwiCandelo loPhando lwamanzi kude kube ngu-2026.
- ☐ I understand that I am free to contact any of the people involved in the research to seek further clarification and information using the following details
- ☐ Ndiyaqonda ukuba ndikhululekile ukuqangashelana nawuphina umntu obandakanyeka kolu phando ukuba ndifuna ingcaciselo ngakumbi ngokusebenzisa ezi nkcukacha zilandelayo.

Participant Signature:

Date:

Researcher / Interviewer: I believe the participant is giving informed consent to participate in this study

Signature:

Date:

Contact Details:

Student: Anthony Fry, MSc Student, antfry13@gmail.com, +2781 871 5487

Supervisor: Prof Tally Palmer, tally.palmer@ru.ac.za, +2782 528 638

B.5 Focus group gatekeeper letter

VILLAGE GATEKEEPER PERMISSION LETTER

Village name: _____

Contact number: _____

TITLE OF RESEARCH PROJECT: A case study of participation in land and water governance in the rural Eastern Cape

ETHICS APPLICATION REFERENCE NUMBER: 2019-0463-529

RESEARCHER: Anthony Fry

DEPT NAME & ADDRESS: Institute for Water Research, Old geology Building, Rhodes University Campus, Artillery Road, Makhanda, 6139

CONTACT NUMBER: +21 81 871 5487

EMAIL ADDRESS: antfry13@gmail.com

Dear Anthony Fry

This letter indicates that I am aware of your research, and I permit you to conduct workshops in my village to research participation in land and water governance.

This permission is valid as long as you:

-
-
-

Sincerely,

Name:

Position:

Date:

Signature:

Appendix C. Data collection tools and protocols

C.1 Interview protocol

This section includes an overview of the interview protocol and a detailed table of the interview activities and justifications thereof.

Interview opening

My name is Anthony Fry, I am a student from Rhodes University. I am researching how people can be involved in planning and decision making to do with land and water

NdinguAnthony Fry, Ndifunda eRhodes University. Ndiphanda indlela yokuthatha inxaxheba.

Would you like somebody to translate for our discussion? Uyafuna mntu ozakuguqulela esixhoseni?

This information will primarily be used for my research and will only be shared with the members of the Tsitsa Project in order to improve the project. Here is an isiXhosa and English brochure that explains the Tsitsa Project.

Ndizosebenzisa le ngcaciso kuphando nzulu lam kwaye ndizokwabelana ngale ngcaciso kuye nabanye abantu abasebenzisana nam kule project yokuphucula iTsitsa.

Would you prefer to remain anonymous, or would you prefer me to name you in the report?

Ufuna ukuba engenamniniyo okanye ndingasebenzisa igama lakho ireport yam.

Please tell me if there is anything you would like to tell me that you do not want me to use in my research. If you want, we can stop at any time.

Ndicela undixelele ukuba ikhona into ofuna undixelela yona, kodwa ungafuni ukuba ndiyifake koluphando lam. ukuba unenxagki singayeka naliphina ixesha.

May I record this interview using my Cell Phone? *Ndingashicilela le dliwano-ndlebe ngomnxeba? (if recording is a problem then notes will be written throughout)*

So I am researching the different ways that people can get involved in official planning and decision making with regards to land and water. From this interview I will draw a diagram to describe how you see the process of participation.

Ndenza uphando ngendlela ezahlukeneyo abantu banga yinxalenye locwagciso, kunye nokwenza izigqibo ngomhlaba namanzi.

A rough outline of the questions I would ask in an informal interview / chat

I am meeting with you because this is something you are involved in.... *Ndiza kuwe kuba ubanakanyeka koluphando.*

1. How do you describe your involvement in this process? *Ungathi ubandakanyeka injani kule nkqubo?*
2. What processes is you/your organisation involved in? *Ungathi ngeziphi iinkqubo wena, okanye umbutho wakho enicaphazeleka kuzo?*
 - a. Who do you collaborate with? *Ubambisana nabani?*
 - b. Which documents guide this process? *Ngeziphi iimphepha ezikhokhela lenkqubo?*
 - c. What is the aim of this process? *Yintoni injongo yalenkqubo?*

3. Can you give me an example of a recent project that required public participation and what processes were followed?
Ungandinika umzekelo weprojekti yakutshanje efuna ukubandakanyeka koluntu kunye naluphi na inkqubo elandelwayo?
4. Have there been any events/processes that you have implemented that were very successful?
Ingaba kukho naziphi na iziganeko/ iinkqubo eziphuyezwayo eziphumelele kakhulu?
5. Is there anything you would like to ask me?
Ingaba ikhona into ofuna ukuyibuza kum okanye ufuna ucaciselwa ngayo?

I would then close with the following

From this interview I will draw a diagram to describe how you see the process of participation. This means that I will interpret your words. If you are willing, we can have a follow up meeting to discuss the diagram and make any changes that you see necessary.

Kule ngxoxiswano ndaku zoba umzobo ochaza indlela obona ngayo inkqubo yokuthatha inxaxheba. Oku kuthetha ukuba ndiyakutshithsa amagama akho. Ukuba uzimisele. sinokudibana nentlakanganiso yokulandelana ukuze sixoxe ngomfanekiso lo ndiwuzobileyo ukuze wenze nayiphi na inguqu wena eyimfuneko.

Thank you very much

Ndiyabulela

Consolidated interview protocol

<i>Table C.1. Overview of the interview questions with justifications.</i>	
Question	Reason for asking it
1. Logistics	Ethics Considerations – Baseline - 0
Can I record this interview?	Ethics
Do you want a translator to make sure we understand each other?	Ethics
Can I get you anything before we start?	Politeness
2. Introduction	Ethics and framing – Baseline - 0
Introduction of my research: I am investigating the way that decisions are made about land and water in the TsRC. I am specifically interested in how people can participate in these processes. I am interviewing you because... • You are involved with decision making, or • You are involved in communicating with people in the TsRC. I am going to ask you a few questions about your work, I hope that the process and questions will be helpful for you. If you have any questions or concerns then please stop me at any time.	
3. Small Talk / story questions	Interview etiquette – Baseline - 0
E.g. Where do you come from?	- Slow start, building rapport. - This will depend heavily on the person being interviewed.

Can you briefly describe your work?	Starting with more of a broad story question
4. Objectives, problems	Multi-actor analysis - Baseline - 0
What is your primary goal when it comes to.....?	
What is the problem you are trying to address through your work?	I would like to get the central problem as seen by each informant
5. Successes discussion	Multi-actor analysis - Baseline - 0
Have there been any events/processes that you have implemented that were successful? - Why do you consider those to be successful?	I want to get an idea of possible causes and solutions Criteria for what would qualify as a success
6. List variables	System Dynamics - Sensibility - 1
What are the important variables related to this problem?	It elicits key variables that become the input for other activities.
7. Process discussion	Network Analysis – Baseline - 0
In what ways do you involve people in the work you do?	As an alternative to asking for causes and effects directly, this keeps the questions more broad and tries to elicit stories that might hint at the problems, causes and possible solutions. This info would have to be inferred from the stories told.
Can you give me an example of a recent project that required communicating with the community? - What processes were followed? - How were people contacted? - How is information shared?	
8. Causes and Solutions	Multi-actor analysis - Sensibility - 1
What do you see as the causes of this problem? (3 ideas)	Starting to draw links. Just looking for what is on top of their minds.
What do you see as possible solutions to this problem? (3 ideas)	Just looking for what is on top of their minds.
9. Elicit causal link to develop CLD	System Dynamics - Literacy - 2
Start by placing the problem statement in the middle, with a list of variables of the side. Then start to build links between the variables starting with how things relate to the central variable.	Drawing a CLD can illuminate a system and allow links to be made that are non-obvious. The creation of the diagram is also useful to create a way to think about a problem.
How are these variables linked?	
10. Verifying institutional map	Network Analysis – Sensibility - 1
Who do you interact with in order to do your job - and how regularly (daily/weekly/monthly/yearly)? For example: - Who directs you? - Who do you direct? - Who do you collaborate with?	Identifying rules in use to compare to rules in form. Or at least the rules as understood by the agents as opposed to rules as dictated by the legislation (as understood by me) This might be something that can be left out of an interview that is time pressed.
Which documents or laws do you often refer to?	
11. Resources and stocks	System Dynamics – Literacy - 2
What resources do you/your organisation have available to do this work? - social capital? - human capital? - natural capital?	This is to get an idea of stocks that might be valuable for the model building session. This could also be a question that gets asked if the more formal model building is requested.

- physical capital? - financial capital?	
12. Closing	Ethics – Baseline - 0
Is there anything you would like to ask me?	
Thank you that was very useful. I like the way that you.... It was very interesting about....	
From this interview I will draw a diagram to describe how you see the process of participation. This means that I will interpret your words. If you are willing, we can have a follow up meeting to discuss the diagram and make any changes that you see necessary. Here are my contact details if you have any problems: Cell – 0818715487 Email – antfry13@gmail.com	

C.2 Focus group activity details

Introduction (see Chapter Five, Village Story mapping method)

Purpose:

- To understand the community perspective of the institutions interacting with them.
- *To the governance capability pathway:* An institutional mapping process would support the capabilities pathway – for example, knowing where to speak and listen.

Sampling: Focus group participants were recruited by the project's community liaison officers. The instruction was to find community members that do not have an extensive understanding of the Tsitsa Project. Permission for the workshop to be held in each village was granted by the village headman, who supported sampling.

Focus group activity.

This exercise was linked to a Learning Words exercise in which we attempt to create a shared meaning of home (Palmer et al., 2022). The word cloud generated from this learning words exercise will be used as a starting point for the mapping exercise. With this word cloud of concepts and things associated with home – answering the question 'what should we learn about?' This time we will put the community in the centre of the page and add in the characters as we go.

Introduction and explanation (10 minutes).

The work of the Tsitsa Project and the GovCop were explained before the learning words process. Introducing the actor mapping required explaining that we (the workshop facilitators) were going to support the groups in mapping 'who' supported the governance of ecological elements, such as land and water, in their village. We were clear that we were interested in their opinions and that there were no bad questions or wrong answers. During the introduction, there was an opportunity for questions.

Each group was given one large sheet of paper per group to complete the exercise, a set of small multicoloured cards to write down social and ecological elements (post-its or sticky notes), a set of small wooden tokens, and different colour pens.

Generate the system elements (30 minutes).

Building on the word clouds generated as part of the Learning Words introduction, we asked the groups: '*who helps you with land and water management?*' to elicit social elements and '*what do they help you with?*' in order to elicit ecological elements. Many groups transferred ecological elements directly from the word clouds generated during the Learning Words process. These were then useful as prompts, for example, '*you have placed livestock here as a part of the land; who helps you manage livestock?*' As social and ecological elements were mentioned, the group facilitators noted them down on the coloured notes and distributed them on the large sheet of paper.

Draw the connections (30 minutes).

Once all the groups had a collection of between 10 and 20 elements on their map, we would draw connections and arrange the network. The question initiated the process: '*how are these actors helpful? What services do they provide?*'

The actor generation and connection drawing were not discrete phases, and we encouraged groups to continually add actors as they emerged in the discussions.

Rate institutions helpfulness (15 minutes).

Groups were asked to rate the elements on the map in terms of how *helpful* they were. The focus on helpfulness falls within the practical conception of power used to guide the influence and accessibility mapping in the Catchment Story, which relates to what people do or could do that influences other people's lives (Agnew, 2011). Rather than asking focus groups to explore abstract ideas of who has power, I used the term helpfulness to reorientate the process towards the participants' perspective. The term 'helpful' was chosen as a relatable term linked to the actor generation questions. Wooden counters were used to represent *helpfulness* – more counters equate to more helpful.

Group discussion (10 minutes).

While the entire mapping process was characterised by discussion and debate; however, once a group indicated they were finished, they were allowed to discuss the map. The discussion would be prompted by the facilitator mirroring back the map by describing the map to the group (Engeström, 2010). These descriptions were met with consent, indicating that the group was satisfied with the interpretation of the map or dissented if there were concerns that needed rectifying.

Presentation of group maps (each presentation took approximately 5 minutes).

After creating the maps, groups were given the opportunity to present their maps to the rest of the participants. These presentations were recorded, transcribed, and translated as part of the focus group data.

C.3 Participant observation guide and unstructured chats schedule

Self-created observation guide

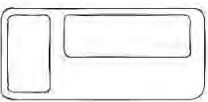
EVENT TITLE (DATE)		What I notice:	What I wonder:
Event activities: -XXXX -XXXX - XXXX -XXXX -XXXX	Weather: XXXX  Location and venue description: XXX  Description of participants: XXX 	XXXXXX XXXXX XXXXX XXXXXX	XXXX XXXXXX XXXXXX XXXX

Figure C.1. Observation note layout in notebook.

General schedule of questions for participants in the unstructured interviews

These interviews varied according to the situation. This interview schedule is long, and I did not ask all of these questions in any single interview. I drew on Bernard & Ryan (2010)

Introduction

My name is Anthony Fry, I am a student at Rhodes University. I am researching how people can be involved in planning and decision-making regarding land and water. I want to know how the current system works and how you experience it. Would you be happy to talk to me about your experiences?

Igama lam ngu-Anthony Fry, ndingumfundi waseYunivesithi yaseRhodes. Ndiphanda indlela abantu abangabandakanyeka ngayo ekucwangciseni nasekuthathweni kwezigqibo ukukwenza ngomhlaba namanzi. Ndifuna ukwazi indlela inkqubo yangoku isebenza ngayo nendlela uva ngayo. Ngaba unokuvuyela ukuthetha nam ngamava akho?

Would you like somebody to translate for our discussion? *Uyafuna umguquli?*

This information will primarily be used for my research and will only be shared with the members of the Tsitsa Project in order to improve the project. Here is an isiXhosa and English brochure that explains the Tsitsa Project.

Ndizosebenzisa le ngcaciso ngoproject yam kwaye ndizokwabelana le ngcaciso yokuphucula iTsitsa Project. Nantsi incadana yesiXhosa kunye nesiNgesi encaza iProjekthi yaseTsitsa.

Would you prefer to remain anonymous, or would you prefer me to name you in the report?

Ufuna ukuba engenamniniyo okanye ndingasebenzisa igama lakho ireport yam.

Please tell me if there is anything you would like to tell me that you do not want me to use in my research. If you want, we can stop at any time.

Khawundixelele xa ikhona into ifihlakeleyo. Xa unenxagki singama nangaliphi ixesha.

May I record this interview using my Cell Phone? Ndingashicilela lo dliwano-ndlebe? (if recording is a problem then notes will be written throughout)

Questions

1. At home, where do you get your water? *Apho endlini niwafumana phi amanzi?*
2. Tell me how you came to be involved at(wherever they are involved)
Ndixelele ubandakanyeke njani?
 - a. What happened next? Kwenzeke ntoni emva koko?
 - b. How often are you involved? Ubandakanyeka kangaka nani na?
 - c. Who or what influenced you? Nguba okanye yinto ekukhuthazileyo?
3. Have you been to similar planning or decision making meetings/workshops/events?
Ingaba ubukhe wabandakanyeka kwintlanganiselo zocwagcino okanye ukuthatha izigqibo/indabano zocweyo/iziganeko?
 - a. Which do you prefer? Ukhetha eyiphi?
 - b. What about it did you enjoy? Yinto ngayo oyonwabeleyo?
4. Which person or group has been the most helpful to you through this time?
Ngowuphi umntu okanye iqela eliye laluncedo kuwe kwelisesaha
 - a. How were they helpful? *Bebeluncedo njani?*
5. What is your main source of information about(wherever they are involved)
Ngowuphi owona umthombo ophezulu wolwazi malunga
6. Why do you want to stay involved? Kutheni ufuna ihlala ubandakanyeke?
7. What role would you like to play in the future? Yeyiphi indima oqwenela ukuyidlala kwixesha elizayo?
8. What are the most important lessons you have learnt through participating? *Ziziphi izifundo ezibalulekileyo ozifundileyo ngokuthatha inxaxheba?*
9. What advice would you give to others that are wanting to participate? *Ngeziphi iincebiso ofuna uzinika abanye abafuna ukuthatha inxaxheba?*
10. Is there anything you would like to ask me? Ingaba ikhona enye into ofuna ukundibuza yona?

Closing

Again, if there is anything that you have told me that you do not want me to share then please tell me. Here is my number, if you have any concerns you can call me.

Kwakhona, ukuba ikhona into ondxeleleyo ongafuni ukuba ndabelane ngayo kwabanye abasebenza kuleprojekthi zundixelele. Nazi inombolo zam ukuba ukukho izinto eninga kholisekanga zizo.

Ok, thank you very much for your time. Kulungile, Enkosi kakhulu ngexesha lakho

C.4 Back-to-office report example and template

During my fieldwork, I represented the Tsitsa Project and submitted 15 formal back-to-office reports. This appendix includes one example of a back-to-office report, which shows the back-to-office report template. The report is from the ward-based planning process initiated by the Local Municipality and facilitated by the NGO RULIV. The local municipality organised the workshop to support participatory governance.

Programme activity: Elundini - Ward Based Planning (Maclear / Ugie cluster)
Date of activity: 23/08/2019
Purpose of activity: Elundini Local Municipality has engaged in a process of ward based planning (WBP). The purpose of WBP is to encourage the emergence of Community Based Organisations in the wards of Elundini and an implementation plan for one project per year in each Ward. The LM is split into 2 sections, one group of wards that meet in Mount Fletcher and one group meets in Maclear. The WBP process is split into 4 workshops. I attended the third one, the purpose of which was to create awareness about the types of CBOs available, and their pros and cons.
Reported by: Anthony Fry DISCLAIMER – Much of the discussion was conducted in isiXhosa, so naturally I don't catch everything.
Who hosted/facilitated the activity? The Event was hosted by RuLiv, an NGO based in East London. RuLiv were contracted by the Elundini Local Municipality Public Participation Unit.
Who was the activity aimed at? Community leaders from each wards 1,2,3,4,5,6,7,16,17. There were no other external observers, so I think it was good that I had met the organisers before and so my presence was clear, otherwise it could had been a bit awkward.
Who attended the activity? Anthony Fry (RU) and Sphagamise Ngobane (LIMA) Community Development Workers (CDW) Ward Councillors (WC) Ward committee members (WCM)
Summary of the activity: planned activities 9 – Planned start, organisers only arrived at 9 to start setting up. Participants Trickled in 10:50 – Opening by WC ward 7 & WC ward 16. Both senior members. 11:00 – RuLiv takes over. Objectives and introduction to WS. Ground rules. 11:40 – Why Community Organisations? & What are the different types. 12:30 – Questions 13:00 – Threats and things to think about 14:00 – Questions 15:00 - Closing
Observations / Learning - Interesting contrast to Tuesday where everything ran really well on time. - Was not a good carry-over of participants, but it was a nice activity to quickly see who was there from previous workshops. - Ward councillors with power.

- Quite low attendance, many of the people invited have to attend other events. Seems like a small pool of hired or 'institutionalised' citizens that are being invited to many events and opportunities. - Interested situation where the LM is trying to manufacture a local institution that is accountable to residents. Feels like the snake eating its tail. Next level from NGOs exclusively being employed by Government. How is the CBO supposed to hold LM accountable when it is born out of LM processes and the planning thereof only includes people employed by LM. - Both the LM and Government Depts divide Elundini up between Mount Fletcher and Maclear. Under Gov. Depts, wards 16 & 7 are in Maclear, but under the LM, wards 16 & 7 are in the Maclear area. THE SPATIAL LAYERS OF CONFUSION. - At the IDP forum and the WBP most of the speaking was in isiXhosa, but all of the presentations and writing were in English. - I learnt the difference between a trust and NPC and when setting up each of these is relevant. I think this interested most participants.	
what worked well - Participants were generally engaged, some good questions. - Interesting and relevant content. - The educational tools were pretty cool, good use of fold up pin boards and pieces of Card. - Distinguishing between citizen and resident seemed to resonate with people. Challenges, or could have gone better - Participants were seated from beginning to end (4 hours), mostly lecture style. - Town hall is COLD. - Much of the discussion went around semantics of the differences between interest groups, institutional organisations and CBOs. Much effort to try and show them to be distinct groups when there are certainly grey areas which went unacknowledged.	
Relevant information - The next round of workshops will be in the first week of September. This session will be more relevant as it is actually a planning process, not just a learning session. - There will be 2 days in Mount Fletcher and 2 days in Maclear. There are no wards in the Mount Fletcher zone that are in the catchment, so only Maclear really applies.	
Next steps/follow-up actions: - Attend planning in the first week of September.	
Parties with whom this information should be shared: Gov COP LIMA Integrated planners	

Appendix D. Chapter Five supplementary material

Appendix D contains findings and supplementary materials to support the system mapping presented in Chapter Five. Chapter Five fulfils the first objective of my research, which is to map the land and water governance system in the Tsitsa Project. The system mapping method focused on mapping governance elements and connections directly involved in participatory governance..

Three governance domains emerged as part of the system mapping process, which I refer to as the three governance stories in Chapter Five. These emergent governance stories informed a differentiated approach to map governance which placed equal importance on the rules-in-form produced in formal governance and the rules-in-use as they happen in reality. The method used to map each story differed (See Chapter Five Methods).

Broader Story findings are presented in Chapter Five with supplementary material in this appendix, including a list of reviewed documents (Appendix D1).

Catchment Story findings are presented here, with a synthesis presented in Chapter Five. This appendix includes the following.

- The one actor map that was co-created as part of a test interview (Appendix D2).
- A timeline of interactions with interview participants (Appendix D3).
- The 15 actor maps that were co-created with local governance actors (Appendix D4).
- Data used to import the actor maps into Gephi for the synthesis of the actor maps into a consolidated actor map (Appendix D5).
- The six influence and accessibility maps that were drawn with selected research participants as part of a follow-up interview process (Appendix D6).

Village Story findings are presented here, with a synthesis presented in Chapter Five. This appendix includes outcomes from the Learning Words processes (Appendix D7) and ten village-level maps drawn with focus groups.

This appendix also includes the outcomes from two mapping processes. The first mapping process was with the Tsitsa Project's catchment-based employees (Appendix D9), and the second was with the Tsitsa Project's management as part of a collaborative project (Appendix D10).

D.1 List of documents and reports reviewed (Broader Story)

Table D.1 lists the grey literature, and legislative documentation reviewed throughout my thesis. In particular, these documents informed the mapping of the Broader Story.

<i>Table D.1. List of key grey literature and legal documents reviewed throughout my research.</i>			
Document Title	Author	Date	Comment / description
The Constitution of the Republic of South Africa.	Republic of South Africa	1996	The constitution to which South African's must abide. To which all legislation must agree.
National Water Act (NWA) No. 36 of 1998.	Department of Water Affairs	1998	Legal framework for management of water resource management.
National Development Plan: Vision for 2030.	National Planning Commission	2011	National planning document to guide development.
Local Government: Municipal Structures Act No. 117 of 1998.	Republic of South Africa	1998	Act directing the establishment of municipalities.
Local Government: Municipal Systems Act No. 32 of 2000.	Republic of South Africa	2000	Act directing the principles, mechanisms, and processes to enable development at a local level.
Traditional Leadership and Governance Framework Amendment Act No.41 of 2003.	Republic of South Africa	2003	Act recognising the legitimacy of traditional leaders.
GREEN PAPER: Spatial Planning and Land Use Management Act (SPLUMA) No. 16 of 2013.	Eastern Cape Cooperative Governance and Traditional Affairs	2016	The Green Paper supporting SPLUMA implementation in the Eastern Cape Province.
Water Services Act No. 108 of 1997.	Republic of South Africa	1997	Act directing water service provision.
National Environmental management Act (NEMA) No. 107 of 1998.	Republic of South Africa	1998	Act directing co-operative governance procedures for environmental Management.
National Water Resource Strategy: Water for an Equitable and Sustainable Future (First and Second Edition).	Department of Water Affairs	2004 & 2013	NWRS sets out how water resources can be conserved while supporting development.
State of Local Government in South Africa.	Department of Cooperative Governance and Traditional Affairs (CoGTA)	2009	A review of progress on the establishment of local governance structures.
Annual Report for the Year Ended 30 June 2018.	Elundini Local Municipality	2019	Municipal report.
Draft Water Services Development Plan 2018/19.	Sicelo Pongoma (manager: water services authority) on behalf of Joe Gqabi DM	2018	Municipal planning document.
Integrated Development Plan 2019/20 .	Joe Gqabi District Municipality	2019	Municipal planning document through which participatory governance processes are facilitated.

<i>Table D.1. List of key grey literature and legal documents reviewed throughout my research.</i>			
Document Title	Author	Date	Comment / description
Integrated Development Plan 2019/20.	Elundini Local Municipality	2019	Municipal planning document through which participatory governance processes are facilitated.
Research Investment Strategy: Ntabelanga and Laleni Ecological Infrastructure Project.	Fabricious, C., Biggs, H. C. and Powell, M.	2016	Early research strategy that developed into the Tsitsa Project.
The Tsitsa Project: Research Investment Strategy (vol 2).	H. Biggs, J. Clifford-Holmes, L. Conde-Aller, K. Lunderstedt, N. Mtati, T. Palmer, M. Powell, E. Rosenberg, K. Rowntree, B. van der Waal, M. Wolff.	2019	Second volume of the research strategy. The systemic and reflexive way that Tsitsa Project aspires to work is articulated throughout this document.
Ntabelanga (Laleni) Stakeholder Analysis Report For the DEA: NRM Branch – NLIEP	L. Sisitka, M. Ntshudu, N. Hamer, A. de Vos	2016	Tsitsa Project Report - first stakeholder analysis. Extensive review of all stakeholders in Catchment.
Lalini Rapid Stakeholder Analysis Report	N. Rivers, J. Burt, M. Ntshudu, N. Mtati & K. Lunderstedt	2018	Tsitsa Project Report - second stakeholder analysis.
Feasibility Study for The Mzimvubu Water Project.	Department of Water Affairs (DWA)	2014	Feasibility study conducted by consultants for DWA.
Environmental Impact Assessment for the proposed Mzimvubu Water Project: Social Impact Assessment	Dr Neville Bews & Associates	2014	Department of Water and Sanitation Report.
THE TSITSA PROJECT: Restoration and Sustainable Land Management Plan. Working Together Adaptively to Manage and Restore Ecological Infrastructure for Improved Livelihoods and Futures T35A-E (Phase 1 of Tsitsa Project).	B. van der Waal, K. Rowntree, J. le Roux, J. Buckle, H. Biggs, M. Braack, M. Kawa, M. Wolff, C.G. Palmer, L. Sisitka, M. Powell, R. Clark	2017	Tsitsa Project Report to: Department of Environmental Affairs: NRM Programmes. Directorate-Operational Support and Planning.
The Mzimvubu Water Project: Baseline indicators for long-term impact monitoring .	J.J. van Tol, W. Akpan, A. Maroyi, N. Mutengwende, N. Huchermeyer, S. Ngesi, H. Nqandeka, M. Mamera, G. Bradley & K. Rowntree	2018	Water Research Commission Report. Including Social survey data (n=300).
Biophysical Monitoring Methods in the Upper Tsitsa River Catchment (T35 A-E).	Huchermeyer, N., Schlegel, P., and van der Waal, B.	2019	Internal Tsitsa Project report that outlines results from 8 Veld Condition Monitoring sites across T35 A, D & E.
THE GREEN VILLAGE PROJECT: VOLUME 1 & 2.	K. Rowntree, L. Conde-Aller, H. Fox, M. Duma, & M. Ntshudu	2019	Water Research Commission Report TT 777/1/18.
Tsitsa Project Learning Report 2018: Learning through reflective praxis: Lessons from integrated sustainability research with a governance focus in a complex social-ecological system, Eastern Cape, South Africa.	Cockburn, J., Biggs, H., Rosenberg, E. & Palmer, C.G. 2018.	2018	Tsitsa Project Internal Report. Rhodes University, Grahamstown.

Table D.1. List of key grey literature and legal documents reviewed throughout my research.

Document Title	Author	Date	Comment / description
Tsitsa Project Meta-Reflection Report 2019-2020	J. Cockburn, H. Human, K. Kotschy, E. Rosenberg, M. Wolff and H. Biggs	2020	Internal Tsitsa Project report to DFFE
Hearing silenced voices: A learning-centred approach to sustainable land rehabilitation and natural resource management	M. Wolff	2018	Student research (MEd)
Understanding local institutions as a basis for ecological restoration efforts in communal areas: The case of Sinxaku Village, Eastern Cape.	S. Herd-Hoare	2015	Student research (Honours)
Navigating diverse interests in the Tsitsa Project. How professionals deal with project dynamics in an ecological restoration project.	T. van der Pol	2019	Student research (MSc)
Demographic Change in the Upper Tsitsa Catchment the Integration of Census and Land Cover Data for 2001 and 2011.	D.L. Hodgson	2017	Student research (MSc)
Using a Social-Ecological Systems Approach to Investigate Hillslope Seep Wetlands Ecosystem Structure and Functionality in the Tsitsa River Catchment, Eastern Cape, South Africa	N. Libala	2018	Student research (PhD). Info about wetlands in catchment, social survey (n=31).

D.2 Actor mapping test (Catchment Story)

Introduction

In preparation for the actor mapping process, I conducted a trial interview with a colleague, Dr Matthew Weaver, from the Tsitsa Project. The mapping exercise did not draw on Dr Weaver's experience in the Tsitsa Project; instead, it drew on his experience and involvement in water governance in the Makana District Municipality. See his doctoral thesis for more details (Weaver, 2018).

Importantly, this figure is presented here to provide insight into the method's evolution rather than the diagram's content. Therefore, the findings give a brief overview of the diagram, but the body of the discussion pertains to the method.

The actor mapping exercise was conducted as one exercise within a semi-structured interview. The test interview consisted of a scoping interview and a follow-up interview which both took place in July 2019 before I began my formal data collection in August 2019. The actor map co-creation was conducted as described in Chapter Five's methods section. Differences in the method are described below. Briefly, the method can be summarised as identifying actors and drawing connections between them.

Findings

The themes 'influence' and 'skin in the game' emerged from the discussion as important variables with which to describe actors – these were then used during the computer rendering of the actor map to position the actors in relation to each other. The actor map presented in Figure D.1 is presented on a cartesian plane with influence on the provision of clean, fair, reliable water in Makhanda on the positive X-axis and 'skin in the game' (Taleb, 2007), which I have described as the measure of how likely an actor is to lose out in the case of municipal failure, on the positive Y-axis.

The actor map shows actors and connections. Plain white circles with black borders indicate broad groups, while smaller purple circles indicate specific groups. Lines are unidirectional, with a comment to describe the connection.

There are seven groups shown on the map:

- **National government departments**, such as CoGTA (Cooperative Governance and Traditional Affairs) and The Eastern Cape Office of the premier,
- **Municipalities** (particularly the Local Municipal Mayor and the Water and Sanitation Manager),
- **Rhodes University** and the Institute for Water Research,
- **The Makana Water Forum** (which provides a platform for participation between diverse actors),
- **Residents with more social capital** (such as the Grahamstown Residents Association)
- **Active citizens** (such as those on street committees and the Eastern Cape Water Caucus) and
- Residents with less social capital.

The national government departments have the most influence over the situation, although they are the most removed from the situation. Municipalities, Rhodes University, Makana Water Forum, and all residents and citizens have substantial skin in the game as they are all based in the municipality and are affected by service delivery challenges such as water shortages and electricity cuts, and poor road maintenance if the municipality fails. These actors have varying degrees of influence over the situation.

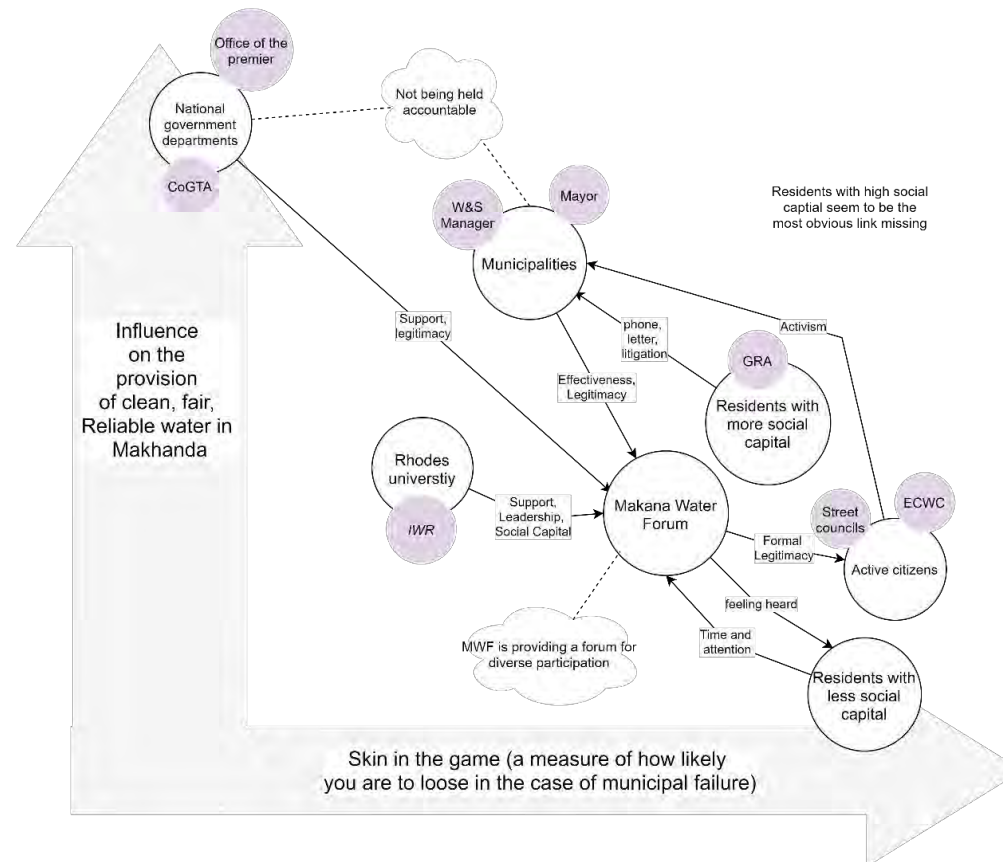


Figure D.1. Actor Map drawn from a test interview with Dr Matthew Weaver.

Actors (shown by circles) are placed on a cartesian plane which compares influence with 'skin in the game.' Lines link actors with comments that support the interpretation of the map.

D.3 Timeline of interactions with interview participants (Catchment Story)

		Before May 2019	May-19	Jun-19	Jul-19	Aug-19	Sep-19	Oct-19	Nov-19	Dec-19	Jan-20	Feb-20
Interview with follow up	Key Informant #1 - CDW 1				Emerged during interviews & met	Interview, in-field analysis & follow up interview	CLO hiring					
Interview with follow up	Key Informant #2 - CDW 2	Met at Learning Words workshop		Organising workshop	Interview	In-field analysis and follow up interview	CLO hiring					
Interview with follow up	Key Informant #3 - CDW 3	Met at Learning Words workshop				Interview, in-field analysis & follow up interview	CLO hiring					
Interview with follow up	Interviewee #1 - Headman 1		Met as part of LIMA orientation			Interview, in-field analysis & follow up interview	CLO hiring					
Interview with follow up	Interviewee #2 - Headman 2		Met as part of LIMA orientation		Interview	Follow up interview	CLO hiring					
Interview with follow up	Interviewee #3 - Headman 3				Emerged during interviews & met	Interview & in-field analysis	Follow up interview and CLO hiring					
Single interview	Key Informant #4 - TP Catchment Coordinator	Met December 2018	Integrated planning meeting in East London	Tsitsa Project	Restoration methods field trip	Village level planning	Tsitsa Project	Tsitsa Project RoadShow 2019	Tsitsa Project Science management	Tsitsa Project	Tsitsa Project	Interview
Single interview	Key Informant #5 - TP Integrated planning	Met December 2019	Integrated planning meeting in East London	Biophysical data collection	Restoration methods field trip	Village level planning	Tsitsa Project	Tsitsa Project	Tsitsa Project Science management	Interview	Tsitsa Project	Tsitsa Project
Single interview	Key Informant #6 - DFFE local government					Met at ELM IDP					Interview	Organising workshop
Single interview	Key Informant #7 - JGDM natural resource management	Met at Learning Words workshop			Restoration methods field trip			Tsitsa Project RoadShow 2019				Interview
Single interview	Interviewee #4 - ELM IDP manager					Meet, interview & in-field analysis						
Single interview	Interviewee #5 - RAFI project Chairperson				Met at TP workshop	Interview & in-field analysis						
Single interview	Interviewee #6 - DFFE Youth Community Outreach Program					Met at ELM IDP					Interview	
Single interview	Interviewee #7 - DRDAR animal health technician					Met in meeting between TP & DRDAR office						Interview
Single interview	Interviewee #8 - ELM water manager				Emerging during interviews	Met at ELM IDP			Meeting about water crisis			Interview

Figure D.2. Timeline showing the interactions with interview participants

Light grey indicates meeting and informal interactions with interviewees and key informants. Dark grey indicates formal data collection events. Green indicates activities in which I collaborated with the research participant. TP – Tsitsa Project, CLO – Community Liaison Officer, ELM – Elundini Local Municipality, IDP – Integrated Development Plan, CDW – Community Development Worker, DFFE – Department of Forestry, Fisheries, and the Environment.

D.4 Co-created actor maps (Catchment Story)

An actor mapping exercise was conducted as part of the 15 semi-structured interviews with local governance actors. The 15 actor maps presented in this Appendix were used to understand individual actor networks as well as contribute to the generation of a consolidated network map which allowed for a more systemic analysis of the actors in the network.

The method for the interviews is described in Chapter Five, and the synthesised findings from these individual actor mapping exercises is also presented in Chapter Five. While the actor map elicitation process was uniform across the interviews, the maps were co-created with participants, and there are differences between the maps. Given the co-created nature of the maps, map conventions do vary. For the first eight interviews, I did not colour code the actors from the beginning of the interview. Therefore, there is less consistent colouring in the first maps than in the last seven.

Another example is that some participants specified link thickness based on the strength of a particular relationship. Each figure caption gives a guide to reading the diagram. The names of departments are described as they were in the interview – in most cases, the department being referred to is intuitive. For example, the Department of Agriculture refers to the Department of Rural Development and Agrarian Reform (DRDAR).

The maps presented in this section are the actual maps co-created with the 15 participants and are presented here for reference when reading Chapter Five. Findings are presented in the present tense as they were recorded after interviews. Importantly, the situation has changed – these dynamics are captured in the resulting synthesis in Chapter Five. Maps are presented in the order in which the interviews took place.

The first eight maps were conducted as part of a first round of interviews. Actor in these maps are white and have a black border. Coloured circles are used to annotate the maps – blue is used to name relevant meetings, red circles name challenges, green circles name mandates or goals, and yellow circles name resources available to different actors. For the second round of interviews (the last seven), I used colours to distinguish between actor interest groups. These are: ORANGE - Cooperative governance; PURPLE - Traditional affairs; BLUE – Water service provision and water resource protection; YELLOW - Land use and rural development; GREEN – Environmental protection and conservation; and RED - Other departments not directly related to land and water governance.

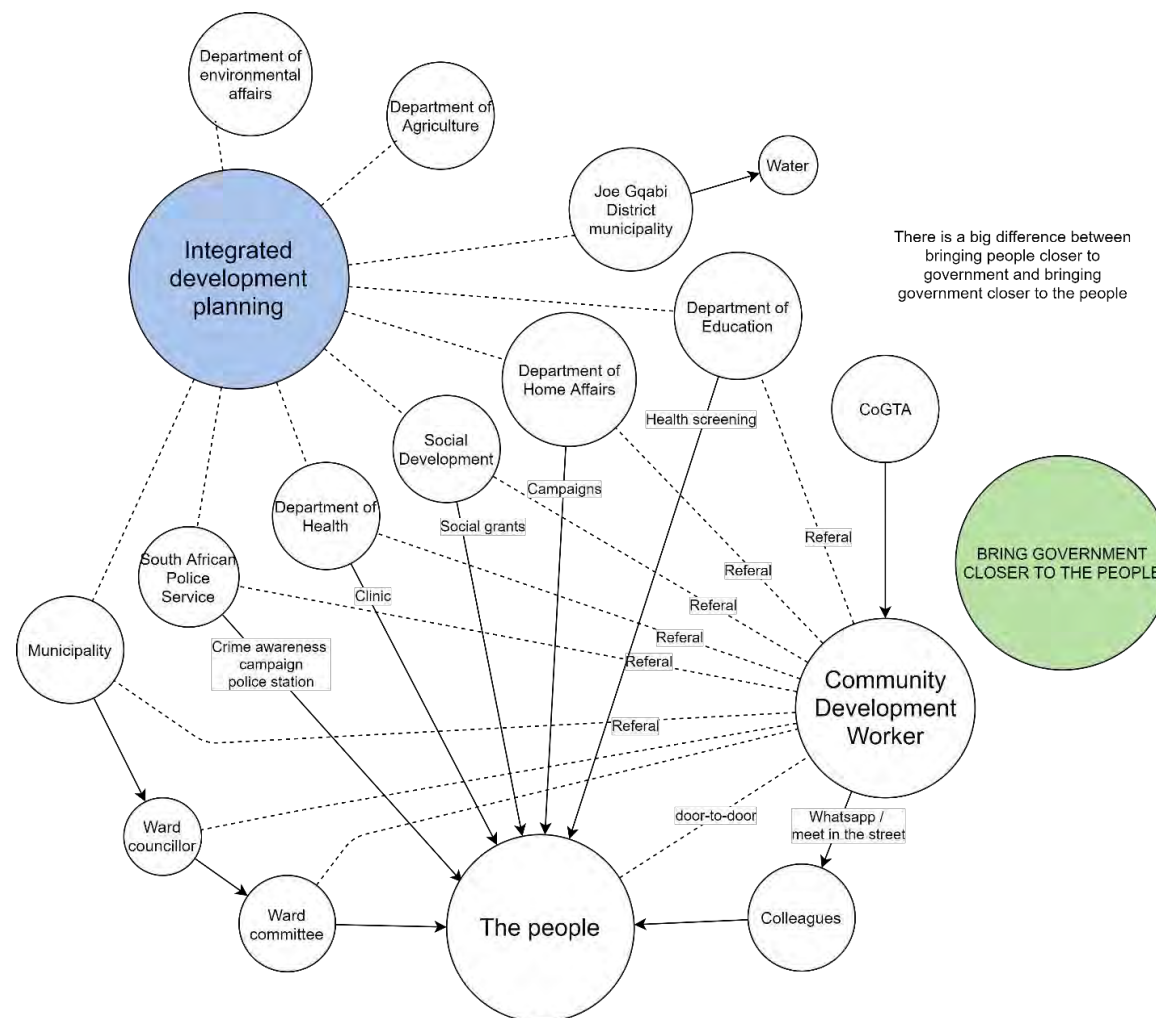


Figure D.3. Actor map co-created with Key Informant #1, a Community Development Worker (CDW). CDWs are employed by the Department of Cooperative Governance and Traditional Affairs (CoGTA) living and working in the Tsitsa River Catchment. The white circles denote actors. Actors are connected by solid lines or edges with an arrow showing unidirectional relations and dotted to show collaborative relations. The big green circle to the right of the figure is the stated goal of the CDW.

The first three key informants are all community development workers working under the Department of Cooperative Governance and Traditional Affairs (COGTA). The importance of community development workers for this case study emerged from my first field trip and proved to be useful sources of information throughout my research. CDWs are hired on full-time contracts and are required to live in the ward in which they operate, thereby being accountable to the community (Raga et al., 2016). CDWs were introduced in 2003 as a mechanism to connect government and communities. CDWs are developmental generalists and are required to help community members access a range of services and give important feedback to government structures (RSA: Ministry of Public Service Administration, 2007). They also coordinate with other community-based workers, such as community development practitioners, youth workers, agricultural extension officers, and community health workers as shown in Figure D.3. CDWs are often well-connected and can provide insight into the other government departments operating at the local level.

The CDWs work closely with and are supervised by the local and district municipalities. There is supposed to be a professional relationship between ward councillors and CDWs, which is often reported as such; however, CDWs do not always feel supported (Raga et al., 2016). The 17 CDWs working in Elundini LM meet every second month to share their problems and help each other resolve them. These meetings are also opportunities for departments to brief CDWs regarding specific problems or upcoming campaigns. The CDWs play an important role in setting up war rooms in their wards. War rooms should be places for stakeholders to come together and resolve a particular issue. As of 2019, 12 War rooms have been established across the local municipality (Elundini Local Municipality (ELM), 2019); however, they are not yet efficiently functioning (KI#2). The war room is supposed to be a stationary place where residents can go to resolve their problems, but unfortunately, this does not work in rural areas with vast areas and low mobility. In practice, it is better for the CDWs, who are more mobile, to be proactive in their interactions by attending village level events and going door-to-door (KI#2). Going door-to-door is also a useful way of eliciting community problems and opinions in a way which is private and non-threatening (KI#1). One way of making residents feel more at ease is by wearing informal clothes while going door to door.

As shown in Figure D.3, drawn with Key Informant #1, the role of the CDW is to bring government closer to the people. CDWs are embedded in the local municipality, working with Ward Committee Representatives and Ward Councillors (introduced in Chapter Five). CDWs within the same local and district municipality also support each other through various platforms, including a WhatsApp group and a monthly meeting. Through a system of referrals, the CDW connects with various government departments who provide services to the people. When the CDWs meet someone who requires a service, they must refer that individual to a specific government department. If the department is unhelpful, then the CDW can support the individual in gaining access to the required institution. The departments listed in Figure D.3 include:

- The Department of Home Affairs, through its various campaigns to ensure people have the necessary identify documents.
- The Department of Education through the local school governing bodies.
- The Department of Social Development through the social workers. Importantly, the South African Social Security Agency (SASSA), which distributes social grants, is also under the DSD, as shown in Figure D.4 below.
- The Department of Health, including the local clinic.

- The South African Police Service through the local police station.

Key Informant #1 also engages with government departments at the Integrated Development Planning forums. These include the Department of Environmental Affairs and the Department of Agriculture. *Figure D.4, as drawn with Key Informant #2*, shows a more detailed depiction of the connections required to ensure that people have access to the services they require. Building on the connections described by Key Informant #1, Key Informant #2 described the following connections:

- The Department of Water and Sanitation is contacted through Joe Gqabi District Municipality, which is responsible for water service provision.
- The Department of Environmental Affairs is represented through the Tsitsa Project and the Working for program implementing agents.
- The Department of Agriculture's work is implemented on the ground by agricultural extension officers.

Key Informant #2 referred extensively to the jurisdictional levels, both on the democratic government jurisdictional scale and the traditional leadership jurisdictional scale. The democratic scale, as shown on the right in Figure D.4, starts with administrative areas, which form part of wards within a local municipality. Local municipalities make up district municipalities, which are within a province. There are nine provinces in South Africa. The traditional scale starts at the household level, which sits within a village and is overseen by a sub-headman. A headman then oversees a cluster of villages. A group of headmen works under a senior traditional leader ('Chief' in the map) within a traditional council that reports to a specific kingdom. Traditional leaders are an important set of actors not mentioned by Key Informant #1. Key Informant #2 lives in a rural village and has a close working relationship with the Traditional Leaders, interacting with the senior traditional leaders, headmen, and sub-headmen weekly.

Figure D.5, as drawn with Key Informant #3 shows similar detail to the previous two figures presented above. The only additions are area specific – these include the Mzimvubu Water Project, and a community works program implemented by an NGO, Mngcunube. Key Informant #3 lives in the research node in which the large dams are being built as part of the Mzimvubu Water Project – she has had some interaction with the project's site manager. However, these have been limited occasions where information has been shared.

The CDWs work closely with ward committee representatives. A ward committee representative, designated to each administrative area is a useful communication channel. Ward committee meetings are held at the ward level between the ward councillor and all the ward committee representatives in that ward. The councillor chairs the meeting and is 'the first level where development issues are deliberated' (Elundini Local Municipality (ELM), 2019). The ward committee meetings sit quarterly. At an administrative area level, the ward councillor visits communities to hold ward community meetings open to residents. The community participation liaison workers (CPLWs) have been hired to play the role of secretary and take minutes for these meetings. In most cases, the CPLWs are under-capacitated and under-supported. These meetings allow the community to speak directly to the Ward Councillor.

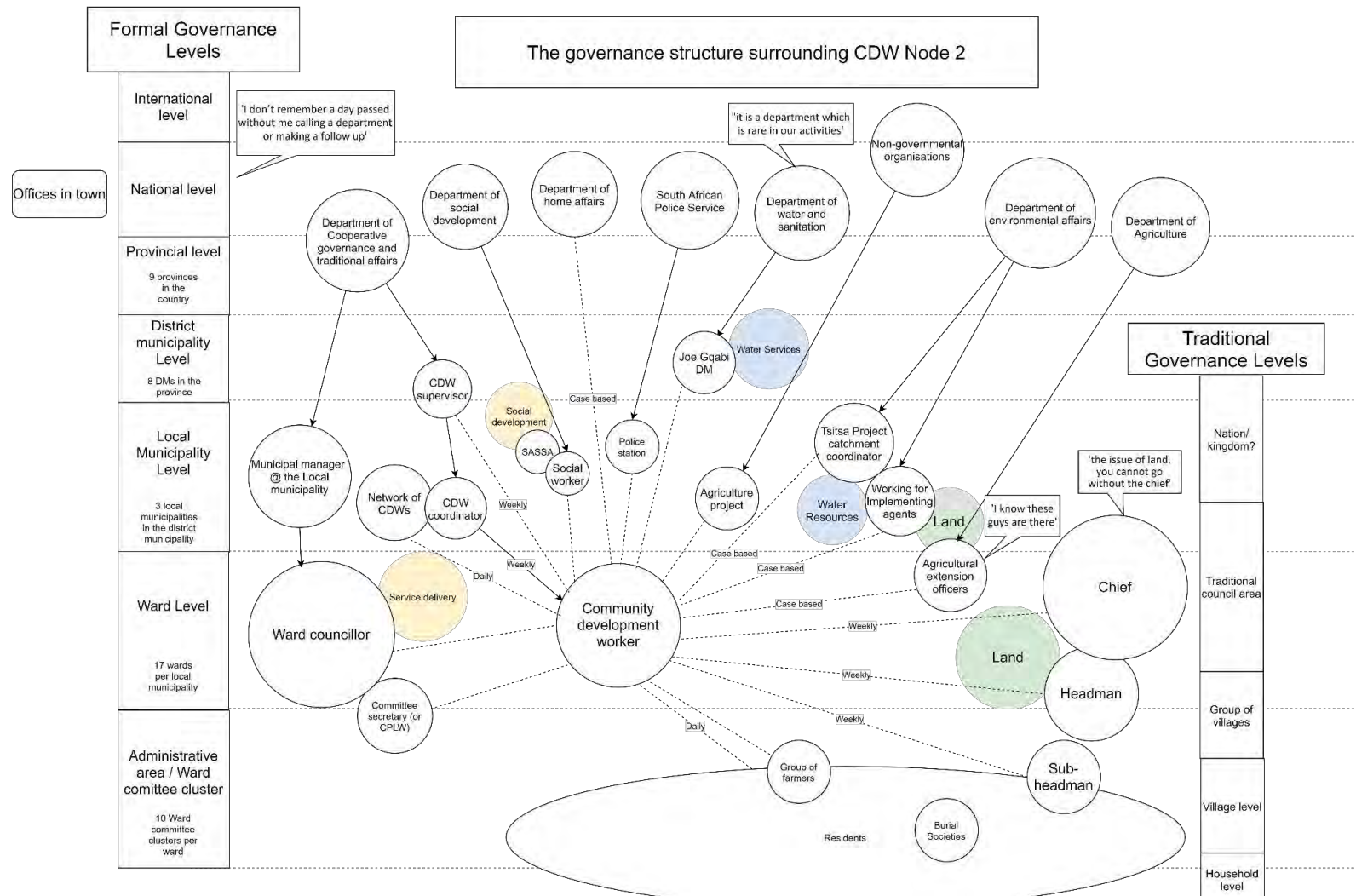


Figure D.4. Actor map co-created with Key Informant #2, a Community Development Worker (CDW). CDWs are employed by the Department of Cooperative Governance and Traditional Affairs (CoGTA) living and working in the Tsitsa River Catchment. The white circles denote actors. Circles are connected by lines or edges which are solid with an arrow showing unidirectional relations and dotted to show collaborative relations. This map also includes the jurisdictional levels from the traditional and democratic governance structures

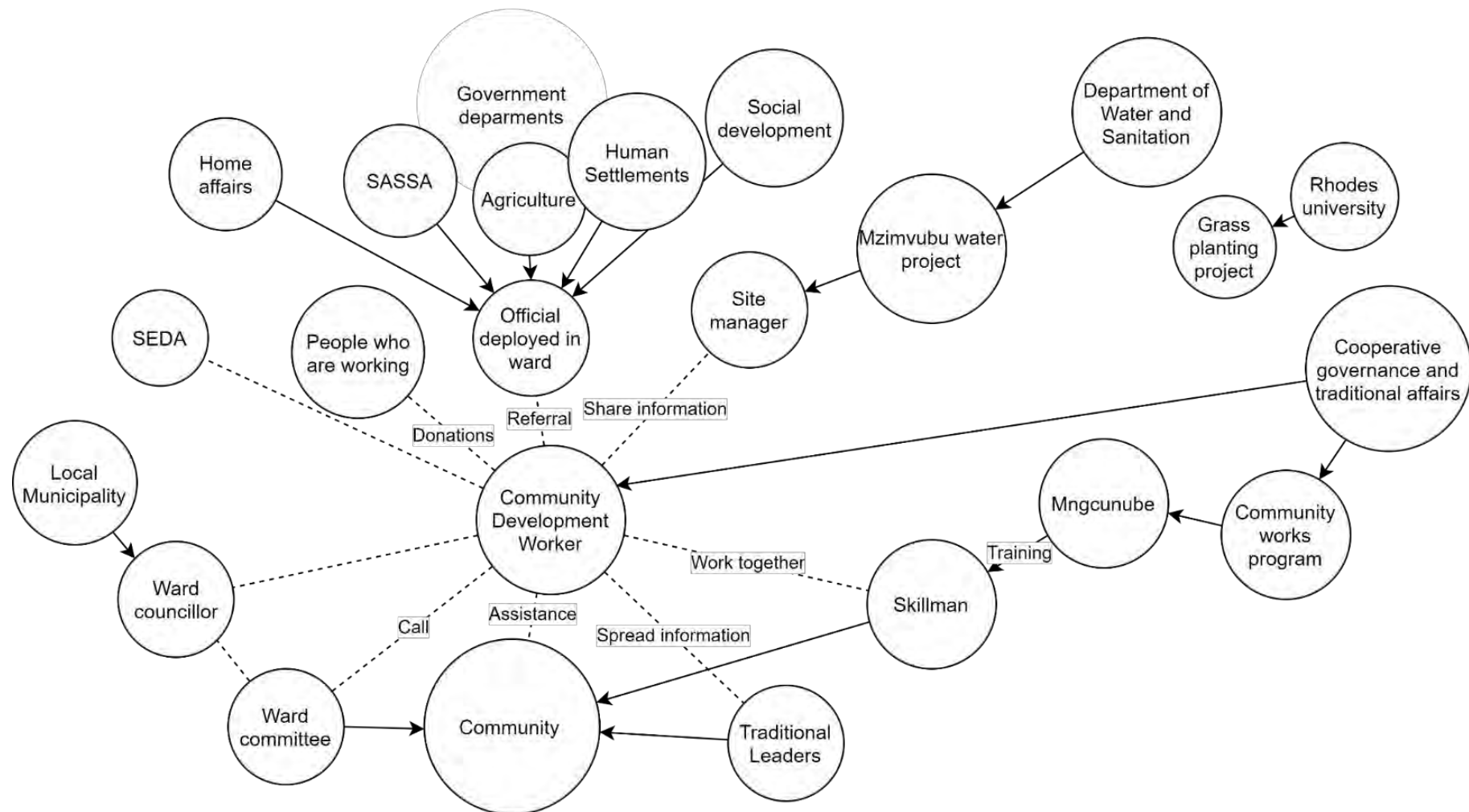


Figure D.5. Actor map co-created with Key Informant #3, a Community Development Worker (CDW). CDWs are employed by the Department of Cooperative Governance and Traditional Affairs (CoGTA) living and working in the Tsitsa River Catchment. The white circles denote actors. Circles are connected by solid lines or edges with an arrow showing unidirectional relations and dotted to show collaborative relations. This map also includes the jurisdictional levels from the traditional and democratic governance structures

The following three interviews were with headmen from the traditional leadership structure – the outcomes are shown in Figure D.6, Figure D.7 & Figure D.8. All of the traditional leaders play a role in linking their residents to the formal structures of governance, the headmen have a particularly important role as they are deeply connected and accountable to their communities while still being involved in formal governance. The boundary-spanning role (discussed throughout Chapter Five) played by the headman is more pronounced than that of the sub-headman, who is more permanently based in the village. The senior traditional leaders play a more important political role but can be disconnected from daily realities. Headmen work within a cluster of villages; each village has a sub-headman who provides leadership within that specific village. The primary role of traditional leaders is related to traditional affairs and land allocation; however, they play a range of other roles depending on the specific challenges their communities face. These roles include providing community leadership, conflict resolution, administrative support to community members, and document certification.

If there is an issue that needs to be discussed by the village, the sub-headman will call a meeting (or imibizo) to consult the community. Generally, these meetings are only open to men who have been circumcised through initiation or women who have borne a child, but these rules are flexible and are not observed in every village. In one instance, I observed the community calling a meeting because they were dissatisfied about who was being allocated government housing. Through the headman, they could call a meeting with the ward councillor and provincial representatives to voice their concerns. This indicated a certain level of agency and organising power within the community. At a headman level, traditional council meetings happen at the traditional leader house present in each headman area. Usually this is a meeting between the headman, the relevant sub-headmen, and some senior residents. During these meetings, the traditional leaders communicate, coordinate activities, and settle disputes. These meetings happen weekly, with breaks over December and January. At a higher level, traditional leaders from the traditional leadership cluster meet quarterly. These clusters are defined by COGTA. Half of the traditional leaders in the catchment meet with the Mt Fletcher cluster, while the others are part of the Ugie-Maclear cluster. These are used to coordinate among traditional leaders.

Figure D.6 shows the *primary connections of Interviewee #1* to be with the sub-headmen and directly with residents. Interviewee #1 is involved with local service provision. For example, he is involved with teachers at the local school as there is a shortage, and he has been trying to find a solution. Interviewee #1 also works extensively with the South African Police Service in supporting law enforcement – such as curbing drug and alcohol abuse, licensing alcohol sales, settling disputes, and promoting a safe community. Interviewee #1's headman area borders forestry operations owned by PG Bison, a large forestry company. There is some cooperation between the traditional leaders and PG Bison on fire management. The forestry industry is a dominant ecological and economic force within the TsRC. In the communal areas of the catchment, the forestry department has agreements with traditional leaders to use their land in exchange for employing local people (Interviewee #3). The forestry department is also responsible for supporting the local fire association. Traditional leaders are requested to report any fires close to the commercial forests. In return, traditional leaders are often given small gifts of gratitude; for example, an extension to the traditional leader's office (Interviewee #1). Ownership and management of livestock is an important livelihood activity in the TsRC, and the majority of the rural Eastern Cape. The headman works with the local police station and the local DRDAR office to certify livestock and reduce the amount of stock theft.

In his role as administrator, the Interviewee #1 stated that he works with all the government departments when they want to be involved in his community. Interviewee #1 connects with the local municipality through the Ward Councillor. Interviewee #2 also showed this connection, stating that they interact through government meetings and councillor meetings. *Interviewee #2, whose map is shown in Figure D.7*, has many similarities to Figure D.6. There are the primary connections to the sub-headmen and the community – stating that if the sub-headman has a problem that he cannot solve, then they can come together and solve the problem. Interviewee #2 connects with other headmen and senior traditional leaders at a higher level through ‘chief’s meetings.’ Interviewee #2 stated that the police supported him and came when called.

Interviewee #3, whose map is shown in Figure D.8, shows many of the same connections as the previous two maps. One important distinction is that community meetings are held with ‘abantu batile’ (selected people) and residents who are seen as mature enough to contribute – maturity can be determined by factors such as age, participation in initiation rituals, and children. *Figure D.8* also specifies that he is involved in local projects, such as the community works program, the extended public works program, and forestry and landscape rehabilitation projects.



Figure D.6. Actor map created with Interviewee #1, a headman from the traditional leadership structure. The coloured dots indicate different topics and reasons for engagement. Red represents problems, green represents potential opportunities, and yellow represents the means available to the traditional leader.

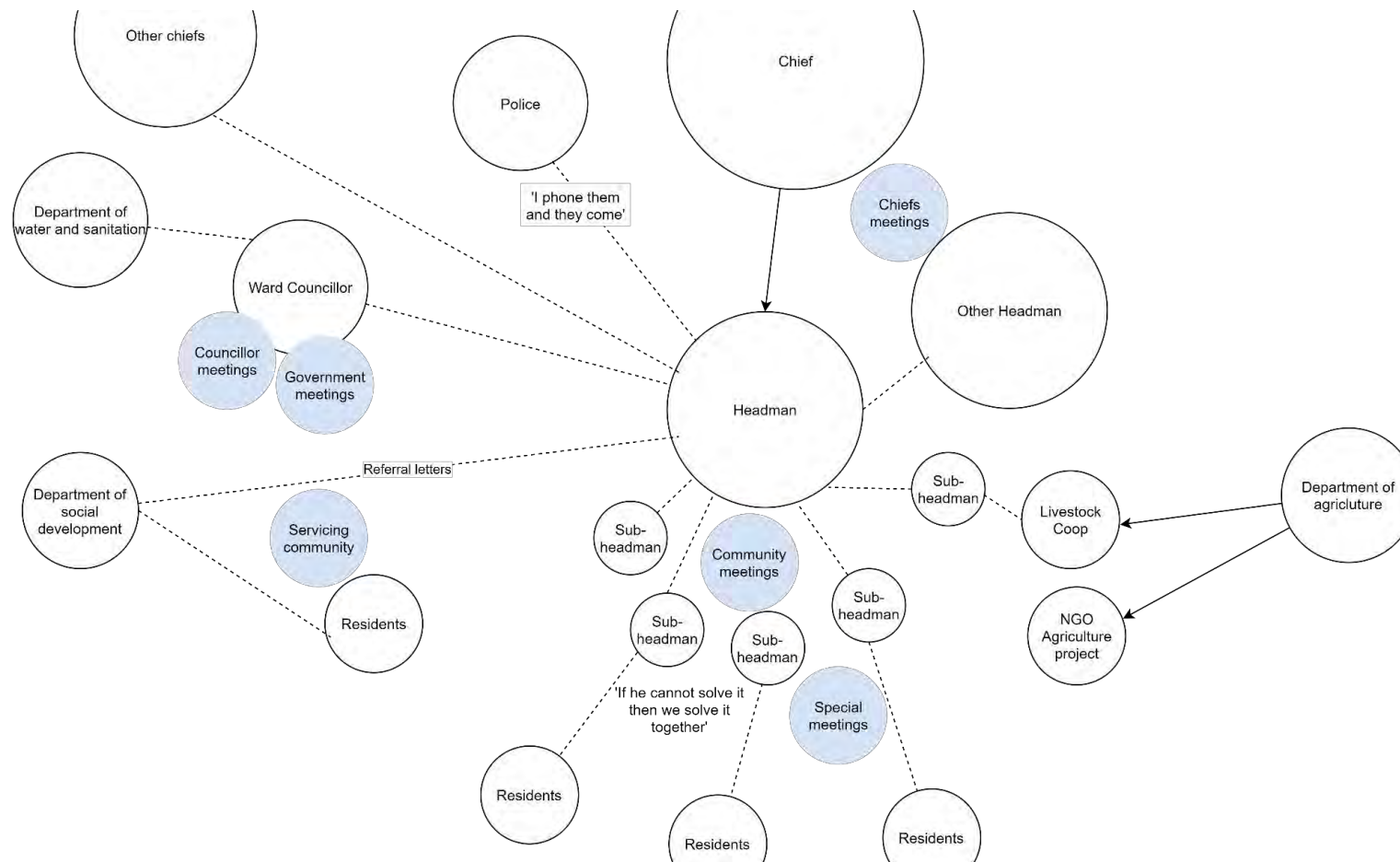


Figure D.7. Actor map drawn with interviewee #2, a headman within the traditional leadership structure. The white circles with black borders represent actors, and the blue circles represent meetings. The connections between circles represent working connections, unidirectional (solid with arrow) or multi-directional (dotted). The double connection between the 'community' and the 'project' represents a particularly strong connection.

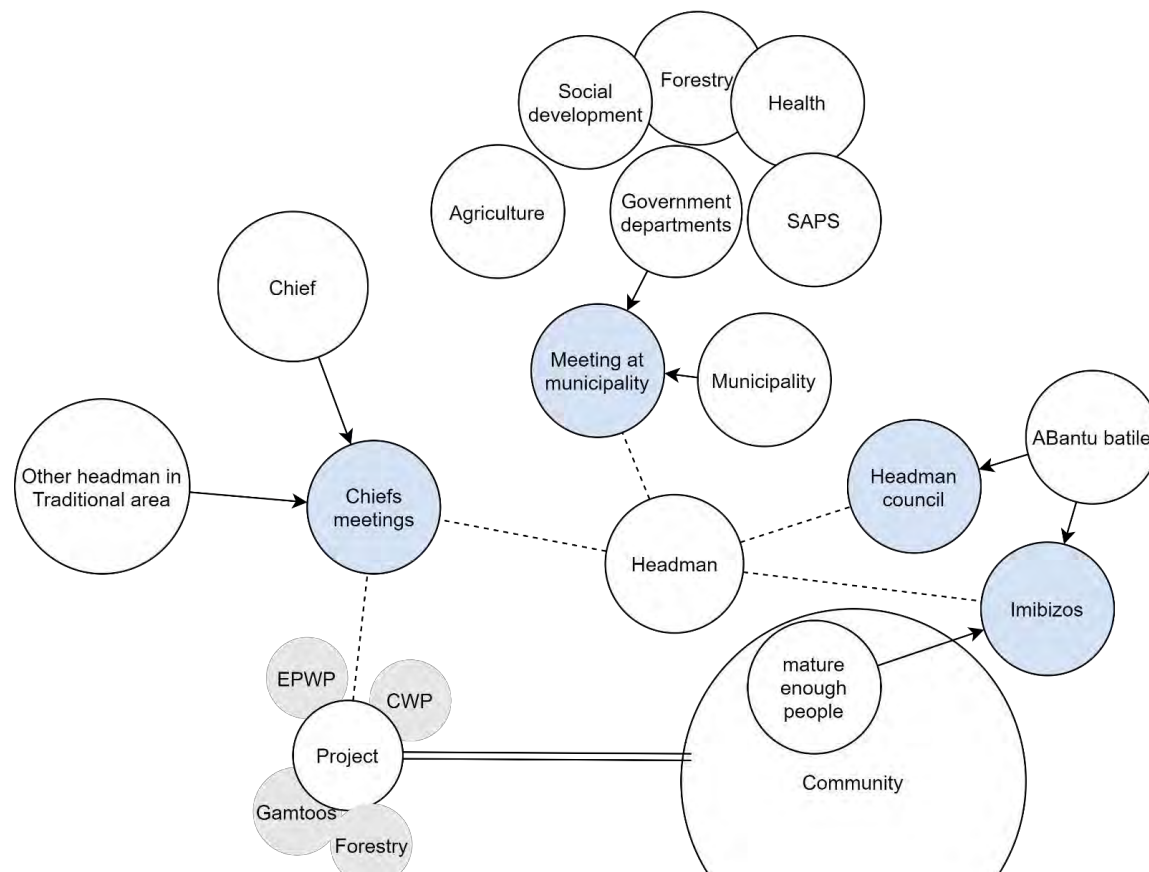


Figure D.8. Actor map drawn with interviewee #3, a headman within the traditional leadership structure.

The white circles with black borders represent actors, and the blue circles represent meetings. The connections between circles represent working connections, unidirectional (solid with arrow) or multi-directional (dotted). The double connection between the 'community' and the 'project' represents a particularly strong connection.

Figure D.9 shows two actor maps. The local municipality's Integrated Development Planning unit (interviewee #4) is on the left, and an agricultural project coordinator is on the right (interviewee #5)

Interviewee #4 manages the local municipality's integrated development planning (IDP) process. The map in Figure D.9 shows how the integrated development planning process creates a formal link between government departments and community members. Government departments and municipal departments meet at the district-level IDP. This district-level IDP informs the local municipal IDP. Government departments attend the local IDP, which is an opportunity for municipal and local representatives to voice concerns and for government departments to present their plans. Municipal departments also attend the local municipal IDP, which will inform their work. The IDP also plays an accountability role in ensuring that the plans put in the IDP are completed. Local governance actors, such as the ward councillors, community development workers, and ward committees present at the local IDP, must communicate with rural and urban communities.

There is an agricultural project operating in two of the research nodes, which was initiated with the support of an Argentinian NGO, RAFI, and has collaborated with the local DRDAR office. The project aims to pilot more sustainable agricultural method through capacity development and agricultural training. The project provides temporary employment, some seasonal jobs, and subsidised maize from production. It operates through a project steering committee comprising the Eastern Cape Development Corporation (ECDC), Joe Gqabi Development Agency (JoGEDA), councillors from ELM, and DRDAR.

Interviewee #5 is the chairperson for an agricultural project that is a collaboration between RAFI (a Non-governmental organisation) and Joe Gqabi economic development agency (JoGEDA). Specialist skills are provided by RAFI, while JoGEDA funds the project. The project steering committee also includes the ward councillor from the local municipality and the relevant traditional leaders. On the implementation side, the local DRDAR office and their extension officers have supported some of the work. One example is the supplying of resources to fence one area under cultivation. RAFI mentors support local farmers. RAFI also employs local residents as community liaison officers to communicate and call community meetings, rangers to remove livestock from the cultivated areas, and security to ensure that resources are not stolen.

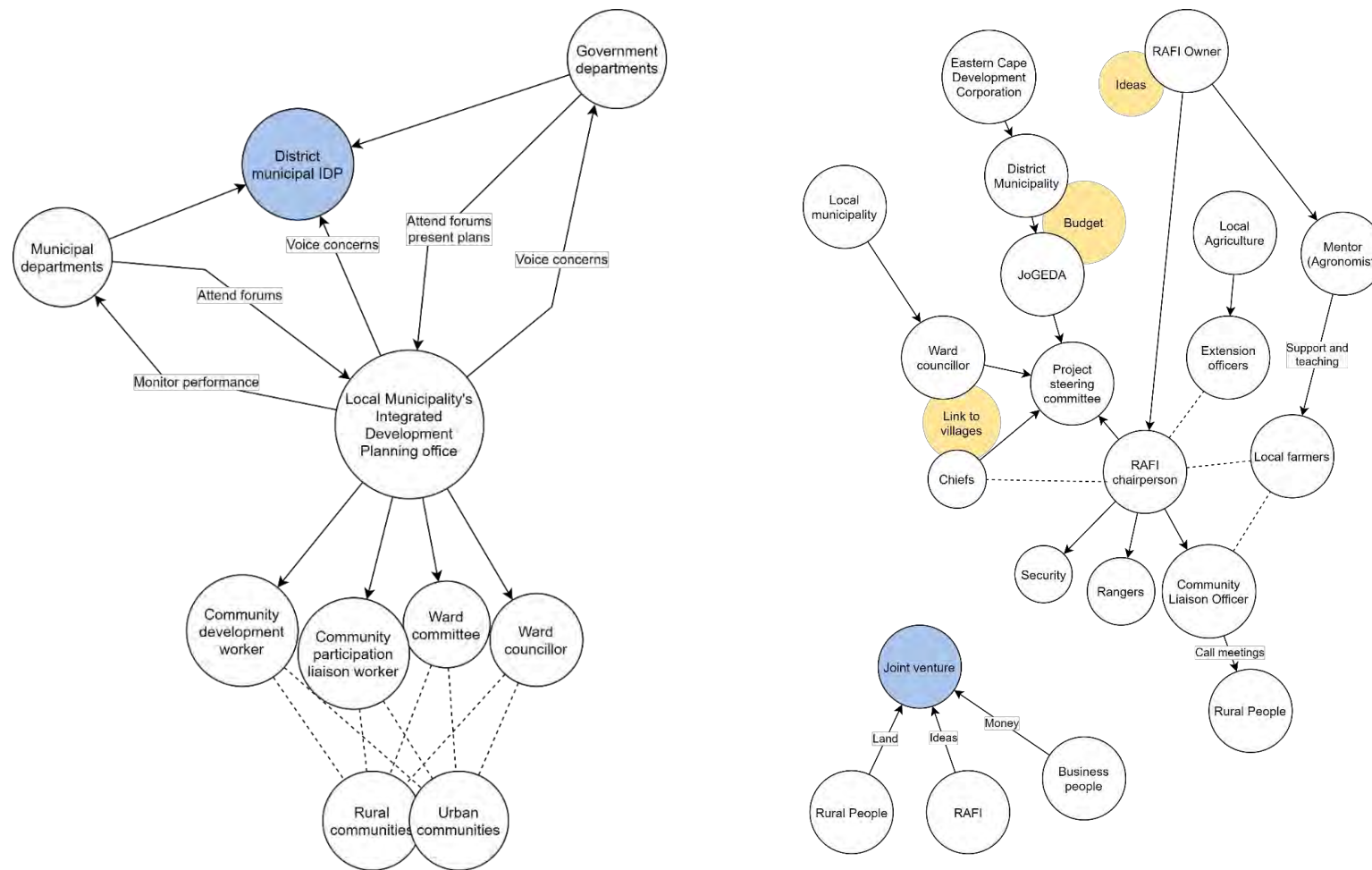


Figure D.9. Two actor maps were drawn with Interviewee #4 (left) and Interviewee #5 (right). Interviewee #4 works within the local municipality's Integrated Development Planning unit, and Interviewee #5 is from an agricultural project. Both maps show actors with connections. The size and shape of actors were selected for readability and do not denote any variable. Connections are either unidirectional (solid with arrow) or multidirectional (dotted). The yellow circles in interviewee #5's map describe specific activities in collaboration with specific actors. The blue circles show institutions that are not individual actors.

Key informants #4 & #5 are both associated with the Tsitsa Project. I extensively engaged with these actors as part of my work within the Tsitsa Project. As part of the Tsitsa Project, there is an effort to create restoration protocols that are more sensitive to social and ecological interactions. To do this, the Tsitsa Project has an integrated planning team helping to merge practical and social considerations with scientific priorities and a catchment coordinator to keep track of research interventions and maintain stakeholder relations. Furthermore, DFFE has employed NGO LIMA Rural Development Foundation to assist with on-the-ground social facilitation. By working with the implementing agents, the Tsitsa Project has created more inclusive collaborative mechanisms through community mapping and village-level planning during the planning and implementation of restoration activities.

Key Informant #4 is the Tsitsa Project's Catchment Coordinator the map in Figure D.10 shows how Key Informant #5 works across multiple levels within the DFFE. In the Broader Story, Key Informant #5 has close connections to the Eastern Cape regional DFFE office in East London. She also has some connection to the National department offices in Cape Town. In the Catchment Story, Key Informant #5 engages with DFFE implementers and other DFFE representatives, such as the local government support. Key informant #5 has close connections to the rural communities within the TsRC. This connection is predominantly through her involvement with the Tsitsa Project's catchment-based monitors and her involvement in community mapping processes, which were designed to facilitate the involvement of community members in the prioritisation of restoration work conducted by DFFE-associated implementing agents.

In the Catchment Story, Key Informant #5 interacts with municipal and traditional leaders. Relevant municipal departments include the communications department, the department of infrastructure and planning, and the public participation unit within the local municipality. The Tsitsa Project's engagement tended to engage more with the traditional leaders on the ground rather than municipal officials who are often absent from rural spaces, working in urban centres. Despite the Tsitsa Project's integrated work, Key Informant #5 struggled to cultivate connections with the local actors involved in water resource management and agricultural activities.

Key Informant #5 is the Tsitsa Project's integrated planning coordinator (Figure D.11). Integrated planning within the Tsitsa Project works closely with the Catchment coordinator and the Livelihoods Community of Practice. While the Catchment Coordinators role is to liaise with a wide variety of stakeholders, keeping everybody up-to-date and ensuring working collaborations that suit everybody, the integrated planning role is to integrate the various sources of knowledge about restoration to improve restoration work. Integrated planning requires mapping the 'community voice' with community groups and traditional leaders, surveying and researching the landscape from a biophysical perspective, and then meeting with restoration implementers to discuss best restoration practices and negotiate priority areas that meet management, research, and community needs. The role includes meeting fairly regularly and planning with DFFE officials from multiple levels, including the local implementers, and the regional and national offices. The Tsitsa Project's integrated planning coordinator has strong links to researchers and research institutions such as the University of Free State, Fort Hare, and Digital Soils Africa, as well as a variety of consulting groups, including Ground Truth engineers and Umhlaba Group who are experts in regional planning. Collecting data on commercial farmers is the one link that Tsitsa Project currently has with commercial farmers. Connections to other agricultural interest groups, such as the Department of Forestry, but there has been little reciprocal engagement, and it was stated that they seem to have little interest in integrating work streams.

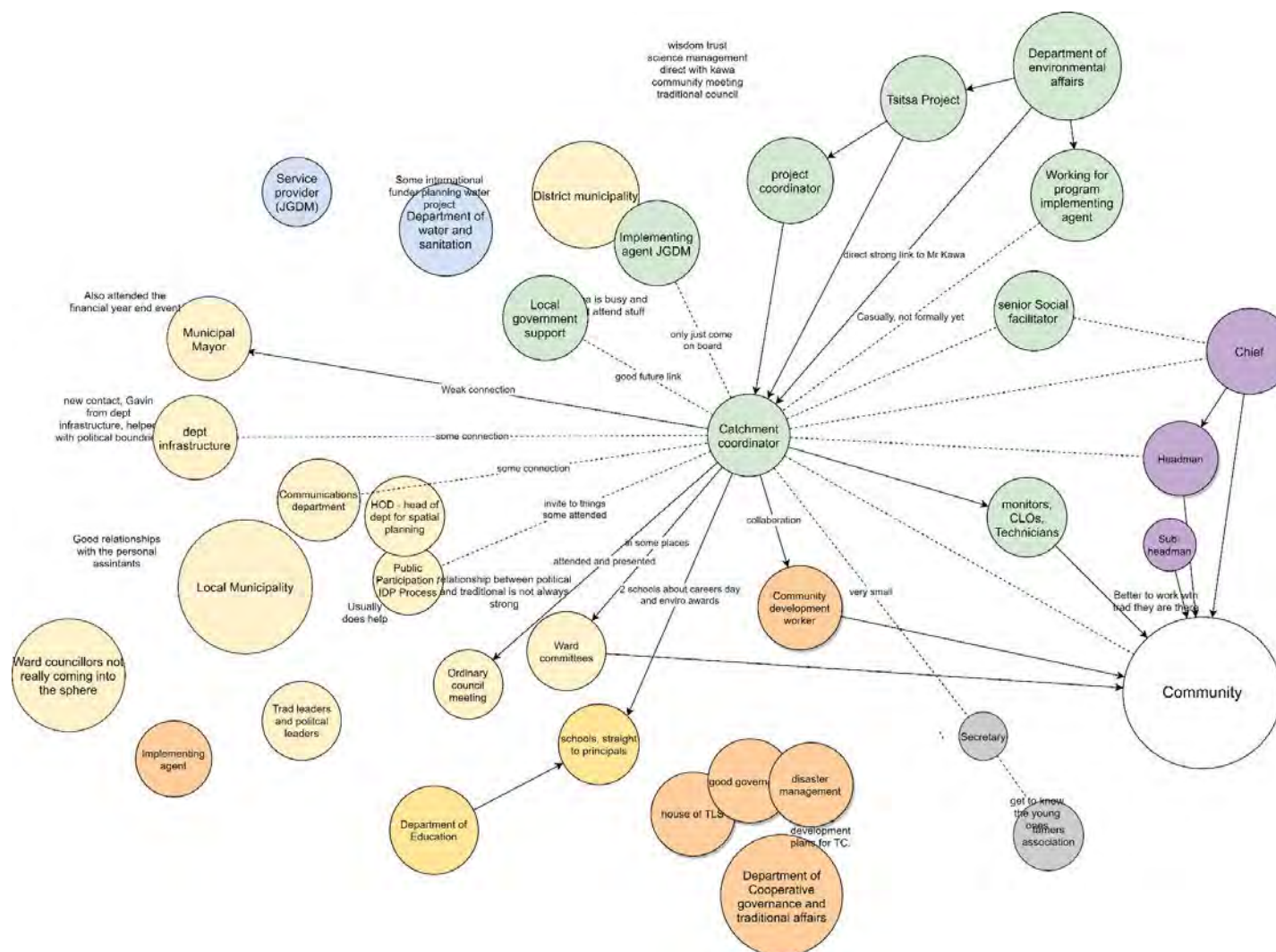


Figure D.10. Actor map created with Key Informant #4, the Tsitsa Project's catchment coordinator. The 36 actors in the diagram represent actors (purple-traditional leaders, orange -municipal, yellow-municipal, green-environmental, grey-private, blue-water, white-community). Connections are either unidirectional (solid with arrow) or multi-directional (dotted). The plain text in the diagram is notes made during the interview to support a more nuanced interpretation.

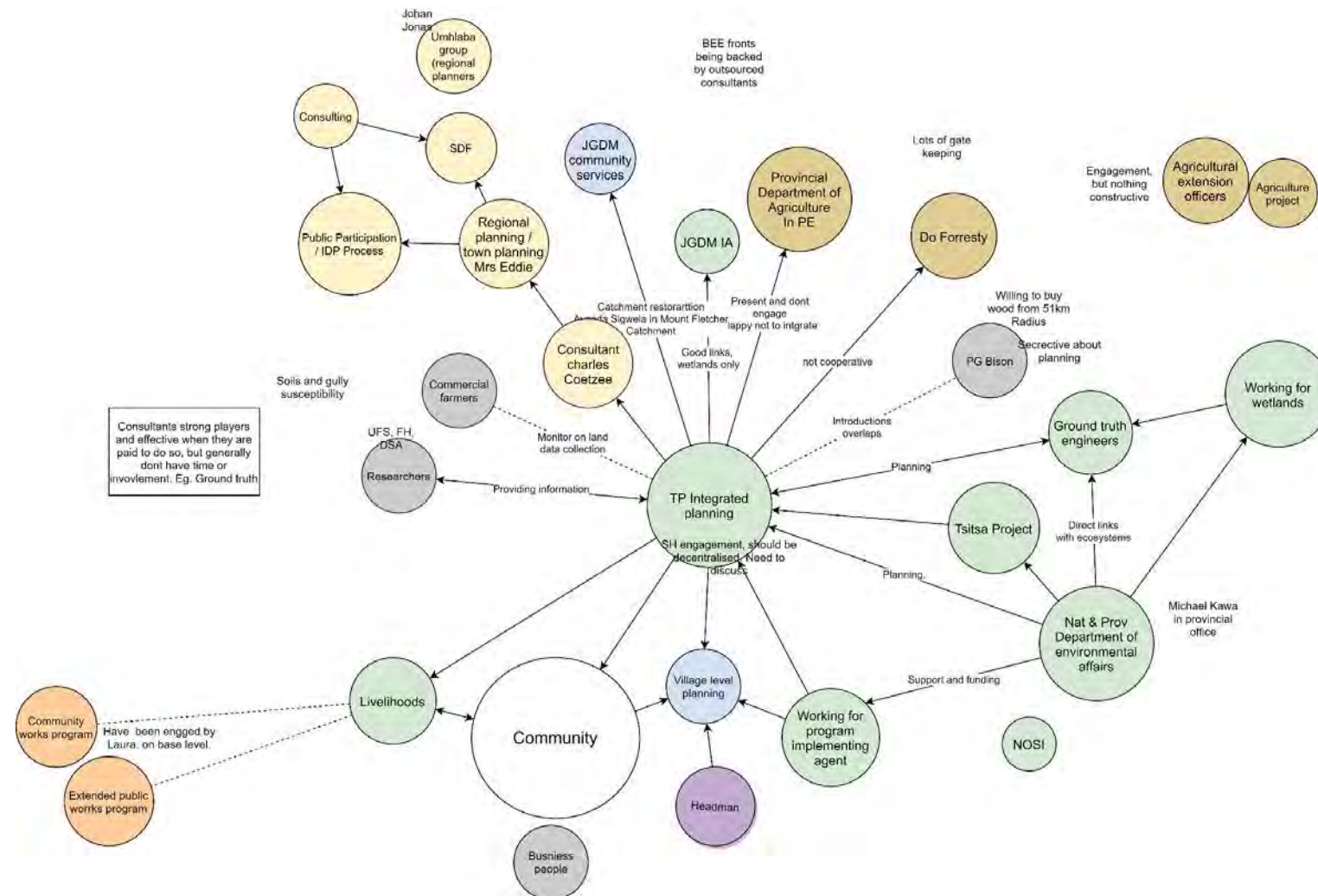


Figure D.11. Actor map of Key Informant #5, the Tsitsa Project's integrated planning coordinator. The 30 actors in the diagram represent actors (purple-traditional leaders, orange -related to EC CoGTA, yellow-municipal, brown – agricultural, green-environmental, grey-private, blue-water, white-community). Connections are either unidirectional (solid with arrow) or multi-directional (dotted). The plain text in the diagram is notes made during the interview to support a more nuanced interpretation.

DEFF national has two officials supporting environmental programs within local government. These include local government support at the district level and the youth community outreach program coordinator at the local municipality level.

Key Informant #6: The Department of Forestry, Fisheries, and the Environment's Local Government Support based at the district municipality (Figure D.12). Key Informant #7: The Department of Forestry, Fisheries, and the Environment's Youth Community Outreach Program coordinator based at the local municipality (Figure D.12).

Both actors provide crucial links to the local governance system. DEFF local governance support has a wide mandate to support municipalities in environmental planning and management. The Youth Community Outreach Project (YCOP) coordinator is responsible for raising awareness and cleaning up waste in the local municipality, aims which are achieved with a team of environmental ambassadors. Their job involves raising awareness about environmental issues and supporting local environmental projects such as recyclers and nursery owners.

One particularly important piece is their role in establishing municipal-level environmental forums. The district-level environmental forum is held at the district municipality and invites all actors working with environmental issues, for example, JDGM NRM and the provincial DEDEAT. This forum is operational and meets quarterly. The local-level environmental forum is supposed to fulfil the same role as the district forum by creating a space for local environmental projects and stakeholders to meet. This local level forum is also supposed to meet quarterly, but currently is not functioning.

These actors represent DFFE within the local and district municipalities. The maps are represented because these participants were interviewed and created the map together. The 50 actors in the diagram represent actors (purple-traditional leaders, orange and yellow-municipal, brown – agricultural, green-environmental, grey-private, blue-water, white-community). Connections are either unidirectional (solid with arrow) or multi-directional (dotted). The plain text in the diagram is notes made during the interview to support a more nuanced interpretation.

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management is primarily involved in the land and water governance as an implementer for DFFE. The Department of Environment Forestry and Fisheries has a large presence in the TsRC, predominantly through the 'working for' programs. The 'working for' programs include a range of environmental management initiatives. 'Working for Water' clears high water usage invasive alien plants. 'Working for Drylands' attempts to reduce erosion and land degradation. 'Working for Wetlands' restores and protects wetlands. There are several 'working for' implementers in the catchment. These include:

- Gamtoos Irrigation Board (GIB), whose current focus is on dryland rehabilitation in the lower catchment.
- TakeNote Trading is a recently established implementer focussing on invasive alien plants clearing in the upper catchment.
- The Joe Gqabi District Municipality's natural resource management team are also implementing agents working in the middle catchment. Their work has been focused in the private areas of the catchment and restricted to working for wetlands.

JGDM NRM is a district municipal entity under municipal community services but receives funding and support from the DEFF NRM branch to conduct 'working for' work. JGDM NRM is well connected to other district-level institutions (including the WSA, disaster management, and municipal health services) through their district environmental forum and community services standing committee. Implementing agents have a connection to local stakeholders, including traditional leadership and municipal representatives, primarily through the project steering (or advisory) committees. These project steering committees plan project implementation and resolve any conflicts which arise. Some people prefer advisory as the term 'steering' can give a false impression of the committee's role. They are typically organised *ad hoc* depending on the projects being implemented.

The map also shows the implementing agent's connection to agricultural activities, especially on private land with commercial farmers. Given the current focus on the former homeland areas, the commercial farmers naturally fall on the periphery of this investigation, although their vast landownership makes them crucial for the overall governance of land and water in the area. Commercial farmers are one of the largest sources of employment in the catchment, and several farmers have worked with the Working for Water implementers in clearing invasive alien plants along the watercourses on their land. The primary agricultural produce includes livestock and crops (such as maize, potatoes, hay, and lucerne). Their primary connection is through the fire association, which issues regular updates about fire risks. PG Bison run the Maclear Fire Protection Association, and the commercial farmers are responsible for ensuring the activities in the area abide by fire protocols. The association members comprise most of the commercial farmers on private land within the catchment. Fire Protection Associations register with the forestry department within DFFE and are key groups that connect many commercial farmers. Given their focus on private land, they also have a close connection to PG Bison, the area's most prominent landowner.

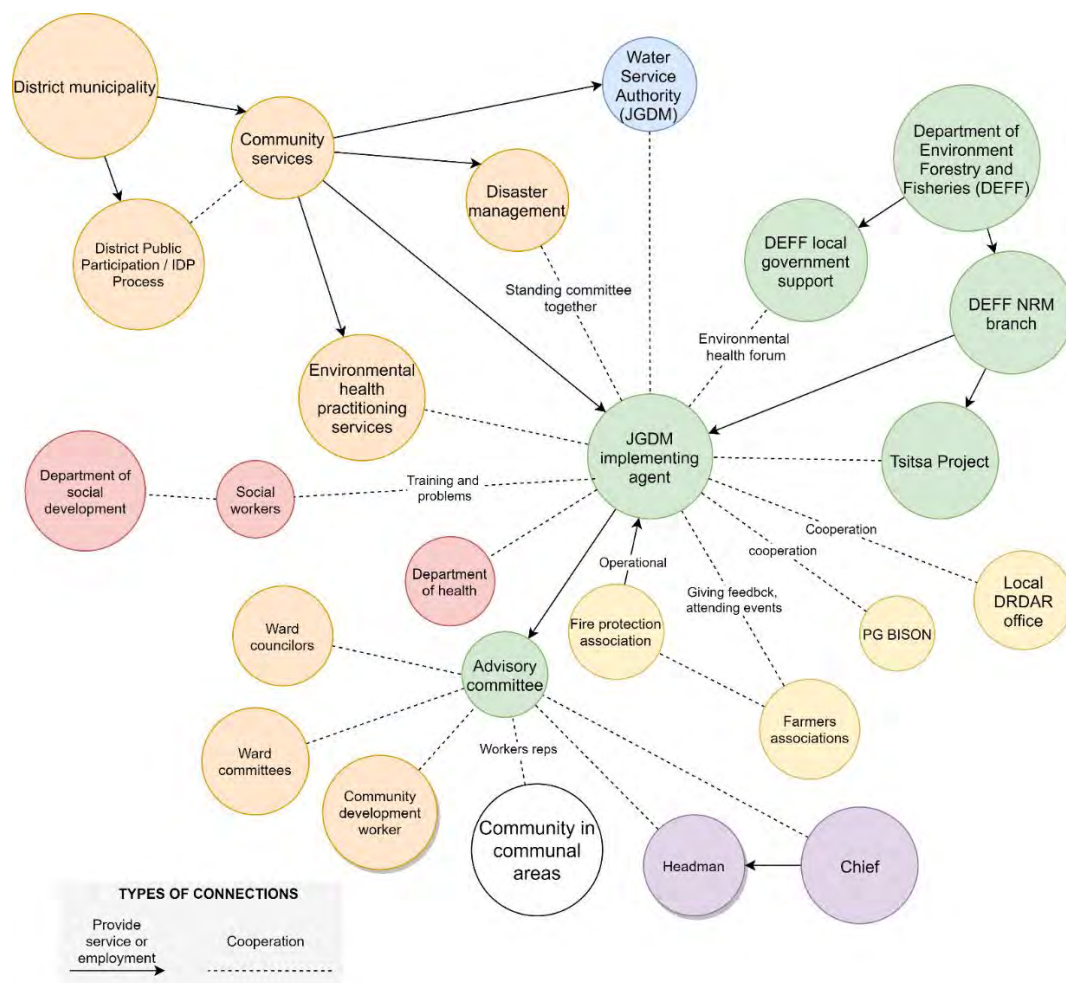


Figure D.13. Actor map drawn with Key Informant #7, an implementing agent.

Key Informant #7 has connections to the communal areas and the private farmers and landowners. The 26 actors in the diagram represent actors (purple-traditional leaders, red- other, orange - municipal, yellow- agricultural, green-environmental, grey-private, blue-water, white-community). Connections are either unidirectional (solid with arrow) or multi-directional (dotted). The plain text in the diagram are notes made during the interview to support more nuanced interpretation.

The local DRDAR office, through its team of agricultural advisors and animal health technicians, supports emerging farmers and farmers in the communal areas. The office is in Maclear, and their knowledge, data, and involvement in agricultural activities, especially livestock management are key to sustainable landscape management. They do not work with commercial farmers. There is also little interaction between emerging and commercial farmers, and an initiative by DRDAR to get commercial farmers to mentor emerging farmers has been unsuccessful (Sisitka et al., 2016).

The DRDAR office supports the growing crops, running campaigns such as livestock dipping to get rid of disease and wool shearing. These interventions are explained in more detail in Story One. Key informant #4 remarked that the emerging farmers have lost faith in the governance of agricultural support, which seemed to impact possible collaborations with the Tsitsa Project negatively.

Although other Tsitsa Project members and I have had difficulty collaborating with the local DRDAR office, there seem to be contradictory views about their work and presence in the landscape. In a related study within the Tsitsa Catchment, Libala (2019) found that livestock owners generally had

access to the local DRDAR office. Key informant #2 said that he knows that they are active in the area. If he reports something to the local office, they are normally already aware of the situation (KI#2).

Interviewee #7 is an animal health technician from the local office of the Department of Rural Development and Agrarian Reform. The map in Figure D.14 shows that the animal health technician works closely with the agricultural extension officers based at the same office in Nqanqarhu in the centre of the TsRC. Interviewee #7 provides health support to local livestock owners; this mostly happens through campaigns communicated by the ward councillor and the traditional leaders. In preparation for the livestock health campaigns, information is spread to community members by driving through and telling people using a loudhailer – this information is communicated directly to community members.

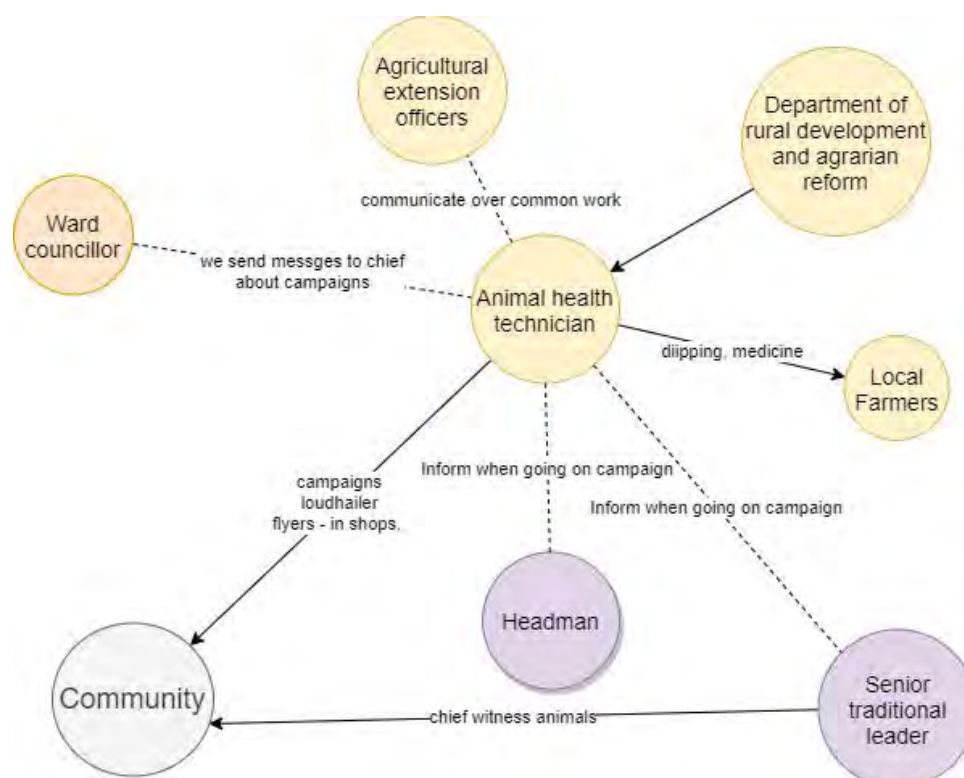


Figure D.14. Actor map drawn with Interviewee # 7, an animal health technician working within the local department of agriculture offices.

The eight actors in the diagram represent actors (purple-traditional leaders, orange -municipal, yellow-agriculture interest, and the community is represented by a grey circle). Connections are either unidirectional (solid with arrow) or multi-directional (dotted).

The final actor map shows the network of the Elundini water manager (interviewee #7) in Figure D.15. Interviewee #7 is employed by the water services provider (WSP) based at Joe Gqabi District Municipality, which is overseen by the water services authority (WSA), also based at the District Municipality. The Department of Human Settlements, Water, and Sanitation appoints the WSA and the WSP. The local water service provider oversees water treatment plant operations, maintenance, and repairs to the water system. Figure D.15 shows strong connections to the local and district municipalities, as could be expected given their mutual focus on service delivery. This discussion also revealed the presence of Integrated Service Delivery Officers and water committees, which were reported to work across the areas under traditional leaders; however, they did not seem to be functional in any of the areas I was working. There seem to be large areas in the communal parts of

the catchment with no formal water supply and, therefore, no interaction with any formal institution related to water. The WSP provider has tenuous connections with other land and water governance institutions. One could expect water resource management institutions to have these connections; however, as discussed in Chapter Five, the formal resource management institutions are largely not functioning.

The WSP is linked to other district municipal departments, including the community services and disaster management. Located at the local municipality, interviewee #7 interacts with the ward councillors, the environmental health technicians, and the local public participation process.

Interviewee #7 interacts with community members and traditional leaders through an integrated service delivery officer. I could not find any other evidence as to the existence of an integrated service delivery officer – this could potentially be a CDW.

Regarding catchment management, the JGDM NRM team introduced above has done some work prioritising restoration work to improve water resources in the area. There is one other relevant institution working in the area. The Umzimvubu Catchment Partnership Program (UCP) is situated in a neighbouring quaternary catchment to the TsRC. UCP 'seeks to demonstrate and foster improved catchment stewardship on a sustainable basis, as a means for securing biodiversity and healthy ecosystem functions, which underpin livelihoods, boost resilience to climate change impacts and fortify South Africa's transition towards a Green Economy' (C. Theron et al., 2012, p.1). UCP is, among other things, focused on developing catchment management strategies to secure water supply in another strategic water source area (Nel et al., 2013; Mubangizi, 2019). UCP has established rangeland agreements and provided local livestock owners access to the market through livestock auctions.

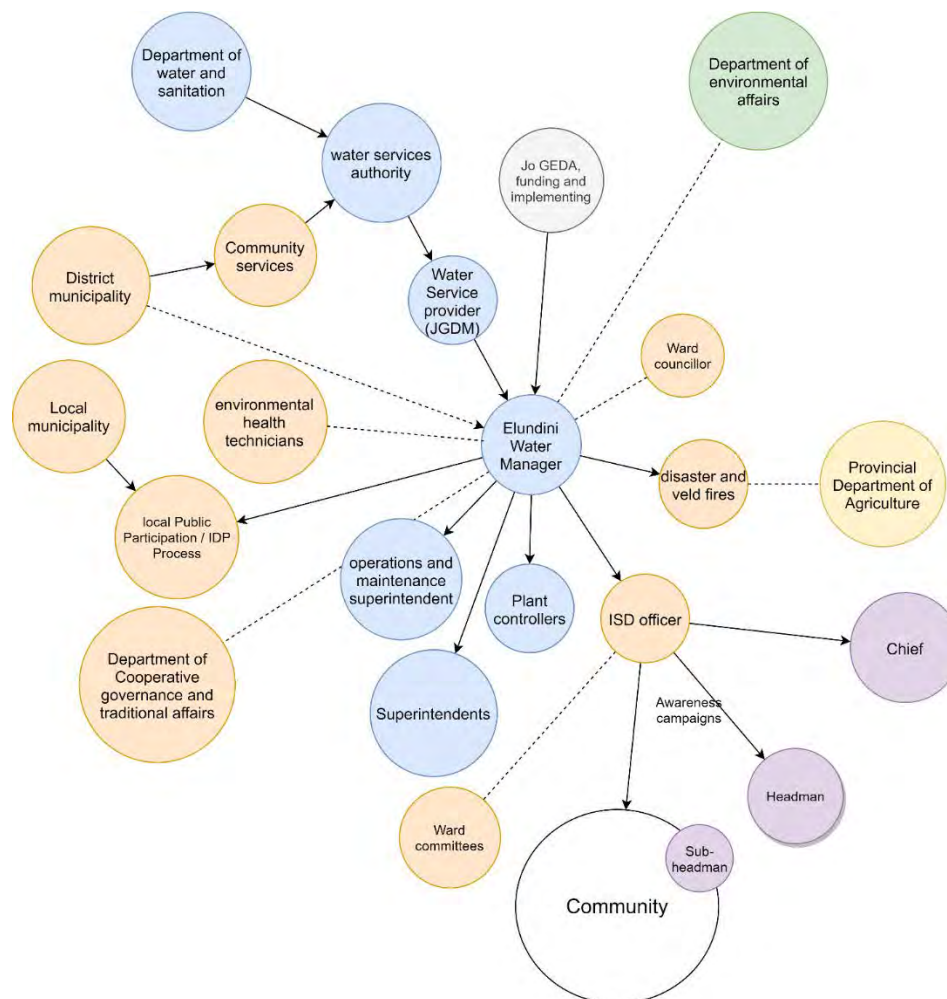


Figure D.15. Actor map of the Elundini Water Manager under the Water Services Provider (WSP). The WSP is based at Joe Gqabi District Municipality. The 24 actors in the diagram represent actors (purple-traditional leaders, orange -municipal, green-environmental, grey-private, blue-water, white-community). Connections are either unidirectional (solid with arrow) or multi-directional (dotted). The plain text in the diagram are notes made during the interview to support more nuanced interpretation.

D.5 Gephi data for consolidated map (Catchment Story)

Gephi data is divided into node details (i.e., actor details) and edge details (i.e., connection details). This appendix includes the data tables used to generate the consolidated actor network map.

Node data table

‘ID’ refers to the node number in Gephi.

‘Label’ refers to the label on the map. Abbreviations: AHT: Animal health technician, CDW (N#): Community development worker (node #), EC COGTA: Eastern Cape Cooperative Governance and Traditional Affairs, CLO: Community liaison officer, Coop: Farming cooperative (node #), CPLW(N3): Community participation Liaison worker (node #), CS: Community services, CWP: Community Works Program, DBE: Department of Basic Education, DFFE: Department of Forestry Fisheries and the Environment, DFFE LGS: DFFE local government support DH: Department of Health, DHA: Department of Home Affairs, DRDAR: Department of Rural Development and Agrarian Reform, DSA: Digital Soils Africa, DSD: Department of Social Development, DWS: Department of Water and Sanitation, ECDC: Eastern Cape Development Corporation, EHT: Environmental health technician, ELM: Elundini Local Municipality, ELM EE: ELM Environmental Educators, ELM MM: ELM Municipal manager, EPWP: Extended Public Works Program, GIB: Gamtoos Irrigation Board, HM(N#): Headman (node #), IDP: Integrated Development Planning unit, ISD: Integrated Service Delivery, JGDM: Joe Gqabi District Municipality, JGDM WSA: JGDM Water services authority, JGDM WSP: JGDM Water services provider, JoGEDA: Joe Gqabi Economic Development Agency, MHS: Municipal Health services, MWP: Mzimvubu Water Project, NRM: Natural resource management, RU: Rhodes University, SAPS: South African Police Service, SASSA: South African Social Security Agency, SAYM: South African Youth Movement, SEDA: Small Enterprise Development Agency, SHM(N#): Sub-headman (Node #), STL(N#): Senior Traditional Leader (Node #), TP: Tsitsa Project, TP IP: TP Integrated Planning, TP CC: TP Catchment Coordinator, UFS: University of Free State, WC(N#): Ward councillor (Node #), WCR (N#): Ward committee representative (Node #), YCOP: Youth community outreach program.

‘Cluster’ refers to the actor’s cluster. M – municipal/cooperative governance, e – environmental, a – agricultural, c – community, o – other, w - water, t- traditional leadership.

‘Story’ refers to the actor’s story. 1 – Broader Story, 2 – Catchment Story, 3 – Village Story.

‘Eigenvector centrality’ refers to the centrality of the actor calculated based on the number of connections that the actor has.

ID	Label	cluster	Story	Eigenvector centrality
1	CDW supervisor	m	1	0.1339619581410386
2	CDW(N1)	m	2	0.48487476656452344
3	CDW(N2)	m	2	0.5107821970971499
4	CDW(N3)	m	2	0.44259850302134607
5	CDW(N4)	m	2	0.12100173345257526
6	EC COGTA	m	1	0.14752612693789796
7	Commercial farmers	a	2	0.048189574519812366
8	Community	c	3	1.0
9	Consultants	e	1	0.03862401878367183
11	Coop(N1)	a	3	0.144120451262599
12	Coop(N2)	a	3	0.21382800073997743
13	Coop(N3)	a	3	0.14114413415296678
14	CPLW(N1)	m	3	0.21653344887369338
15	CPLW(N2)	m	3	0.1883781914033622

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ID	Label	cluster	Story	Eigenvector centrality
16	CPLW(N3)	m	3	0.14578647159682195
17	CWP	o	2	0.15474860738771337
18	DBE	o	2	0.3178960470599959
19	DFFE	e	1	0.17270856789800068
20	DFFE LGS	e	2	0.18343687893556382
21	DH	o	2	0.23212720270899836
22	DHA	o	2	0.266231165069496
23	DWS	w	1	0.09474590531118403
24	JGDM Disaster Management	o	2	0.12925050777196503
25	DRDAR	a	2	0.353148325551901
26	DRDAR AHT	a	2	0.43217210802646727
27	DSA	o	1	0.03862401878367183
28	DSD	o	2	0.32441439498359
29	ECDC	o	1	0.016017286564373553
30	EHT	e	2	0.04826397398683679
31	ELM	m	2	0.3316723211111345
32	ELM Communications	m	2	0.1252909750467651
33	ELM CS	m	2	0.03962107747259398
34	ELM EE	e	2	0.08828971778897961
35	ELM IDP	m	2	0.7353996443991463
36	ELM Infrastructure	m	2	0.1252909750467651
37	ELM Mayor	m	1	0.1252909750467651
38	ELM MM	m	1	0.10765792345954242
39	ELM Regional planning	m	2	0.06657556299856421
40	ELM Spatial planning	m	2	0.1252909750467651
41	ELM Waste and Environment	m	2	0.030056278486792307
42	ELM Water Manager	m	2	0.245262593995126
43	Environmental Ambassadors	e	2	0.025623643339459934
44	Environmental projects	e	2	0.04287783974696388
45	EPWP	o	2	0.1253074897449175
46	Extension Officers	a	2	0.08187946858460193
47	Farmer Association	a	2	0.10548942795798393
48	Fort Hare	o	1	0.05541835320528528
49	Fire protection agency	a	2	0.03714465081092803
50	GIB team	e	2	0.062435055531095004
51	Ground Truth	e	1	0.015984883696756984
52	HM(N1)	t	3	0.5175750704470021
53	HM(N2)	t	3	0.5625090442877662
54	HM(N3)	t	3	0.5426275345745235
55	HM(N4)	t	3	0.12100173345257526
57	JGDM	m	1	0.1643319394527838
58	JGDM CS	m	1	0.08663926586231481
59	JGDM IDP	m	1	0.04237112182834643
60	JGDM MHS	m	1	0.08858107401653477
61	JGDM NRM	e	2	0.4209983602011033
62	JGDM WSA	w	1	0.0450994438581462
63	JGDM WSP	w	2	0.04263447091428536
64	JoGEDA	o	1	0.056063705842068136
65	LIMA	e	2	0.04069633740058915
66	Local Nurseries	e	3	0.10948072598110714
67	Mngcunube	e	2	0.06258252974366209
68	Mvula Trust	w	1	0.012123169837935563
69	MWP	w	1	0.019585604784349092

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ID	Label	cluster	Story	Eigenvector centrality
70	MWP site manager	w	1	0.04062680408488999
71	PG Bison	a	2	0.11856410265657889
72	RAFI	a	2	0.16729383100895212
73	RAFI CLO	a	3	0.09942902110350042
74	RAFI Employees	a	3	0.02107166816904142
76	RAFI staff	a	2	0.049558701242773104
77	Recyclers	e	2	0.025623643339459934
78	SAPS	o	2	0.36274908669750444
79	SASSA	o	1	0.09945344965116404
80	SAYM	o	2	0.040328912970144404
81	SEDA	o	1	0.037524060695989216
82	SHM(N3)	t	3	0.12757363240387817
83	SHM1(N1)	t	3	0.13924129282946004
84	SHM1(N2)	t	3	0.17277085270334977
85	SHM2(N1)	t	3	0.13924129282946004
86	SHM2(N2)	t	3	0.17277085270334977
87	SHM3(N1)	t	3	0.1266525157036262
88	SHM3(N2)	t	3	0.13017913289680946
89	SHM4(N2)	t	3	0.13017913289680946
90	Social workers	o	2	0.10654292740726724
91	STL(N1)	t	2	0.12903499418327452
92	STL(N2)	t	2	0.25932857989330677
93	STL(N3)	t	2	0.2245167082826951
94	TakeNote	e	2	0.09720062228696914
95	TP	e	1	0.18588128426126233
96	TP CC	e	2	0.7600339295718515
97	TP IP	e	1	0.4448452465373612
98	TP monitors	e	3	0.1472186687332375
99	UFS	o	1	0.05541835320528528
100	Vetiver nursery	e	3	0.2026370219385228
101	WCR(N1)	m	3	0.2386060824378182
102	WCR(N2)	m	3	0.2386060824378182
103	WCR(N3)	m	3	0.2622157206167902
104	WCR(N4)	m	3	0.12100173345257526
105	Water operations	w	2	0.02738457473206749
106	WC(N1)	m	2	0.30051508580366065
107	WC(N2)	m	2	0.3811890158242974
108	WC(N3)	m	2	0.27950985958702596
109	WC(N4)	m	2	0.12100173345257526
110	YCOP	e	2	0.2942682540580391
111	RU	o	1	0.016794334421613474
112	GIB	e	1	0.0061876318956904305

Edge data table

‘Source’ indicates the actor initiating the connection. If the connection is undirected, then the source is the actor in the relationship from the higher story (i.e., where Broader Story is higher than the Catchment Story, which is higher than the Village Story).

‘Target’ indicates the actor with whom the connection is being made.

‘Type’ indicates whether the relationship is directed (i.e., uni-directional) or undirected (i.e., bi-directional).

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‘ID’ indicates the number assigned to the connection in Gephi.

‘Weight’ indicates the strength of the connection. Connections have a weight of 2.0 when two different actors mentioned them.

Source	Target	Type	ID	Weight	Source	Target	Type	ID	Weight
57	58	Directed	0	2.0	42	106	Undirected	171	1.0
57	59	Directed	1	1.0	42	107	Undirected	172	1.0
58	24	Directed	2	1.0	42	108	Undirected	173	1.0
58	62	Directed	3	2.0	42	24	Undirected	174	1.0
58	60	Directed	4	2.0	42	30	Undirected	175	1.0
58	59	Directed	5	1.0	42	35	Undirected	176	1.0
28	90	Directed	6	2.0	42	6	Undirected	177	1.0
57	62	Directed	7	2.0	26	11	Undirected	188	1.0
110	43	Directed	8	1.0	26	12	Undirected	189	1.0
20	110	Directed	9	1.0	26	13	Undirected	190	1.0
21	60	Directed	11	1.0	26	46	Undirected	191	1.0
19	51	Directed	14	1.0	26	106	Undirected	193	1.0
19	95	Directed	15	4.0	26	107	Undirected	194	1.0
95	97	Directed	16	1.0	26	108	Undirected	195	1.0
19	61	Directed	17	1.0	26	8	Undirected	196	1.0
57	61	Directed	18	1.0	26	91	Undirected	197	1.0
64	42	Directed	19	2.0	26	92	Undirected	198	1.0
25	24	Directed	21	1.0	26	93	Undirected	199	1.0
31	35	Directed	22	3.0	26	52	Undirected	200	1.0
42	105	Directed	23	1.0	26	53	Undirected	201	1.0
68	64	Directed	25	1.0	26	54	Undirected	202	1.0
25	26	Directed	27	1.0	72	12	Undirected	203	1.0
25	46	Directed	28	3.0	72	13	Undirected	204	1.0
29	57	Directed	29	1.0	72	46	Undirected	205	1.0
57	64	Directed	30	1.0	72	64	Undirected	206	1.0
31	107	Directed	31	1.0	72	107	Undirected	207	1.0
72	73	Directed	32	1.0	76	12	Undirected	208	1.0
73	8	Directed	33	1.0	76	13	Undirected	209	1.0
72	74	Directed	34	1.0	57	35	Undirected	210	2.0
35	106	Directed	35	1.0	35	38	Undirected	211	1.0
35	107	Directed	36	1.0	106	8	Undirected	213	1.0
35	108	Directed	37	1.0	107	8	Undirected	214	1.0
35	2	Directed	38	3.0	108	8	Undirected	215	1.0
35	3	Directed	39	2.0	14	8	Undirected	219	1.0
35	4	Directed	40	2.0	15	8	Undirected	220	1.0
35	14	Directed	41	1.0	16	8	Undirected	221	1.0
35	15	Directed	42	1.0	101	8	Undirected	222	1.0
35	16	Directed	43	1.0	102	8	Undirected	223	1.0
35	101	Directed	44	1.0	35	18	Undirected	225	1.0
35	102	Directed	45	1.0	35	22	Undirected	226	1.0
35	103	Directed	46	1.0	35	28	Undirected	227	1.0
69	70	Directed	47	1.0	35	21	Undirected	228	1.0
103	8	Directed	48	2.0	35	78	Undirected	229	1.0
31	108	Directed	49	1.0	35	25	Undirected	230	2.0
6	4	Directed	50	1.0	35	19	Undirected	231	2.0
6	38	Directed	51	1.0	35	79	Undirected	232	1.0
19	94	Directed	53	1.0	35	37	Undirected	233	1.0
1	2	Directed	54	1.0	35	36	Undirected	234	1.0
1	3	Directed	55	1.0	35	32	Undirected	235	1.0

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1	4	Directed	56	1.0	35	40	Undirected	236	1.0
95	96	Directed	57	2.0	4	81	Undirected	238	1.0
6	2	Directed	59	1.0	4	22	Undirected	239	1.0
93	54	Directed	61	1.0	4	79	Undirected	240	1.0
92	53	Directed	62	1.0	4	25	Undirected	241	1.0
25	72	Directed	63	1.0	4	23	Undirected	242	1.0
25	12	Directed	64	1.0	4	28	Undirected	243	1.0
52	14	Directed	65	1.0	4	70	Undirected	244	1.0
52	83	Directed	66	1.0	108	103	Undirected	245	1.0
52	85	Directed	67	1.0	4	82	Undirected	246	1.0
52	87	Directed	68	1.0	4	67	Undirected	247	1.0
31	106	Directed	69	1.0	95	100	Undirected	248	1.0
31	14	Directed	70	1.0	6	17	Undirected	249	1.0
61	24	Undirected	71	1.0	17	67	Undirected	250	1.0
61	20	Undirected	72	1.0	4	54	Undirected	251	1.0
19	20	Undirected	73	2.0	3	15	Undirected	252	1.0
61	95	Undirected	75	1.0	3	107	Undirected	253	1.0
61	25	Undirected	76	1.0	38	107	Undirected	254	1.0
61	71	Undirected	77	1.0	3	90	Undirected	255	1.0
61	47	Undirected	78	1.0	3	22	Undirected	256	1.0
61	49	Undirected	79	1.0	3	78	Undirected	257	1.0
61	8	Undirected	80	1.0	23	57	Undirected	258	1.0
61	21	Undirected	81	1.0	3	72	Undirected	259	1.0
61	90	Undirected	82	1.0	3	94	Undirected	260	1.0
61	60	Undirected	83	1.0	6	1	Undirected	261	1.0
61	5	Undirected	84	1.0	3	53	Undirected	264	1.0
61	55	Undirected	85	1.0	3	92	Undirected	265	1.0
61	109	Undirected	86	1.0	3	84	Undirected	266	1.0
61	104	Undirected	87	1.0	3	86	Undirected	267	1.0
61	92	Undirected	88	1.0	86	8	Undirected	268	2.0
110	66	Undirected	89	1.0	3	12	Undirected	269	1.0
110	77	Undirected	90	1.0	12	8	Undirected	270	1.0
110	18	Undirected	91	1.0	2	31	Undirected	271	1.0
110	8	Undirected	92	1.0	2	80	Undirected	272	1.0
110	35	Undirected	93	1.0	2	17	Undirected	273	1.0
110	106	Undirected	97	1.0	2	18	Undirected	274	1.0
110	107	Undirected	98	1.0	2	22	Undirected	275	1.0
110	108	Undirected	99	1.0	2	28	Undirected	276	1.0
20	44	Undirected	100	1.0	2	21	Undirected	277	1.0
110	44	Undirected	101	1.0	2	78	Undirected	278	1.0
31	33	Undirected	102	1.0	2	3	Undirected	279	1.0
33	34	Undirected	103	1.0	2	4	Undirected	280	1.0
33	41	Undirected	104	1.0	17	45	Undirected	285	1.0
31	45	Undirected	105	1.0	18	8	Undirected	287	1.0
110	41	Undirected	106	1.0	22	8	Undirected	288	1.0
24	20	Undirected	110	1.0	28	8	Undirected	289	1.0
59	20	Undirected	111	1.0	21	8	Undirected	290	1.0
20	60	Undirected	112	1.0	78	8	Undirected	291	1.0
62	63	Undirected	113	1.0	54	52	Undirected	294	1.0
63	20	Undirected	114	1.0	54	53	Undirected	295	2.0
60	30	Undirected	115	1.0	54	31	Undirected	296	1.0
20	30	Undirected	116	1.0	54	8	Undirected	297	1.0
97	7	Undirected	117	1.0	54	78	Undirected	298	1.0
97	71	Undirected	118	1.0	54	28	Undirected	299	1.0

Appendix D: Chapter Five supplementary material

97	61	Undirected	119	1.0	54	25	Undirected	300	1.0
97	25	Undirected	120	1.0	54	50	Undirected	301	1.0
97	58	Undirected	121	1.0	54	17	Undirected	303	1.0
97	96	Undirected	122	1.0	54	45	Undirected	304	1.0
19	50	Undirected	123	2.0	53	78	Undirected	305	1.0
97	94	Undirected	124	1.0	53	107	Undirected	306	1.0
97	52	Undirected	125	1.0	53	52	Undirected	307	2.0
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97	54	Undirected	127	1.0	53	86	Undirected	309	1.0
97	17	Undirected	128	1.0	53	88	Undirected	310	1.0
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97	99	Undirected	131	1.0	107	23	Undirected	313	1.0
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3	8	Undirected	153	3.0	66	8	Undirected	337	1.0
4	8	Undirected	154	4.0	34	8	Undirected	338	1.0
6	24	Undirected	155	1.0	76	74	Undirected	339	1.0
96	18	Undirected	156	1.0	72	76	Undirected	340	1.0
96	101	Undirected	157	1.0	68	62	Undirected	341	1.0
96	102	Undirected	158	1.0	69	62	Undirected	342	1.0
96	103	Undirected	159	1.0	23	69	Undirected	343	1.0
96	31	Undirected	160	1.0	23	62	Undirected	344	1.0
96	37	Undirected	161	1.0	57	63	Undirected	345	1.0
96	36	Undirected	162	1.0	63	105	Undirected	346	1.0
96	32	Undirected	163	1.0	100	8	Undirected	347	2.0
96	40	Undirected	164	1.0	39	31	Undirected	348	1.0
96	35	Undirected	165	1.0	11	8	Undirected	349	1.0
96	20	Undirected	166	1.0	13	8	Undirected	350	1.0
96	61	Undirected	167	1.0	82	8	Undirected	351	1.0
96	47	Undirected	168	1.0	7	47	Undirected	352	1.0
42	57	Undirected	169	1.0	67	82	Undirected	353	1.0
42	19	Undirected	170	1.0					

D.6 Influence and accessibility maps (Catchment Story)

Introduction

Participation in land and water governance at the local level in the former homeland areas of Tsitsa River Catchment (TsRC) is dominated by the local municipality and the traditional leaders. As part of mapping the Catchment Story, I conducted six influence and closeness or accessibility mapping processes with three headmen (traditional leaders) and three community development workers (CDWs) (associated with the Eastern Cape Department of Cooperative Governance and Traditional Affairs as well as the local municipality).

The influence and accessibility mapping method is described in Chapter Five. Circles represent actors. Influence and accessibility are indicated by the size and position of the circles on the map.

- The size of the circle indicates influence.
- Closeness is indicated by the distance of the circle from the 'community' placed at the centre of each map.

The influence and accessibility mapping exercises were done in three of the Tsitsa Project's research nodes - one headman and one CDW from each research node were selected. I used a generic map created based on the first round of interviews to support the influence and accessibility mapping process. The generic actor map depicts actors mentioned in more than one of the first six interviews, spread around a central 'community.' I roughly positioned actors in the Village Story actors closer than Catchment Story actors, which were, in turn, closer than the Broader Story actors. At the beginning of the interviews, I made it clear that the actors' size, position, and presence on the generic map was merely a starting point, and that the interviewee was able to edit, add and remove actors throughout the process. The elicitation process and mirroring back are described below.

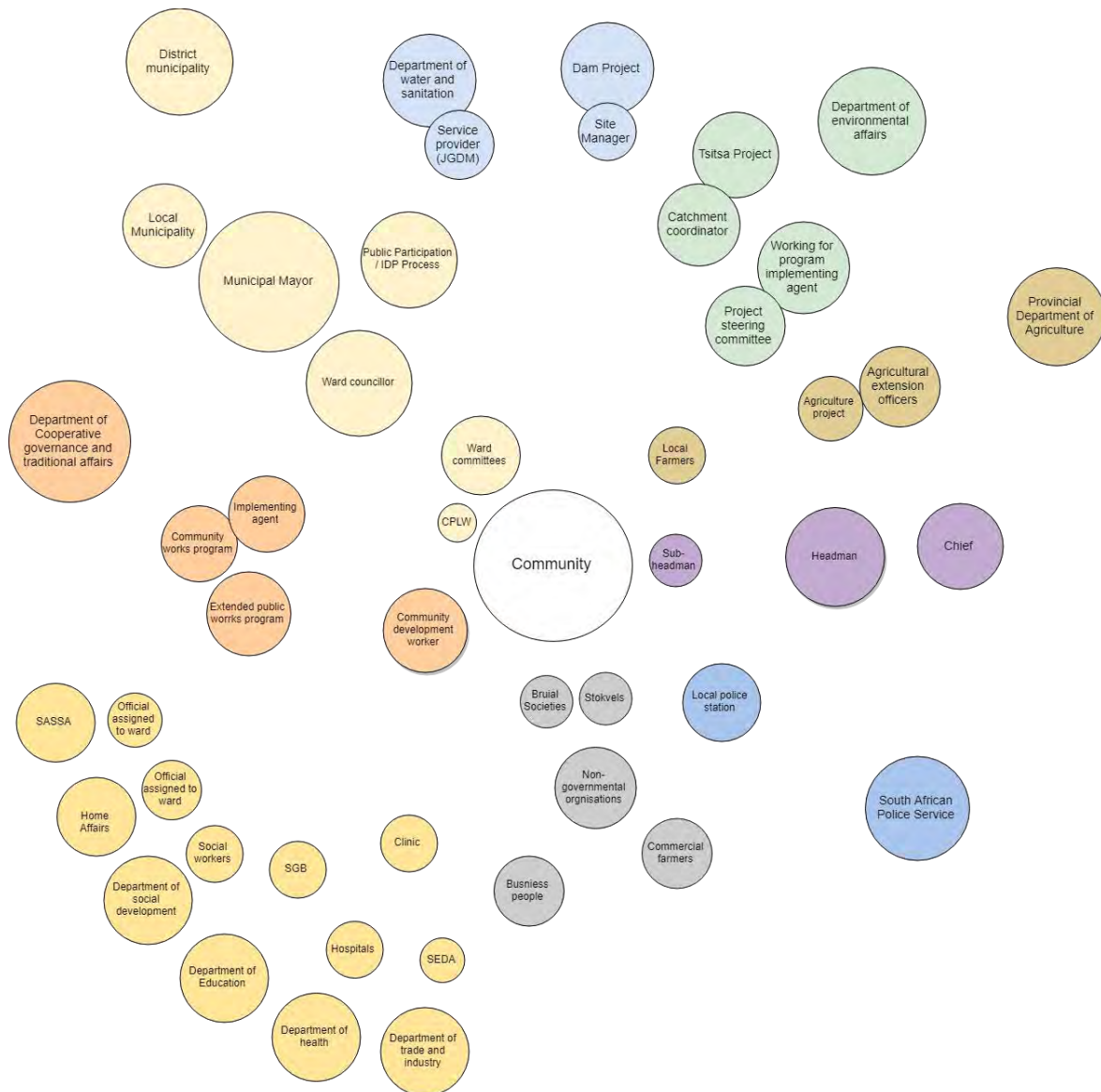


Figure D.16. Generic template used to prompt the second round of interview mapping exercises. Circles show actors; the circle's size indicates the actor's influence. The distance of the circle from the 'community' circle indicates the accessibility of the actor to the community.

Findings

The six influence and accessibility maps are presented in this appendix. A synthesis of the findings is given in Chapter Five. The maps are presented per node so that the CDW and headman map for the same area are presented alongside each other and the nuances of each node are noted alongside.

Influence and accessibility maps for research node 1 are shown in Figure D.17 and Figure D.18. Figure D.17 shows the influence and accessibility map co-created with the community development worker from research node 1. The map shows the municipal mayor and ward councillor as the most influential actors in the node's activities.

- The CDW in research node one has a big ward and struggles to get to all the areas within her ward.
- Power discrepancy- The CDW exaggerated the municipal power, and the headman exaggerated the traditional leader's power.

- Extension officer is present and responsive.
- Organisations and NGOs struggling – HBC (home-based care) and SEDA both not operating.
- There is a disagreement about the closeness of the police, I attribute this to the fact that the Headman works closely with the police.
- The Headman justified the small size of the ward councillor node by saying that they change every five years and so their influence is hampered.
- Note the presence of PG Bison, who provide non-monetary gifts to the headman in exchange for keeping an eye on fires.

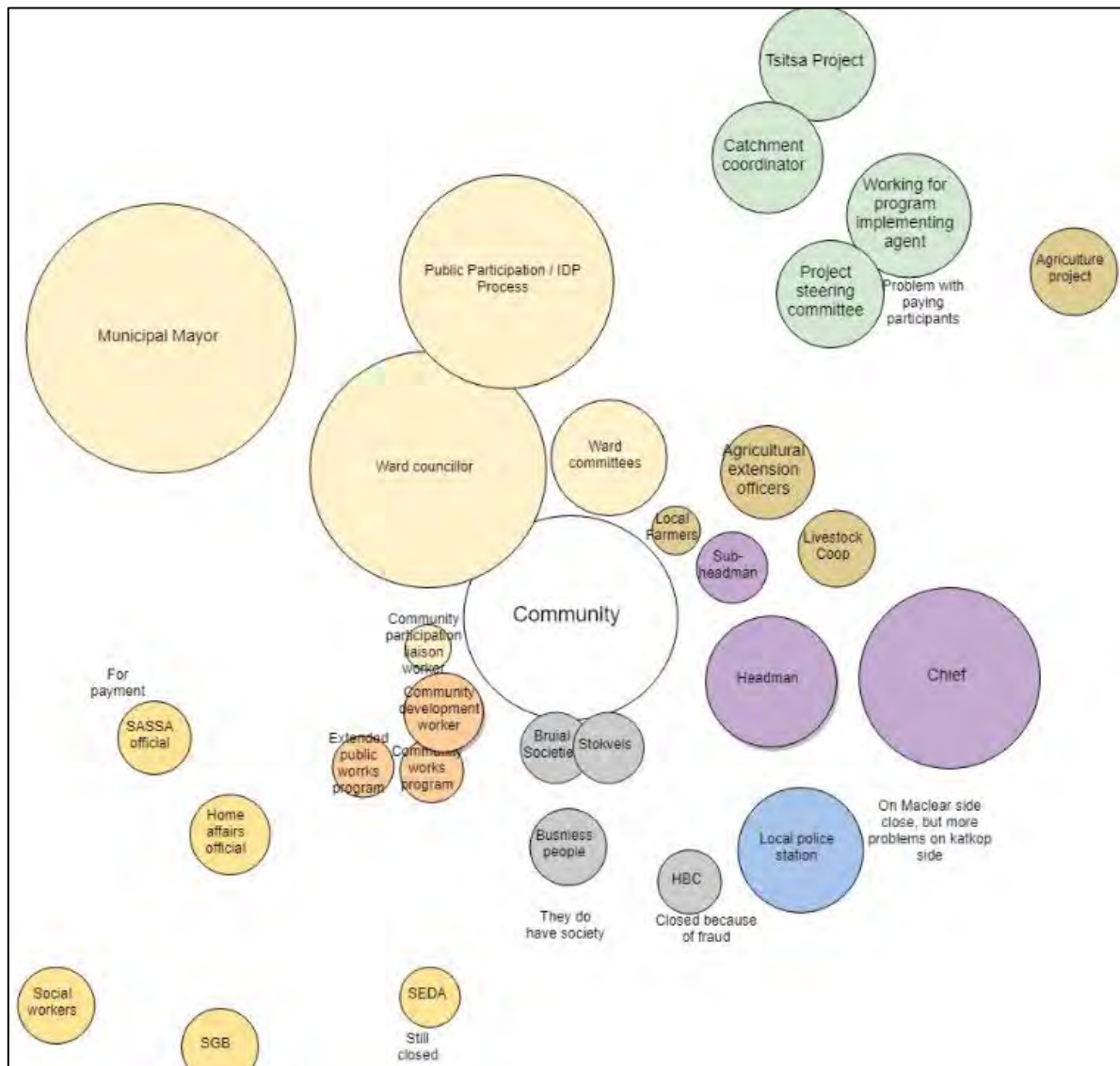


Figure D.17. Influence and accessibility map co-created with Key Informant #1.

Key Informant #1 is a community development worker (CDW) CDW from Tsitsa Project research node 1. Circles show actors; the circle's size indicates the actor's influence. The distance of the circle from the 'community' circle indicates the accessibility of the actor to the community.

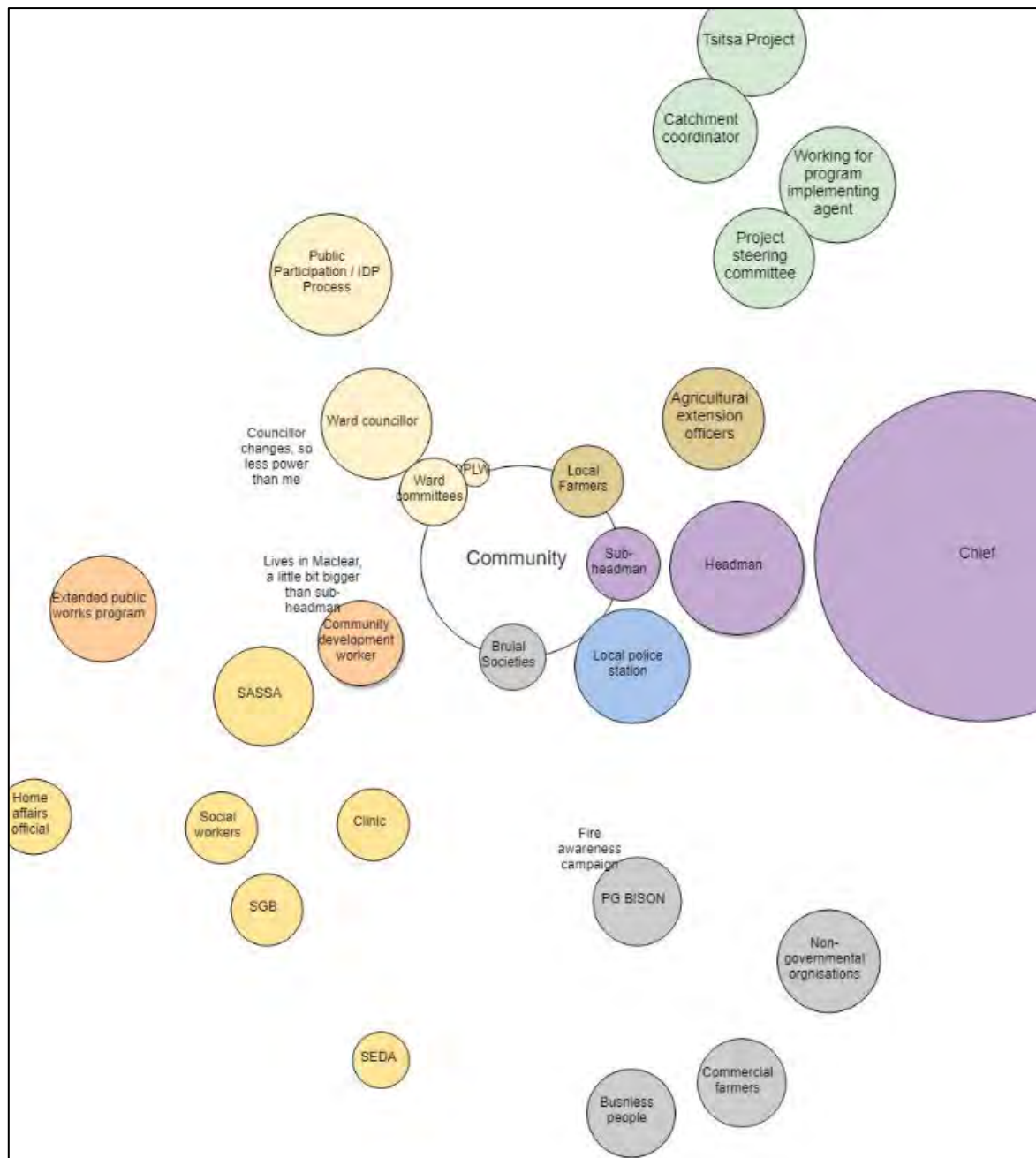


Figure D.18. Influence and accessibility map co-created with Interviewee #1.

Interviewee #1 is a headman from within the traditional leadership structure. Circles show actors; the circle's size indicates the actor's influence. The distance of the circle from the 'community' circle indicates the accessibility of the actor to the community.

Influence and accessibility maps for research node 2 are shown in Figure D.19 and Figure D.20.

- There is some conflict between the local people and the chief. The Chief is also absent, which is reflected in both diagrams.
- CDW and the headman both live in the same village and work closely together. This is reflected in the similarity of diagrams, the main difference being the position of the ward committee.

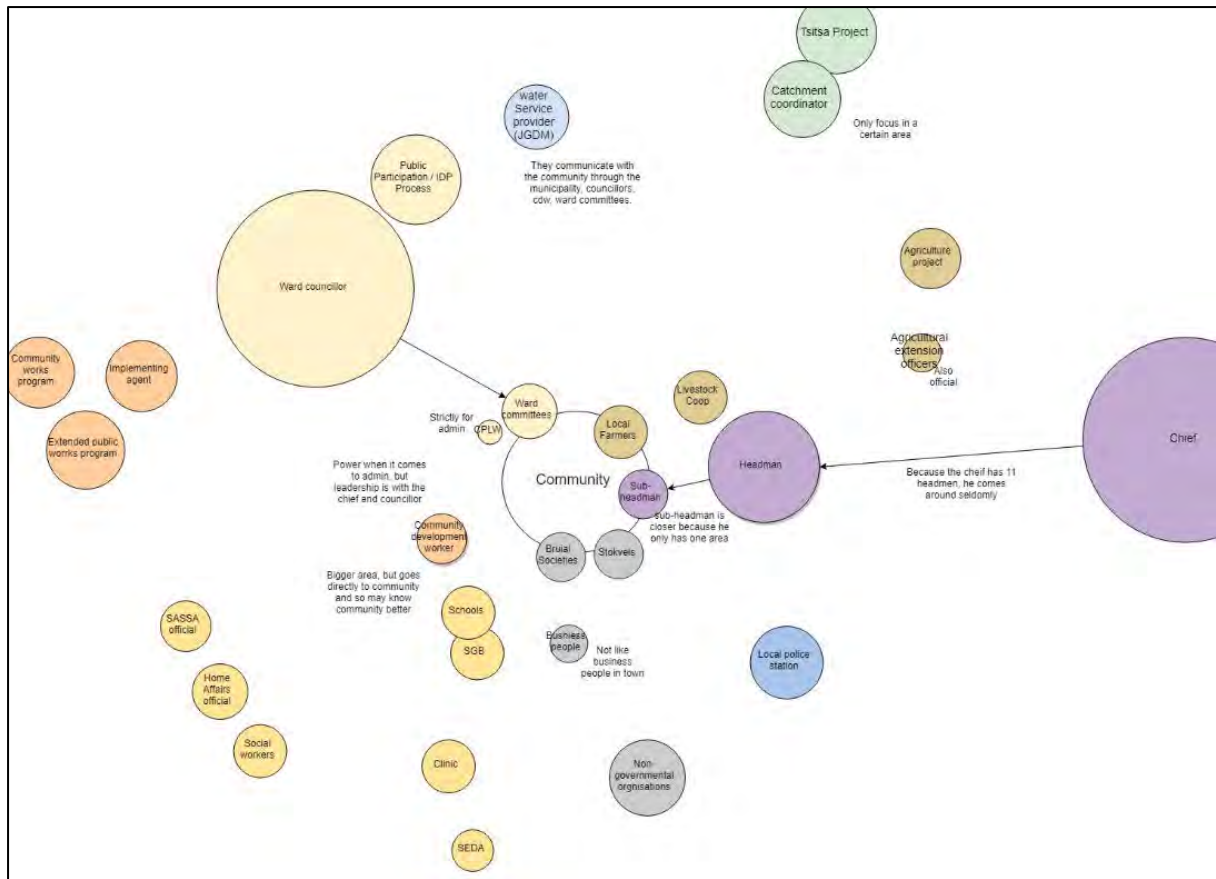


Figure D.19. Influence and accessibility map co-created with Key Informant #2.

Key Informant #2 is a community development worker (CDW) from research from Tsitsa Project research node 2. Circles show actors; the circle's size indicates the actor's influence. The distance of the circle from the 'community' circle indicates the accessibility of the actor to the community.

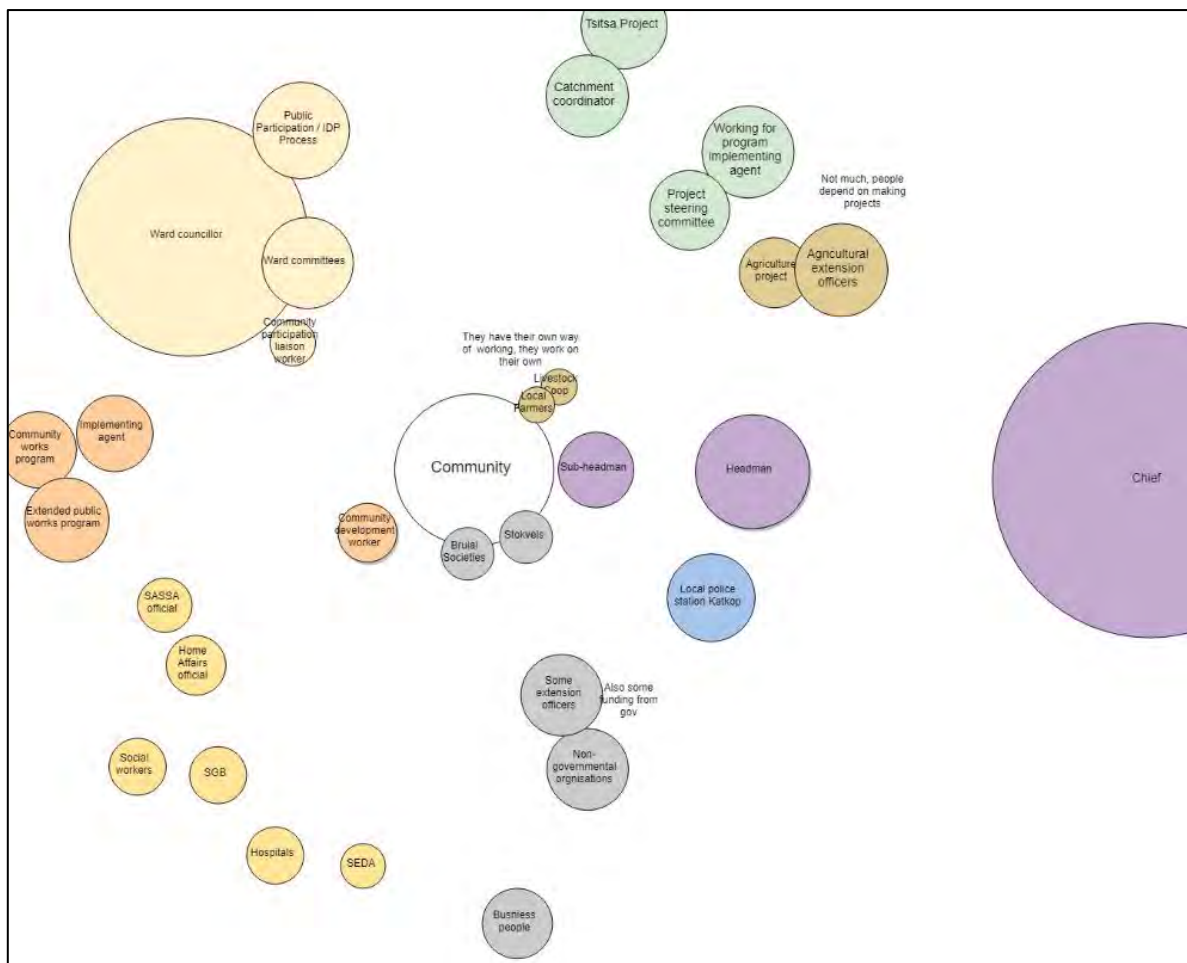


Figure D.20. Influence and accessibility map co-created with Interviewee #2.

Interviewee # 2 is a headman from Tsitsa Project research node 2. Circles show actors; the circle's size indicates the actor's influence. The distance of the circle from the 'community' circle indicates the accessibility of the actor to the community.

Influence and accessibility maps for research node 1 are shown in Figure D.21 and Figure D.22.

- Note the presence of the Mzimvubu Water Project in this node
- The municipal official has exaggerated the power of other municipal officials, and the headman has exaggerated the power of other traditional leaders.
- Both agree on the large power of the chief - a particularly influential character.
- The extension officer seems absent in this node, and the headman said he has to go straight to the department.
- Headman lives in the node, CDW is based in another village in ward.
- The headman is very interested in development, and this shows in how he brought all job creation entities closer (e.g., CWP, EPWP, WFW).
- The ward committee is this node's main source of information for the CDW. The CDW asserts 'that they know everything that happens in the village.'
- The Headman asserts that the ward councillor is not fulfilling their role and not communicating properly with the community.

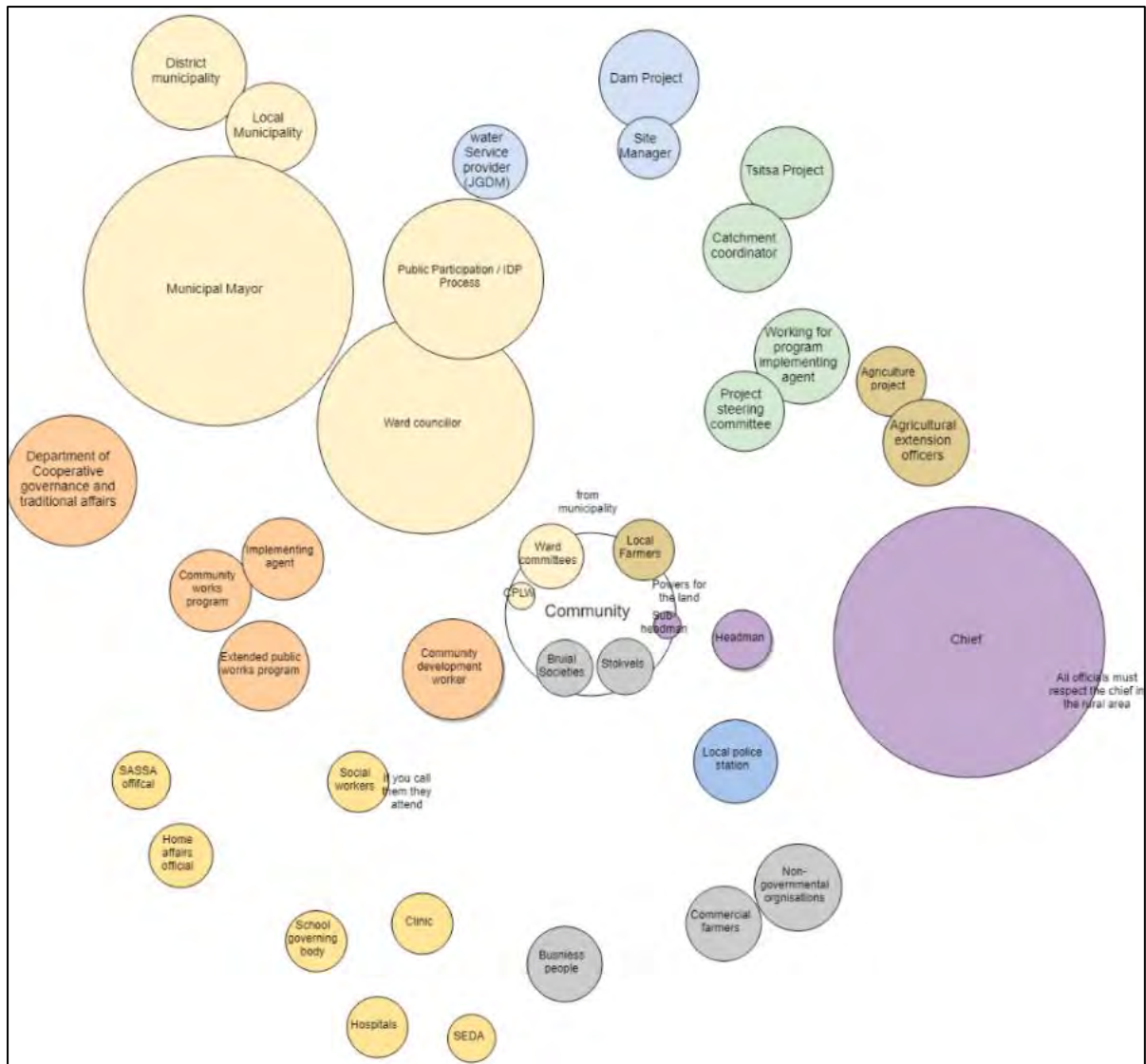


Figure D.21. Influence and accessibility map co-created with Key Informant #3.

Key Informant #3 is a community development worker (CDW) from research node 3. Circles show actors; the circle's size indicates the actor's influence. The distance of the circle from the 'community' circle indicates the accessibility of the actor to the community.

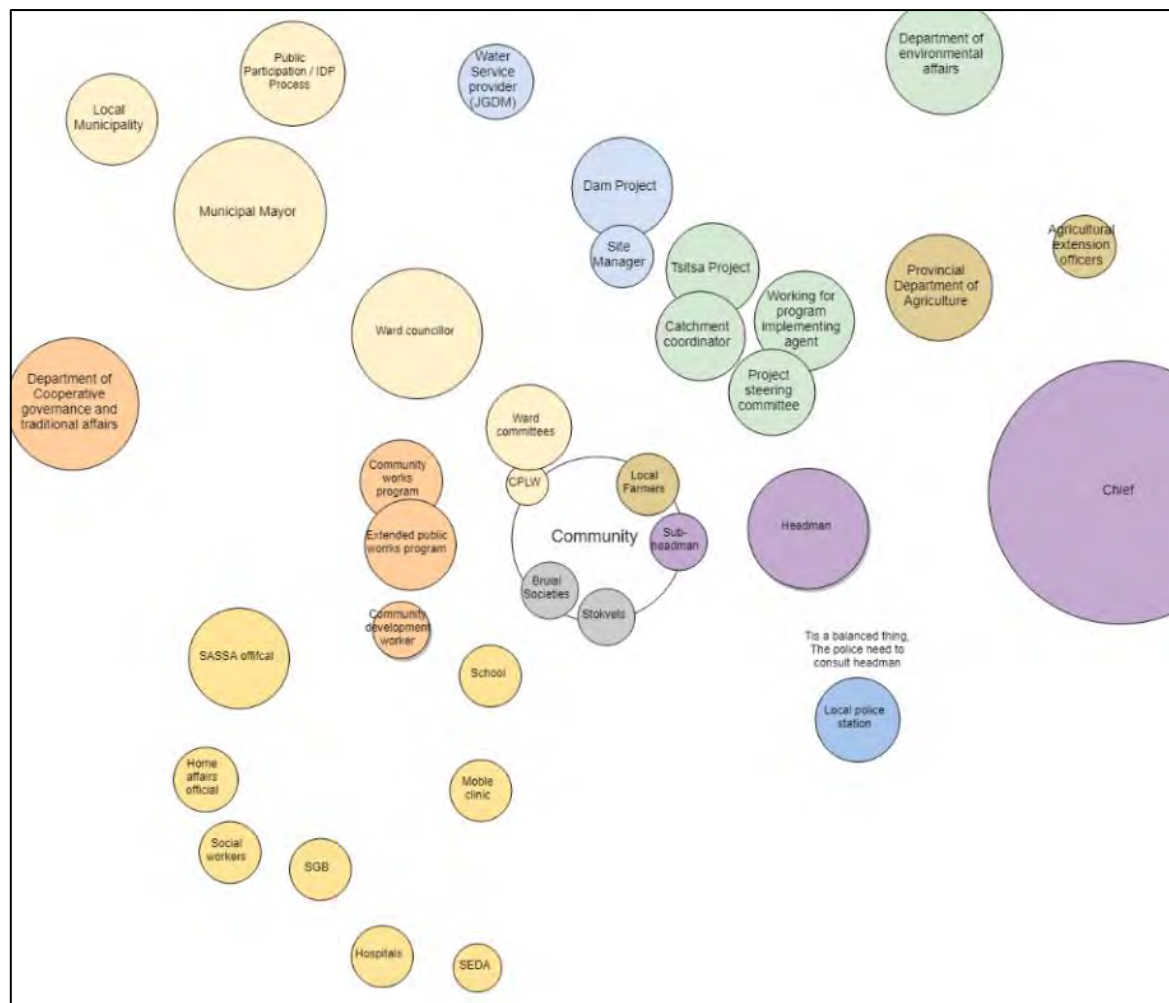


Figure D.22 Influence and accessibility map co-created with Interviewee #3.

Interviewee #3 is a headman from Tsitsa Project research node 3. Circles show actors; the circle's size indicates the actor's influence. The distance of the circle from the 'community' circle indicates the accessibility of the actor to the community.

Synthesis

These diagrams are useful in and of themselves, but they are also a tool for having a broader conversation. Through the elicitation, it became clear that there are many different types of power, and these were described in different ways but were common across the interviews.

- **ADMINISTRATIVE** – The power to deal with administrative issues. The CDWs assert that they have complete administrative power and can call the president if the matter calls for it.
- **DISCIPLINARY** - The headmen have disciplinary power in some respects, and they can deal with small issues in-house, but there is a boundary that they cannot cross. If the police want to enter the headman's area, they need to be in contact with him.
- **SOCIAL CAPITAL THROUGH TIME IN OFFICE** - Politicians (e.g., Ward councillors and Municipal mayors) lose power because they come and go. Officials (e.g., CDWs and Municipal Managers) and traditional leaders are permanent. This allows the building of social capital.
- **POLITICAL or SERVICE DELIVERY** – This form of power does influence what development happens. The ward councillor and IDP process influence the service provision in the ward. The traditional leaders also need to be consulted. Traditional leaders have no responsibility when it comes to service delivery.

Senior Traditional Leaders and the Ward Councillors were articulated as the main actors with power at this local level.

There are a few different interpretations of closeness and the discussions varied. Some of the interpretations can be explained as follows:

- Relationality – how does the person relate to the community, are they spoken about with high esteem?
- Distance – How close is the office of the person?
- Scale – how big is the person's work area? A big work area means that the person is further removed. The headman in charge of five villages is further than the sub-headman in charge of one village. Small work scales allow you to be close to the community.
- Physical presence / Interaction frequency – how often does the person interact with the community?

Community Development Workers have a big area, so they are removed; however, their job dictates that they visit individuals' houses, which means they are close to the community than many other officials. The headman has a smaller area but uses the sub-headman to communicate.

D.7 Learning Words result sample (Village Story)

Introduction

As part of the Tsitsa Project's effort to improve participatory governance capabilities within the Tsitsa River Catchment (TsRC), the Governance Community of Practice conducted a series of Learning Words Workshops to build common vocabulary among local governance actors (Palmer et al., 2022). Mapping local resource use to create village-level maps occurred in the context of focus groups conducted during a Learning Words Workshop, which formed part of the Learning Words expansion into rural villages. Refer to Chapter Five for an explanation of how the mapping exercise was embedded within the Learning Words workshop.

My involvement in the learning words process and the outcomes thereof also informed my understanding of the context. This appendix presents a sample of the Learning Words workshop outcomes.

Method

The Learning Words process is a collaborative word cloud build process that supports equitable participation and building a shared understanding of terminology required to plan and act together (Palmer et al., 2022). Word clouds are clusters of words commonly used as a textual analysis method for identifying important words within a body of text (Flinders & Dommett, 2013; Cosens & Gunderson, 2018). In the Learning Words workshops, the word cloud generation process was used to explore the meaning of specific words within the context – such as 'water' or 'land.'

Learning Words workshops were facilitated by GovCoP researchers and were designed to encourage open knowledge exchange and create spaces for overcoming epistemic injustices (Fricker, 2007), by which some people are excluded from participatory processes. One example of a common epistemic injustice is the use of dominant languages, which exclude people who speak different languages. In early Learning Words workshops, the primary language of facilitation was English, supported by translation into isiXhosa. Later, the workshops were led in isiXhosa, resulting in notably more vigorous participation.

The workshop was opened with a song and prayer, followed by a welcome from the most senior member of the community present. Individual introductions followed. In small workshops (less than 20 participants), we were able to introduce ourselves and state our affiliations. In larger workshops (up to 50 participants), participant introductions were restricted to names and often made more engaging through a game or ice-breaker. In one of the more commonly used ice-breakers, a facilitator would request that participants say their names and do an action. The whole group would then repeat the name and action. The workshop's purpose was then explained, and consent was requested for photographs and recordings.

The workshop was then divided into groups of between five and ten participants, each with a facilitator. Facilitators wrote keywords, amanzi (water) or umhlaba (land), in the middle of a large sheet of paper. Each participant was then given sticky notes and ten minutes to write a range of other words or ideas (one per sticky note) they associated with the given word. The notes were then mixed, and individuals were asked to select notes randomly to add to the 'word cloud.' Word clouds are clusters of words commonly used as a textual analysis method for identifying important words within a body of text (Flinders & Dommett, 2013; Cosens & Gunderson, 2018). In the Learning Words workshops, we co-created word clouds to explore the meaning of specific words within the context.

The placement of words was accompanied by facilitated discussion about the meaning of the words. When each group had a rich vocabulary around the keyword, they moved on to identify and talk about

links between words. Two group members then presented the group's word cloud to the rest of the workshop participants.

The findings presented below are transcribed presentations that have been translated from isiXhosa to English.

Findings

The following four paragraphs come from community groups living in Ntatyani village.

Group A (water): We will be talking about water, where do we get water? We get water from tanks, springs and windmill, and rivers. What do we do with water? We plant with water, we swim in water we make traditional beer with the same water, clean and cook, water plants, wash laundry, make bricks, build house, drinking, send livestock to the dip, make medicine with water, wash our cars, brush our teeth, mix cool drinks. Problems occur because of water is creates dongas, floods can destroy our homes; it's destroyed our bridge and destroys the roads as well. Solutions we can buy tanks so when its rain we have water.

Group B (land): Land is life we live in it. There are three different soils, we have sand, and we have clay, and we are also the soil that we plant in. Where does this land we talk about come from, it comes from the rocks or stones the rocks were broken into small pieces which lead to creating of soil, which will be clay and sand. The soil has a problem of breaking when there are heavy rains, which is soil erosion. What we do in the soil we plant, and we build foundations for our house we will build, we plant with tractors, with our hands and with cows. We build houses in the soil and grass growing from the soil, the same grass that we built house with. We also plant vegetables and fruits we also have livestock in this land, cows, sheep, chickens and goats and horses and even wild animals also stay in this land. We as people get an expiring date on this land and we get buried in the same land.

Group C (land): What do we do in the land, we build houses, we are given plots to have veld, and make bricks we have sand that we get from Tsitsa River, and we build our schools and churches on this land. On the other hand, we have fields where we plant crops, wild fruits, all the food we eat comes of the soils. We have animals that eat the food from the soil; we have grass and water from the river. We have trees, mountains, dongas and rivers.

Group D (water): My name is tata uLehana; in our group we had a discussion around water. Water is life in everything humans, animals and even insects. We get water from the rain, we get water that comes down as rain, and we get water as hailstorm and as snow. The wild animal gets water from springs and rivers and wetlands. We as human get it from spring and rivers that comes from the rain. We go to the dams to do our laundry, to swim and fish. How we can save water, we can save water by making springs to store water once it rains, and to build dams and have pipe that led to the taps in people's houses and buy tanks. We used water to water our plants, cook food, take a bath. The livestock drink the water, and we that they to the dip. We make traditional beer, and cool drinks with water, we need to save water as much as we can because it is important to all living things on this earth.

The following three paragraphs come from community groups living in the Upper Sinxako area.

Group 1 (Land): In this land that we live in what we think is that water, planting, trees, dongas, forest, grass, bricks for building, cows that eat the grass, having land makes you rich, water, rivers. Houses, flowers, medicine.

Group 2 (land): The air that we breathe comes from the ground. Trees are the ones making us the oxygen that we breathe. Because we were born from the soil, we will go back to it that is why we need to protect it at all times. The soil helps us by feeding us because we can plant vegetables in the soil and other fruits that keep us healthy, so we live longer. We have villages and towns that are built in this soil, and we all walk on the soil that is why we need to be protected, and not have dongas. The soil is life it has medicine we get from doctors to help us and that is why we must make sure that there is no soil erosion.

Group 3 (water): We were given water; we started cooking with water, take a bath and laundry. Water is helpful in our health in the following ways: people get sick when they drink dirty. Churches water for baptism in river or inside the church. Water makes medicine; we build our houses with water. We it rains a lot the water open dongas and soil erosion, animals that drink at the river depend on the water that get from it fill there is no water the animals could die. The wetlands are there because of water. We also plant with water like vegetables and fruits, the livestock also depend on water. The fish in the water depend on water to survive. The forest depends on water so they can stay looking green and beautiful.

D.8 Focus group outcomes (Village Story)

Introduction

I conducted three focus groups to collect data for the Village Story presented in Chapter Five. These were conducted in three villages, including Upper Sinxako, Ntatyani, and Sigoga.

The link shows the connection. The green circles in some maps show a usefulness ranking – the higher the number of green circles, the more useful the actors are to the community. The Village-level maps created show three colour circles.

- White circles contain general notes
- Blue circles show actors – who?
- Yellow circles show non-human system elements – what?

Findings

The findings of the CSES mapping process are presented in this appendix. A synthesis of the findings is presented in Chapter Five. The findings include the following:

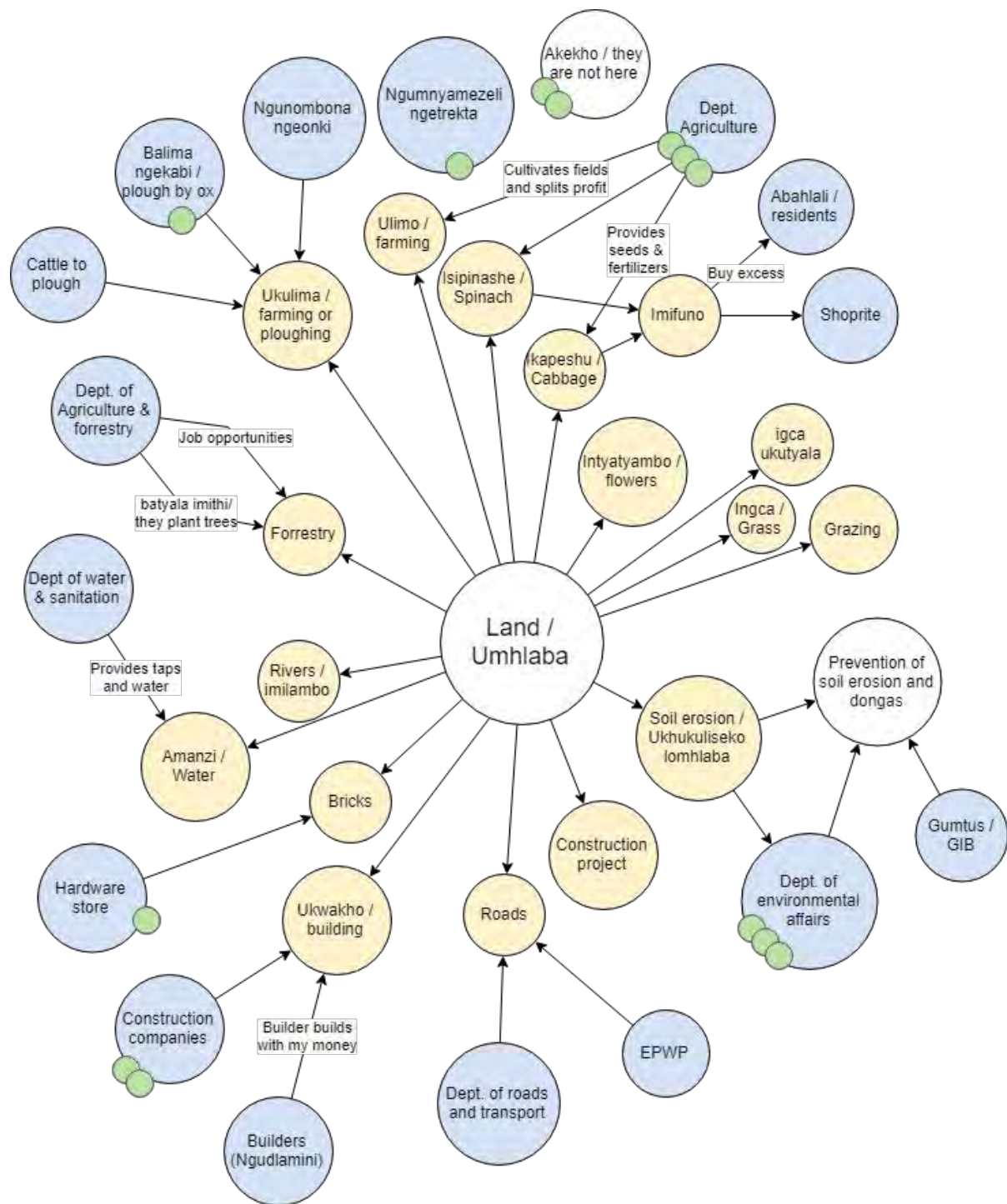
- Village-level maps produced by the groups, which I reproduced in draw.io.
- The presentations were done in English and isiXhosa, transcribed and translated by Ntombekhaya Mti. The English translations are included here. I added some notes in green to help with reading the transcriptions.
- The feedback and reflections that the focus group participants gave.

The outcomes for the three groups from Upper Sinxako (30 October 2019)

Group 1 (Upper Sinxako): Village-level map of institutions associated with land.

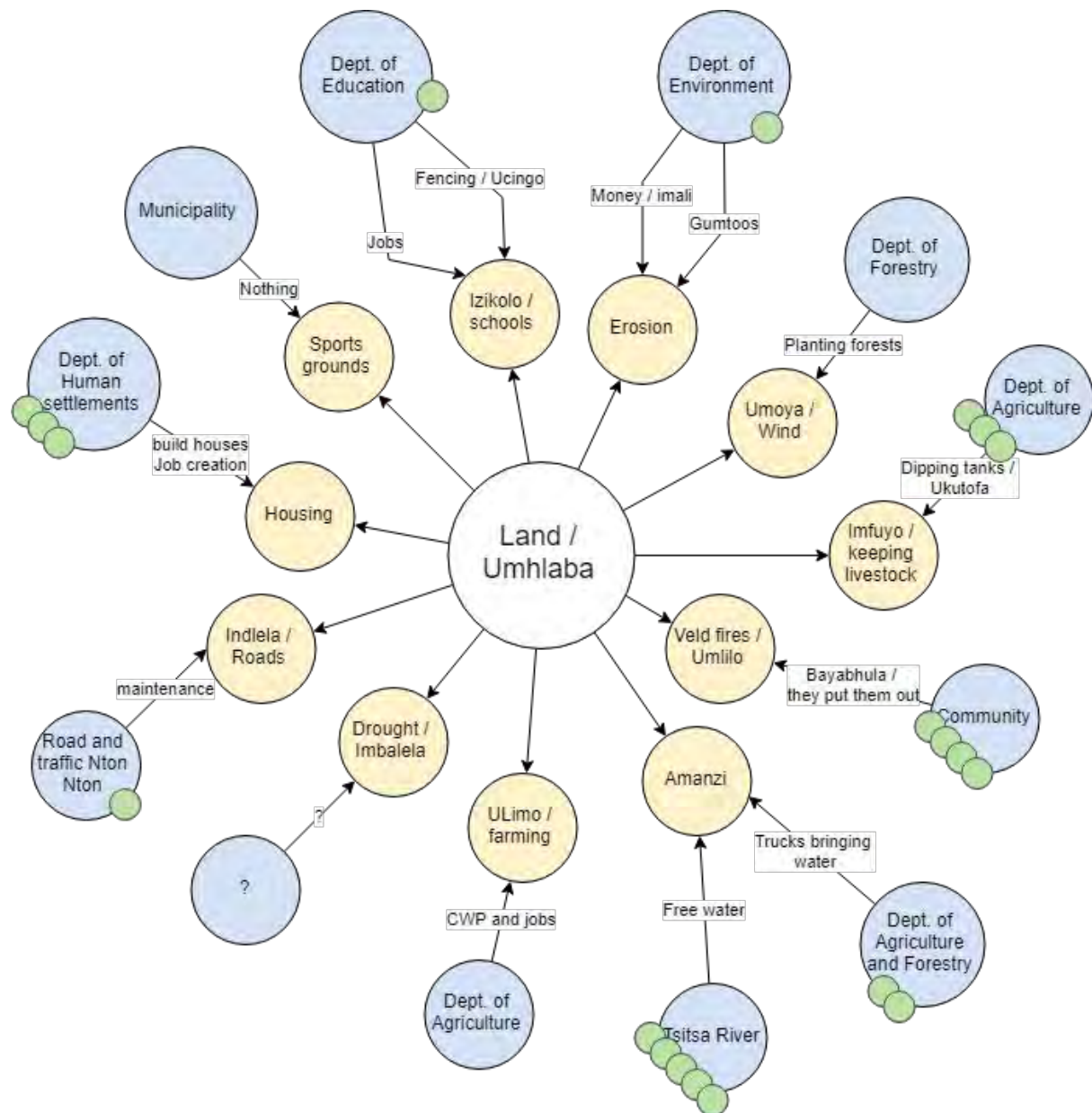
We were asked to write about the WHAT? HOW? And WHO? We wrote about the Department of Agriculture and how it has helped us with giving us the seeds that we are planting in our gardens. We also spoke about who plants for us in our gardens, we counted Mr. Mnyamezeli and the Mr. Diliza and Mr. Nombona (representative of the DRDAR). We also mentioned that some plough with donkeys and some with tractors. We then moved on to the point of soil erosion and how it happens, where the Department of Environmental Affairs assisted us with Gamtoos; who is responsible for closing up the donges near the river. EPWP who helps with constructing the road. We also spoke about the people who help us in building our homes; we have Mthobeli, and Mr. Dlamini, Kamva and Mziwoxoli (local construction contractors). The Department of Agriculture also has Forestry in which it takes people from the community and employees them so that can get food. The Department of Water and Sanitation is assists us by giving our Municipality money to build a dam to pump water from the river to our homes so we can be able to water our plants. Rhodes University creates jobs with the projects they bring to us. A lady added the Department of Agriculture also help with fertilizers for the soil to help with planting, and the department plants fields in which half goes to the field owner and other half to the government.





Group 2 (Upper Sinxako): Village-level map of institutions associated with land.

The yellow faded colour is our WHAT. We started with soil erosion the Department of Environmental Affairs who helped us with Gamtoos so close all the places that have the potential to have dongas and on top of that people were employed. We also have school from Department of Education who provide our children with education and has created job creation from the building of the poor people in the community where employed, and their people employed at the schools continuously with feeding scheme, then we have sports grounds which we were supposed to be assisted by the Municipality, but nothing has happened. With our homes we are helped by Department of Human Settlement because they have built us RDP and a creation from jobs, and we have scored this department higher because they are doing a good job. The department of Road and Traffic they maintain the roads with the people are employed on the road and at times they would grade the roads so we are able to walk on it but we have not score them high because we are not satisfied with their work. Drought is also something we spoke about, but we did not see anyone helping there. Also, Department of Agriculture who helps us with the planting, there a people employed by CWP work in the selected gardens in our communities to plant vegetables to sell to the community which is helpful because residents don't have to go to town and buy vegetables and save the return money for something else. Department of Forestry help with water they have trucks with bring us water and we pay them. Then we have the Tsitsa River, we scored it the highest because we get water there for free, we don't ask anyone. Field fires, when the fields are on fire the help is from the people of the community and they are very helpful we have no heard that any village has burnt down because of this. Livestock we get them from Department of Agriculture with dipping tanks and immunization. The wind is very destructive so we need trees pacify the strong winds the Department of forestry is supposed to help, in fact if we had trees, we would not be worried much about the soil erosion that is happening, the department does plant trees at the Ntywneka area, and we have decided we will not score them because we don't have trees in our community.



Group 3 (Upper Sinxako): Village-level map of institutions associated with water.

Here we are speaking about water and the importance of water, the rain is our main focus and we spoke about is how the rain is helpful to us, and we said for our health we have elderly people who used water to take their medication, but health we came to the conclusion that it is not helpful much because we do not have clinics nearby to us, to assist this elderly people who some of them can do walk long distance and can to fetch their medication, if they will have to fetch it will be transported and the transport is no less than R500 in which are still dependent on the same money for food and other staff. The importance for water to the people who build houses, they cannot continue with the building process if they do not have water. Livestock that is affected by the drought and the government has not intervened to help with that. What we score the most is the Department of Forestry because when the rain is scarce the department together with Eskom helps with electricity, in building most of the jobs here help with vegetation because the trees here grow because there is water. The traditional ceremonies that are performed need water because they used water a lot to prepare for them. Livestock in order for it to be healthy it needs water which come from the river, so that the farmers can sell to each other privately or commercial farming. The CWP that are employed in the gardens are helpful, but the vegetables that they plant they do not sell to the community and in my group no-one has said that any of the CWP employees has ever said here is what we have planted in the garden, instead they keep the vegetables for themselves. Houses are built by the government and Municipality use a lot of water and they use are not from the spring but from the Tsitsa river, and fishing there is a fisherman here who will attest you can not fish in the river is there is no water.



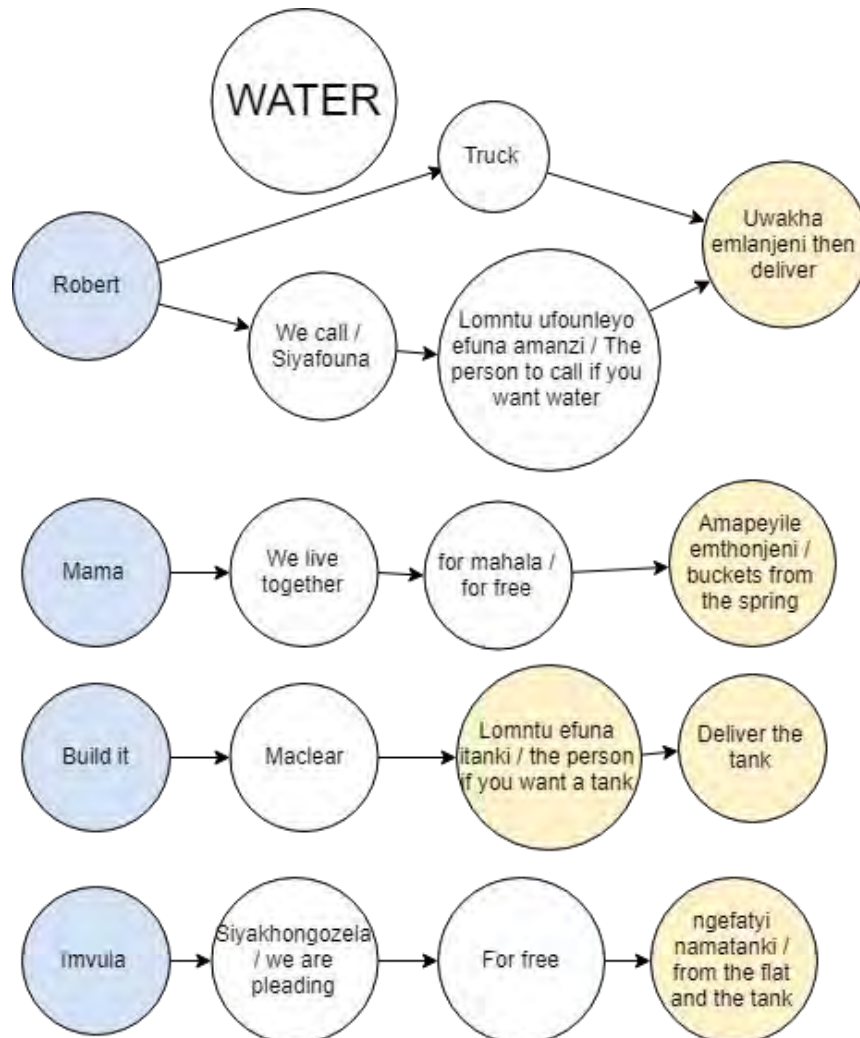
Feedback and reflections from the Upper Sinxako focus groups.

Feedback comment	Translation / explanation
Sifunde izinto eziza kusinceda, zincede nabantwana bethu	We learnt things that are helpful to us, and our children
Sifunde indlela esingaba negalelo ngayo ekwenzeni indawo yethu ibe ngcono	We learnt how we can be helpful in making our environment healthier
Ukusebenzisana kakuhle ngokweqela	To work well with a team
Sifunde ukuba nombulelo ngezinto ezintle ezenziwayo kwilali yethu nokufaka isandla apho sinako	We learnt to be grateful for the beautiful things in this location and to lead a hand where we can here in Sinxako
Ndonwabile	I am happy
Happy, motivated and well tired	
Ichitha ixesha ezintweni ivula ingqondo	I spent time on things that opened my mind
Ungacingi yonke into because I concentrated	I thought of everything because I concentrated
Ndifunde ngokubaluleka kwamanzi	I learnt the importance of water
Ukhukuliseko lomhlaba	Soil erosion
Ukubaluleka kwemithi emhlabeni ie. Ikhusela inkanyamba	It is important to have trees on the land to protect from strong winds
Ndive ndinemincili ngoba ndifumene ulwazi ngendalo	I am excited because I got knowledge about nature
Ndivile ngoba ndifundise ukuba kufanele ndenze ntoni ngoku ndivule ingqondo	It taught me what I need to do. My mind is open.
Ndizive ndonwabile	I feel happy
Ndiziva makuhle ndonwabile	I feel good and happy
Kuba ndifunde ukuba amanzi nomhlaba abalulekile apha ebomini bethu	I learnt water and land are important in my life
Ndonwabile	I am happy
Ndifunde ukhusela umhlaba	I learnt about soil erosion
I learnt that there are many departments that uplift within the community. I feel much more at ease given the knowledge and contributing my own. I feel that much more opportunities should be available.	
Sifumene uncedo ivula inqondo ngokubaluleka komhlaba namanzi wenkuni sibase ngazo sipheke ngazo	We got it open my mind on the importance of land and water and wood, we cook with them
I have learnt a lot about land and water without there is no life. Land without water we cannot have vegs even farming livestock. It is important to keep our land and water safe.	
I have learnt today the importance of our land and how to take care of it	
Ndifundile ndathola ulwazi. Ndavuleke amehlo	I learnt and got some knowledge; my eyes were opened.
Sincedile ke le nto ngoku sivula ingqondo le nto ka enviromente ntalbasoloko belo ndolozelelizwe ngendlela nganye kube	We were helped and it opened up own minds to the environmental

The outcomes for the four groups from Ntatyani (18 & 19 November 2019)

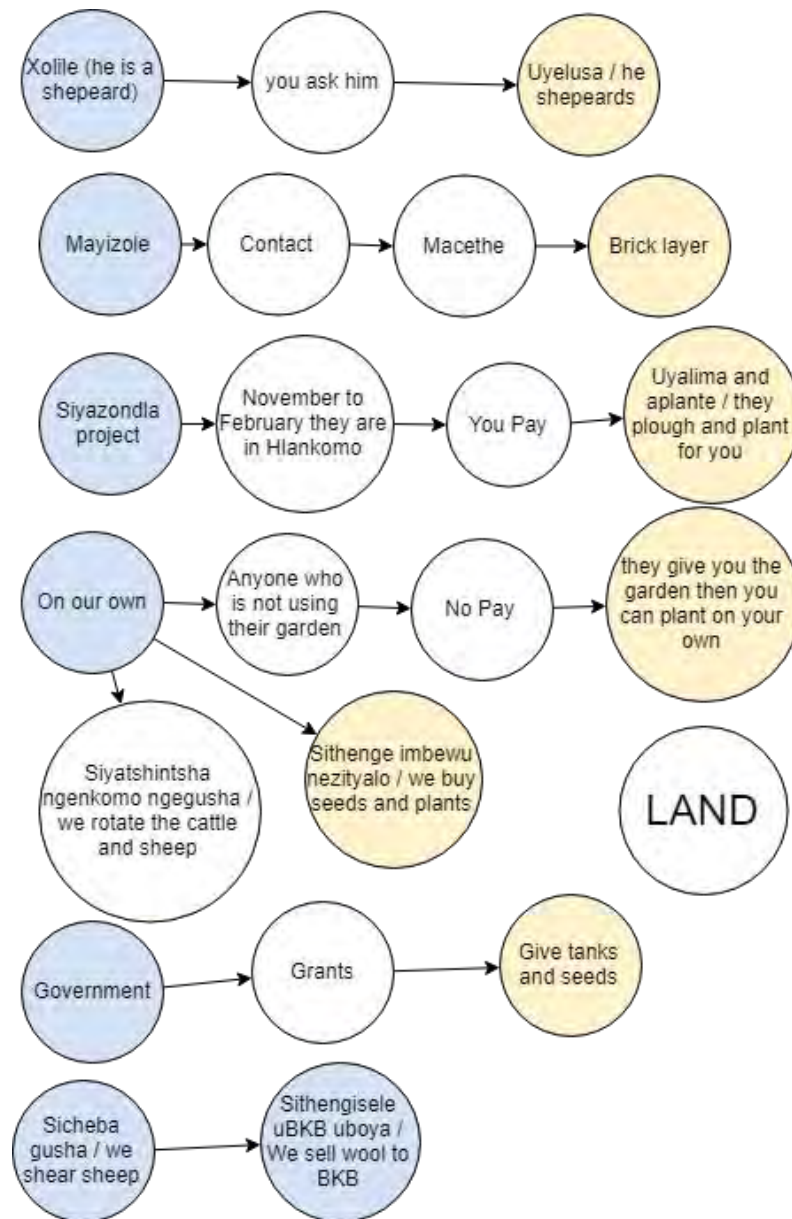
Group 1 (Ntatyani): Village-level map of institutions associated with water.

We will be talking about water and land, but we will start with water. Someone who assists us with water is Robert when we want to meet Robert we call him and we pay for it. Robert fetches water in the river and delivers to us. Other person who helps us with water is our mother but we do not need to pay her she fetches water from the river with a bucket. Built it company also helps having tanks for us to purchase and we pay him on delivery. We also get water from the rainfall for free we just have to store in buckets and tanks that rainfall.

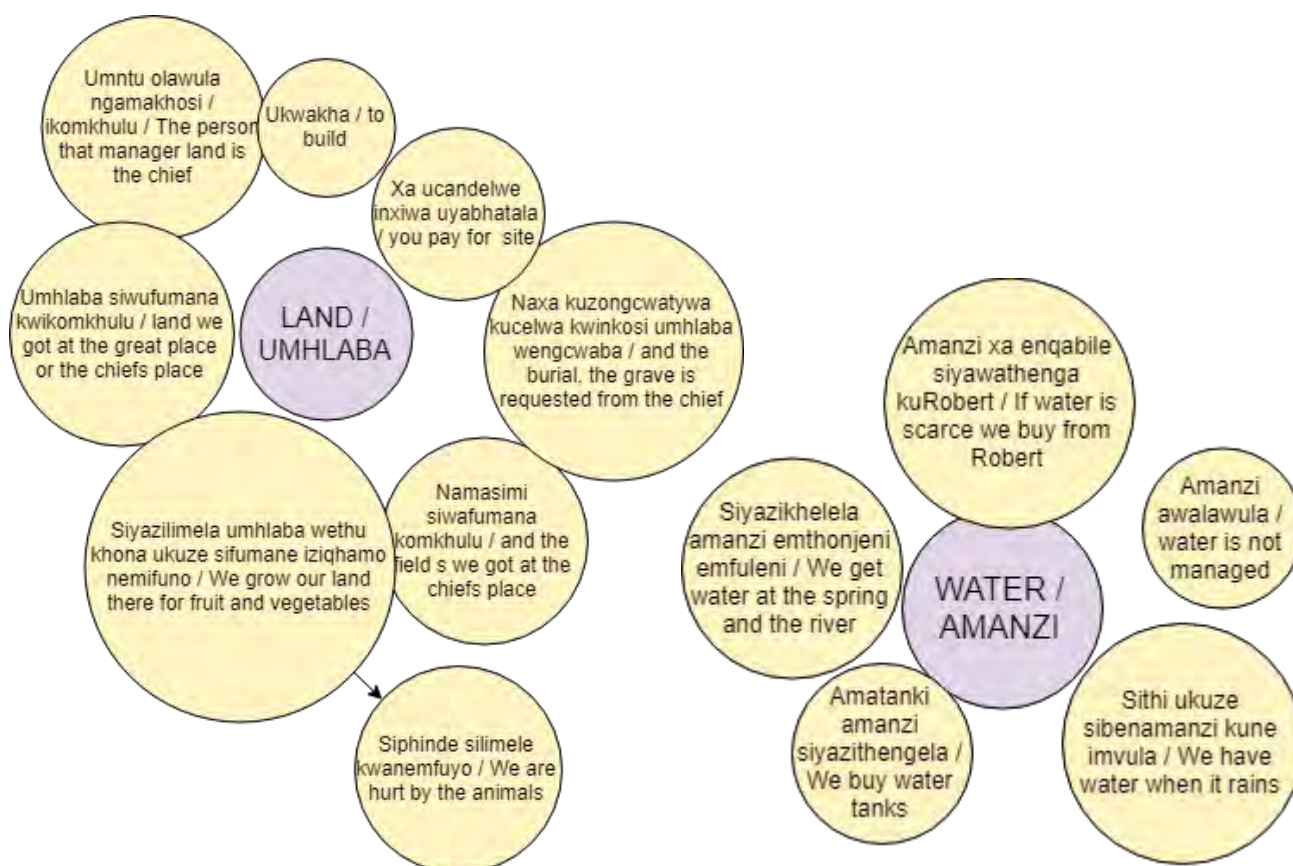


Group 1 (Ntatyani): Village-level map of institutions associated with land.

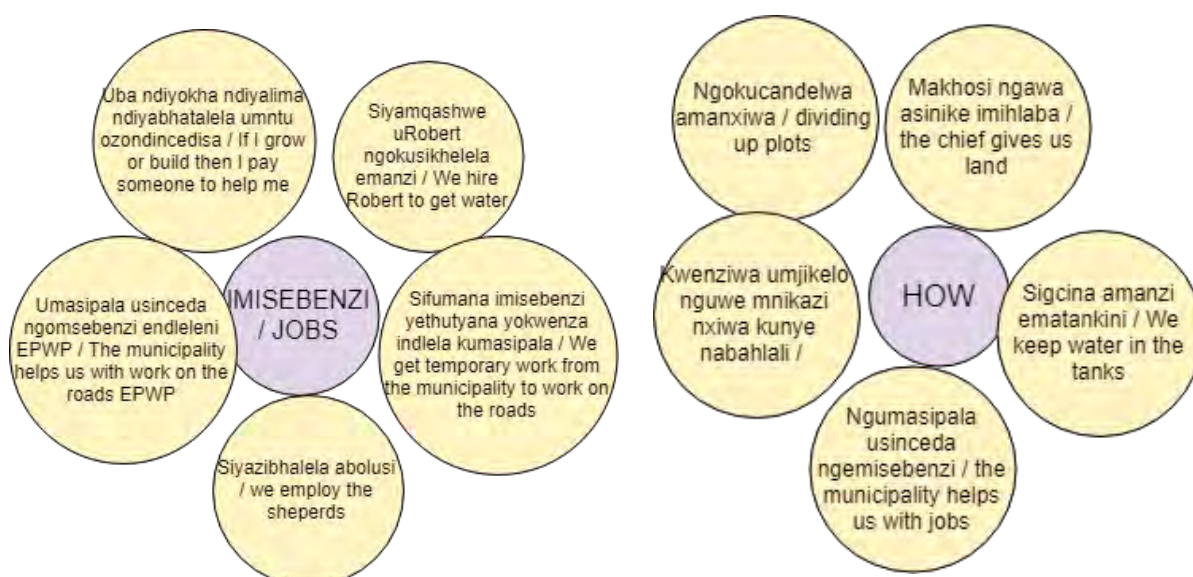
On land someone who helps us is Xolile he has been to be herd livestock, and also tata Makuzole he helps buti Macete with brick laying. The Siyazondla project from Qwaleni come to Hlakomo from December to February and is payed to come and plough the fields. Government helps us with the grant money where we buy tanks with the money, we also cut the sheep fear and sell it to BKB, and so we can buy seeds to plant.



Group 2 (Ntatyani): Village-level map of institutions associated with land and water.



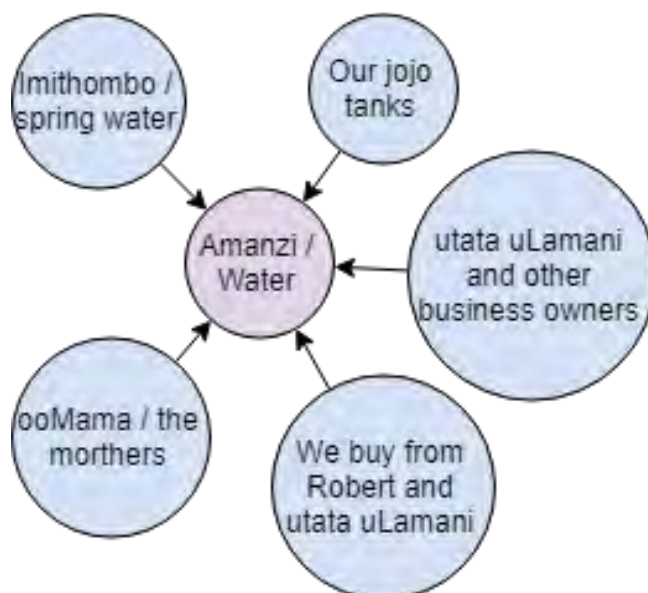
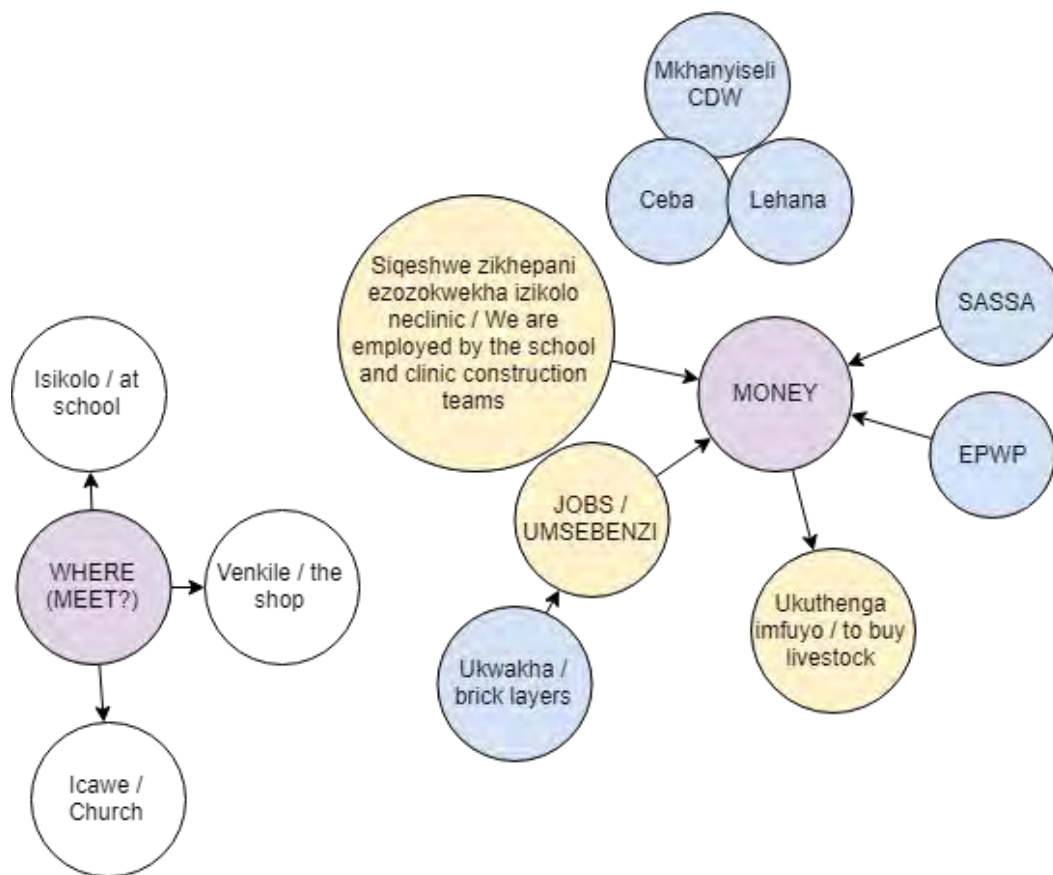
On the land, we get the land from the King he is the one who gives us the land we also get plot so we can build on. We use the land to bury our loved one; we also plough on the land. Robert helps us using his tractor to deliver water to us and we have to pay him, and we get water from the rainfall. We get temporary employee by the municipality like EPWP to help with the road. We pay for our herdsmen when we need them. We get water form nature; we also buy tanks to we can store the water from the rain in our homes. We do not receive any money from municipality to buy these tanks, and we fetch our own water from the river.



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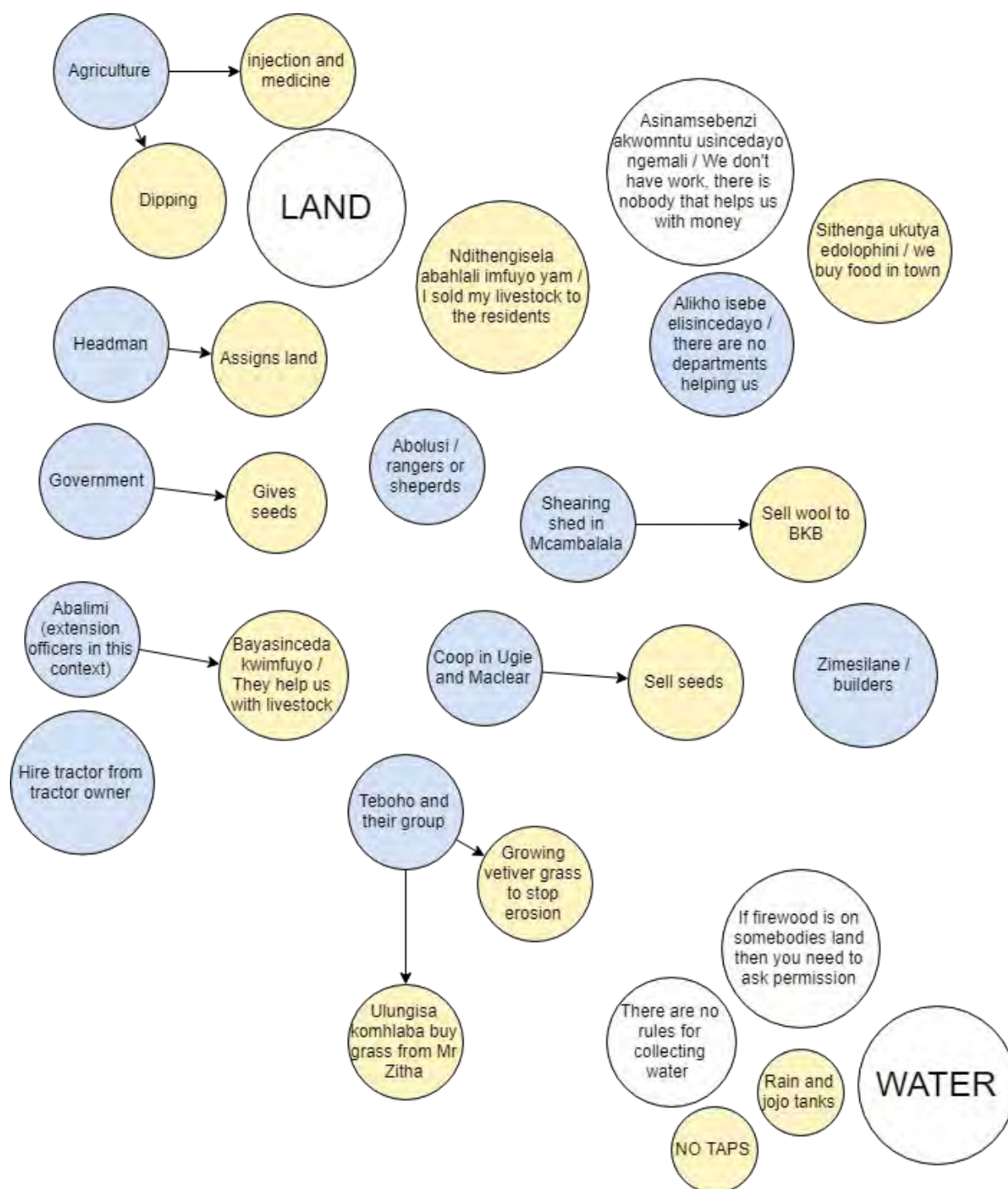
graph TD
    A((Siyahlala, siyakha, siyalima,  
sikha amanzi emhlabeni  
We live, we build, we grow, we  
draw water from the ground))
    B((UMHLABA /  
LAND))
    C((Unkosi usisikela  
manxiwa / The chief  
divides the land))
    D((Permits to do  
business))
    E((Masipala /  
municipality))
    F((Indlela /  
Roads))
    G((Amahlati /  
forrest))
    H((Abahlali /  
Residents))
    I((utata  
uLamani))
    J((Nofemele))
    K((ukulima / to  
farm))
    L((Dipping))
    M((Agriculture))
    N((Nofemele))
    O((Inkomo))
    P((Ukulima  
emakhayeni /  
farming in the  
home))

    C --> D
    E --> F
    F --> G
    G --> H
    B --> I
    I --> J
    J --> K
    K --> L
    L --> M
    M --> N
    N --> O
    P --> N
    P --> O
  
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Group 4 (Ntatyani): Village-level map of institutions associated with water.

We are helped by tata uNkosi with the land, we can build and plough. We get the dip from Agriculture and the seed to plant. We also sell livestock to community members like bhuti Thobile. There have been talks about soil erosion; there is the grass that closes the dongas you have to speak to Mr. Zitha and Tebogo. No Department comes here at Ntatyani to provide jobs for us only the road. We get water from nature, springs and rivers we do not have taps we buy jojo tanks. When we plough we have to hire a tractor. We also have people getting employed by building houses and herdsmen who employed by community members to herd their livestock. We also the Department of Agriculture bringing the Co-op to plant for people, the money to pay we get it from SASSA. We used that money to hire tractor for bricks and buy taps.



Feedback and reflections with facilitation team from the Ntatyani focus groups.

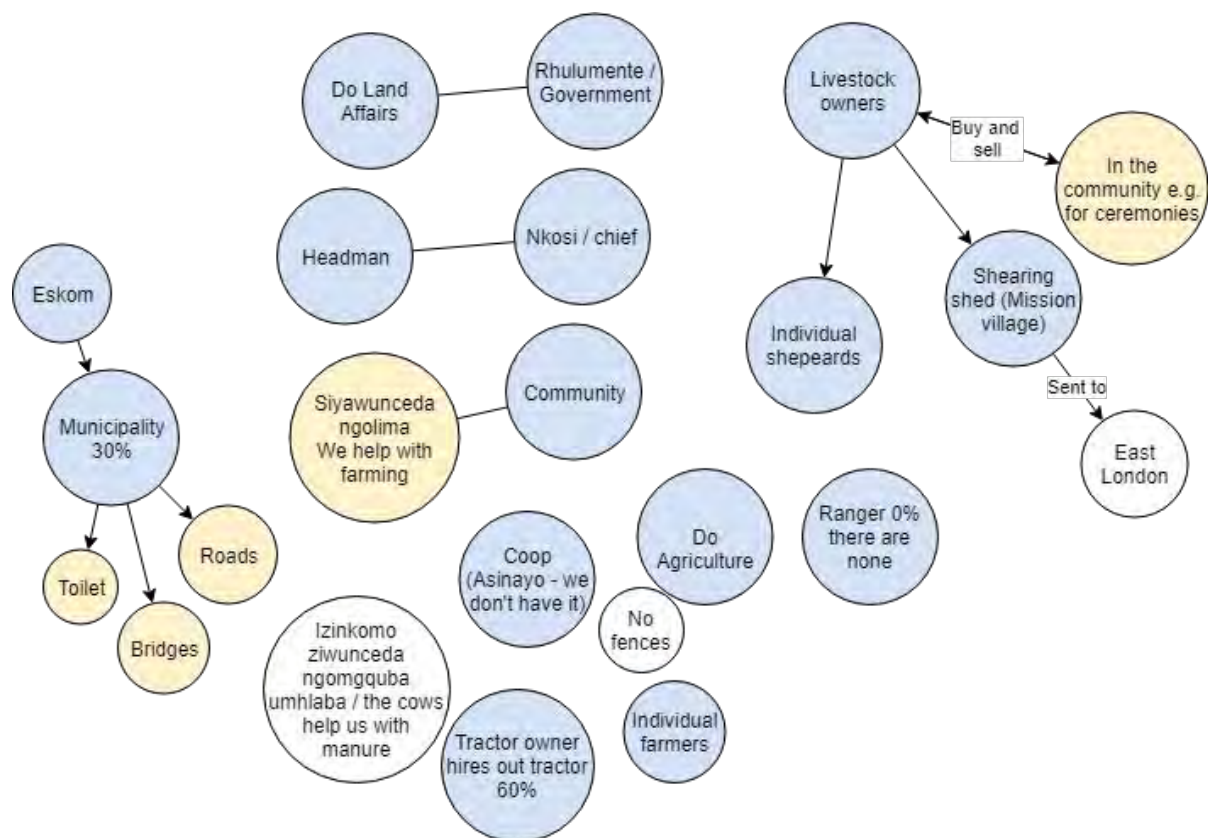
- Community all arrived nicely on time and were all eager to participate in the workshop. It really was a great group of people. Mzi commented that these people always attend meetings and are eager for information.
- The group was mostly older men, better representation on day 2.
- Good questions in all of the sessions. And a great energy.
- The numbers dropped considerably on day 2 because some of the people were being paid. This did in the end work out, because the smaller group was engaged with the mapping exercise. A few young guys really getting very involved.
- Most of the time it worked for the CLOs to be scribes and then listen to instructions from the group. Having pencils is really help as people are more likely to add their inputs if they have a pencil.
- One disgruntled man complained that they 'just need proper roads, because everything comes by road' – linked to accessibility theme.

Other Interesting points emerging from the Ntatyani focus groups.

- You can hire somebody to do the planting for you. In Tsitsana you can hire someone with a tractor – will cost about R500 for a field. In Ntatyani there is a project that does it, so it seems to be a bit cheaper @ R350.
- Normally wood and forests operate on a use it or lose it basis. Wood is open to anyone. If it is on somebody's land, then you can just ask them for it. The school has a forest on their land that is only available to them to use.
- Water's path (according to the community):
- Spring > Wetland > donga > River (or a culvert that just leads straight to a donga)
- Always surprised by government liberalism and community conservatism.

Group 2 (Sigoga): Village-level map of institutions associated with land.

The topic is who is helping the land. The government helps us through the Municipality and underneath the government a Chiefs and Kings which we have given 25% in scoring because the tire road is finished on the roads. The Chiefs is 5% wherever you in places with Chiefs you will always see projects. The community, when we need to close, we are the ones taking the stones to close even the bridge it was done by the members of the community Sbali and Thozaba to their cement and close because of the soil erosion and water. The Co-operative that was supposed to be established we still don't have it because we do not have a fence. We do not have rangers to look after this land we also don't have a fence that separate these camps, now there is a lot of overgrazing due to this. Our livestock we herd ourselves we don't hire anyone. Agriculture we plant we keep the soil, the grass that turns into compost keeps the soil healthy. The cow helps with the cow dung that we pour on our garden so that the grass will quickly grow and when there are winds the soil will not erode.

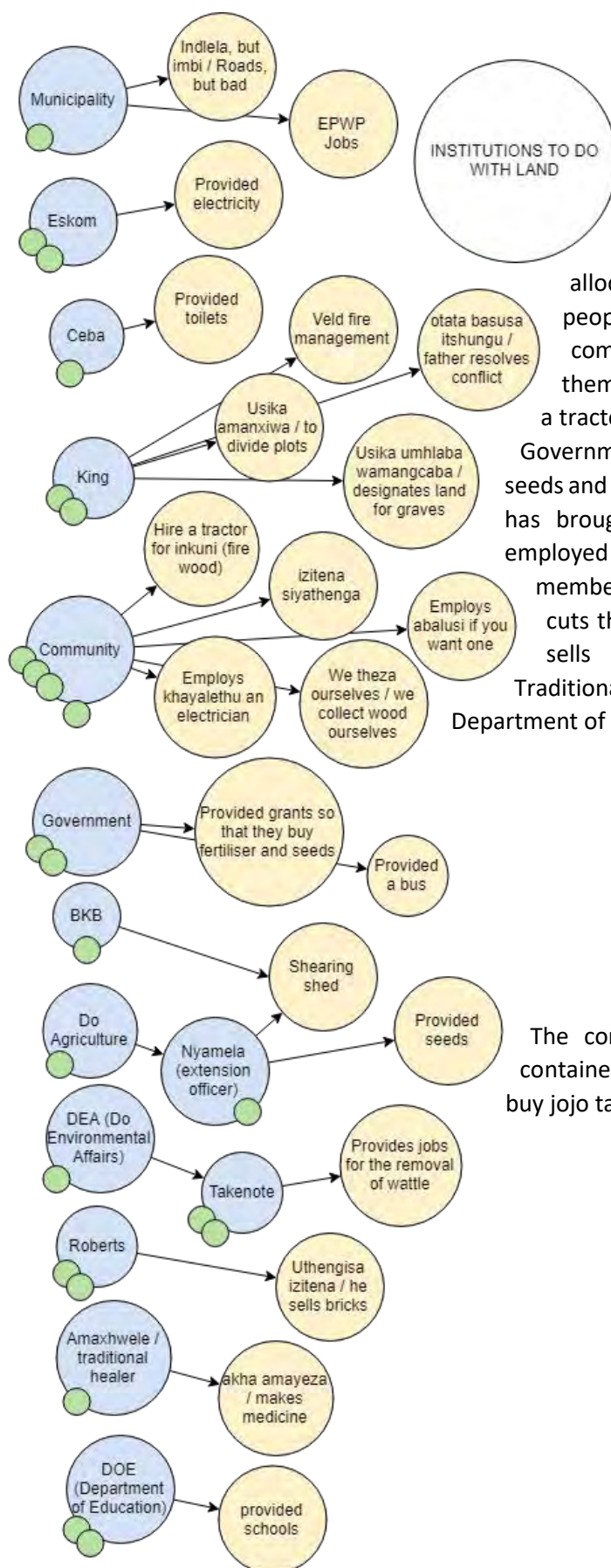


Group 2 (Sigoga): Village-level map of institutions associated with water.

Water goes together with the soil, on our side we do not have dams when there is a drought it is hard for us because we must hire tractors to fetch us water so we are able to do our traditional ceremonies. At the Municipality we have a Councillor that helps us with the bridge, we have ward committee's and the headman all of them get 3% because they don't have much power.

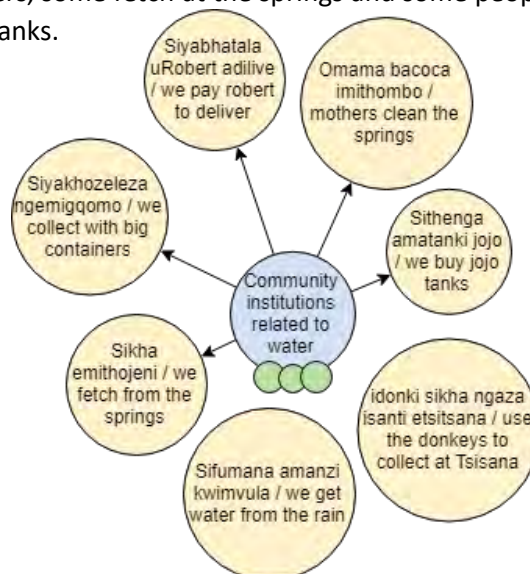


Group 2 (Sigoga): Village-level map of institutions associated with land and water.



The people here at Sigwaba say that the Municipality help them with the road and provide jobs from the road construction the EPWP's. Eskom provides electricity for us, the councillor made it possible for us to get toilets built for us. The Chief has made some allocation of land for burial site, and he asks people to not burning things. Some members of the community will people to herd the cattle and pay them, people go and find wood or sometimes hire a tractor to fetch wood. They make bricks of the soil. Government gives people grant money so they can pay seeds and fertilizer. Department of Environmental Affairs has brought in Take Note which some people are employed in. Department of Agriculture in 2016 it gave members of the community some seed to plant. BKB cuts the wool and gives it to the community. Rovet sells bricks and delivers to the community. Traditional healers that give us medicine from plants. Department of education that provide schools.

The community use water by collecting with big containers, some fetch at the springs and some people buy jojo tanks.



Participant feedback from the Sigoga focus group

How I feel (response)	Translation
Ndifunde uba wonke umntu ukhetha ekhululekile	
Ndiziva ndonwabile kule mini yanamhlenje ngoba sabelene ngolwazi	I feel happy today because we shared knowledge
Siyasebenzisana	We worked together
Nibuye futhi	You must come back again
Ndizivandonwabile	I feel happy
Ndizivandonwabile kakhulu	I feel very happy
Excited	
Ndiyavuya ukufunda	I am happy to learn
Ndonwabile kukuvulwa amehlo - information	I am happy to have my eye opened
Ndibona ithemba ndonwabile	I see hope, I am happy
Ndichulumanco ngokufunda namhlanje, kodwa ndinomgweno wokuba ngothi ngaphumeke	I am smiling to learn today, but I desire to be succesful
Siziva sinovuyo ngoba sizokwazi ukhusela amanzi nomhlaba	We feel good because we will be able to protect the water and the soil
Ndiziva kakuhle ngokuba yinyacanye yalantlangano	I feel good about being part of this initiative
I feel happy and knowledgeable	
Ndiziva ndichulumance kakhulu namhlanje	I feel I was smiling today
Ndiva ndonwabile ngamanzi	I feel happy about water
Ndinovuyo kuba ndinethemba loba ezi zinto zizakulun ga ngenyemini.	
Ndonwabile gobaba ndive izinto ebendingazazi	I am happy because I learnt thing that I didn't know
Ndiziva ndonwabile kakhulu sithetha ngamanzi nendlela	I am very happy. We spoke about water and the road
What I learnt (response)	Translation
Ndifunde kakhulu ebendingakulindlela ngokuya qhubeka	I learnt about what to expect moving forward
Ndifunde lukhulu ngedlalo ngamanzi nomhlaba	I learnt a lot about nature, water and land
Sifunde ngokubaluleka komhlaba namanzi	We learned about the importance of land and water
Ndifumene nolwazi oluninzi ngokufunda nangama imigxobhozo ncedayo nezinyeke	I gained a lot of knowledge through Learning words. Wetlands are helpful and they should be left alone
Ndifunde lukhulu ngendlelo abahlali bephefumla ngayo	I learned a great deal about the way residents live
Ndifunde lukhulu kakhulu ngolwazi endilifunekeyo ngendalo nomanzi	I learned so much about needed information about nature and water
I learnt more about Tsitsa Project and what it is all about	
Ndifunde lukhulu nomahluko wezinto ebendingazi hoyanga endalweni	I learned a lot about the different things I didn't know about in nature
Ndifunde lukhulu ngolwazi esabelene ngalo nenge Tsitsa Project	I learnt a lot of knowledge that we shared about the Tsitsa Project

Uba angasinceda urhulumenta ngokonga amanzi nokugcina umhlaba ukhuselekile	The Tsitsa Project can help government by saving water and keeping land safer
Ingathi yonke lento yenziwa apha ingaphumelela kumasipala	It seems that everything done here will be a success for the municipality
Umphakathi uyazi nceda ngamanzi	The community helps themselves with water
Ndiziva ndonwabile namhlanje. ndifunde ngokwazi ukusebenzisa amanzi ndinethemba sizophucuka	I feel happy today. I learnt knowledge about using water. I have hope we will improve.
Ndifunde lukhulu ngetsitsa project ngezinto ezenzayo	I learnt a lot about the Tsitsa Project and the things they are doing
Ndiziva ndonwabile ngoba ndiye ndafuna ukuqonda ngento ebe ndingazazi	I feel happy because I understand things that I didn't know
Less development in the area	
Sifunde lukhulu, safunda okuningi savuleka amehlo	We learnt a lot, we learnt a lot and it opened our eyes
Ndivandonwabi kakhulu namhlanje ndivuyela ukuva ngamanzi ndinethemba ukuba kuzokulunga ngokufika kwenu	I am so happy today and happy to hear about the water and I have hope that you will fix it.

Feedback and reflections from facilitation team from the Sigoga focus groups.

- There were some facilitation challenges – good challenges. Mainly being handled pretty well.
 - Crucial to strike a balance between keeping the discussion focused and allowing it to wander and be explorative.
 - There have been a few dominant characters. We need to work on strategies to get other voices to come up. Suggests include saying – thanks. Can we hear some other opinions? Or to allow him to carry on and meanwhile move around the table to a quiet character and ask their opinion.
- There have been issues with catering. Caterers dish up small plates and then after the first round they take the food away instead of offering a second round to the team.
- We need more flyers! More booklets!
- **Ntombekhayise said that organising in Sigoga was easy because the sub-headman and ward committee work closely together so once she spoke to them the organising was easy.
- The three vastly different maps show how differently groups can interpret the same activity, how you facilitate this type of deviation has a massive impact on the outcomes

D.9 Actor mapping with monitors

Introduction

One of my involvements in the Tsitsa Project was through a four-module short course guided by the Governance Capability pathway (Palmer et al., 2022). The third module aimed to build listening and speaking capabilities. My contribution to the third module was to run a relationship mapping exercise with the monitors. We used the tool to co-create a map of the local actors and the connections between them. As the maps were developed collectively, the monitors could discuss them with the various facilitators and share their knowledge about local institutions. The idea was for monitors to understand where or with whom to listen and speak – we were looking for potential local governance actors that the monitors could engage with about resource problems in their area.

I will now describe the activity. Firstly, the monitors were asked to create personal relationship maps at home. Secondly, during the training, the monitors were grouped according to their area. The mapping data was analysed after the training and presented using Gephi (gephi.org). This exercise focused on identifying stakeholders and the connections between them. There were also discussions about the interest and influence of different actors. The steps are given in Table D.2, along with the prompt questions facilitators gave to support the process.

Table D.2. Steps in the relationship mapping process were conducted during the third module of the Tsitsa Project Monitor Capacity Development short course focused on building listening and speaking skills, with corresponding prompt questions given to the facilitators.

Step in the process	Facilitator prompt questions
Write the stakeholders related to land and water management in your areas on sticky notes so that you can move them around.	Who employs you? Who do you work with? Who helps you with land and water?
Write your name or the name of your community in the middle of a piece of paper	
Arrange the names in a way that makes sense to you	Are there particular groups that work together? Who is closest to the community?
Now add the connections between different stakeholders.	
You can then draw your map more neatly and add other details. You can make your diagram more readable by using different colours.	Are there different groups that can be colour coded? Are there types of connections that can be colour coded?

Findings

The individual actor maps gave insight into how the monitors see their working relations. The primary difference in the maps was to whom they reported. All the individual maps accurately show that Spha is from LIMA and Nosi is from Rhodes University. These are the monitor's main points of connection, so it is good that their affiliations are apparent. Some individuals also included broader members of the Tsitsa Project, like GovCoP members, but this was the exception.

The 'Tsitsa Project' represented is represented differently on each map. Two maps did not indicate the Tsitsa Project as an actor at all. When asked why the Tsitsa Project was not on her map, Ntombikhayise said that most of the people on the map were part of the Tsitsa Project. One monitor showed connections to the Tsitsa Project but did not connect herself to the Tsitsa Project. Other individual maps have the Tsitsa Project floating between the different actors without specific connections.

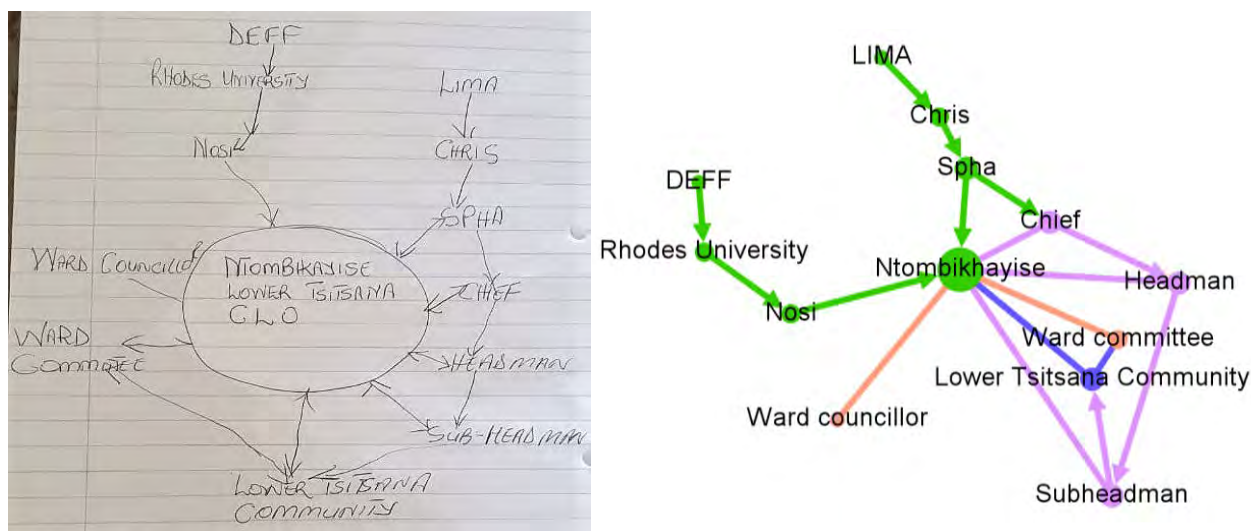


Figure D.23. Ntombikayise's actor map on the left and rendered in Gephi on the right. The map shows the two communication channels related to her job as a community liaison officer (CLO) are through Nosi (from Rhodes University) and Spha (from LIMA). Ntombikayise shows that her main connections in the Tsitsa Catchment governance are through the municipality's traditional leaders and the ward committee. Ntombikayise's map also includes the local ward councillor and, importantly, her community.

There were five groups from Sinxako (Upper and Lower together), Hlankomo, Basotho (East and West together), Tsitsana (Upper and Lower together), and Mpondomise. The groups had slightly different ways of doing and representing their relationship maps. Two maps have been presented here with a brief analysis. In Basotho, two CLOs worked together to create Figure D.24. This is an area where the project has not been less active. The map drawn by the Basotho group was unclear about the direction of different connections; thus, the map was rendered as though the connections were directionless.

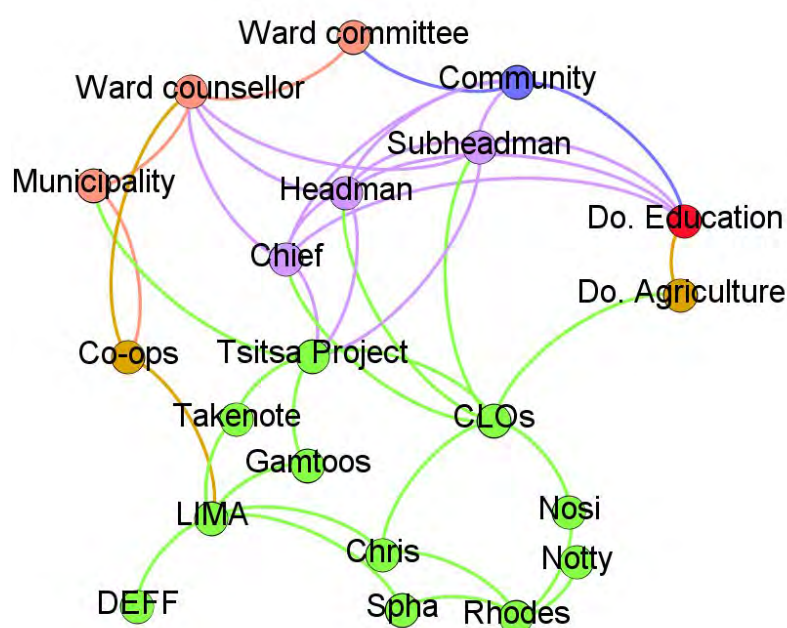


Figure D.24. Basotho relationship map rendered in Gephi with actors colour coded.

The Tsitsana group approached the task differently. The connection directions were clear in this diagram and are thus represented in the Gephi rendering. This group worked together to build the overall picture, but each participant chose which of the connections they agreed with. This allowed the connections to be ranked from 1-3 depending on whether the group agreed or not. The thickness of the arrows in Figure D.25 is representative of how confident the group was about the different connections.

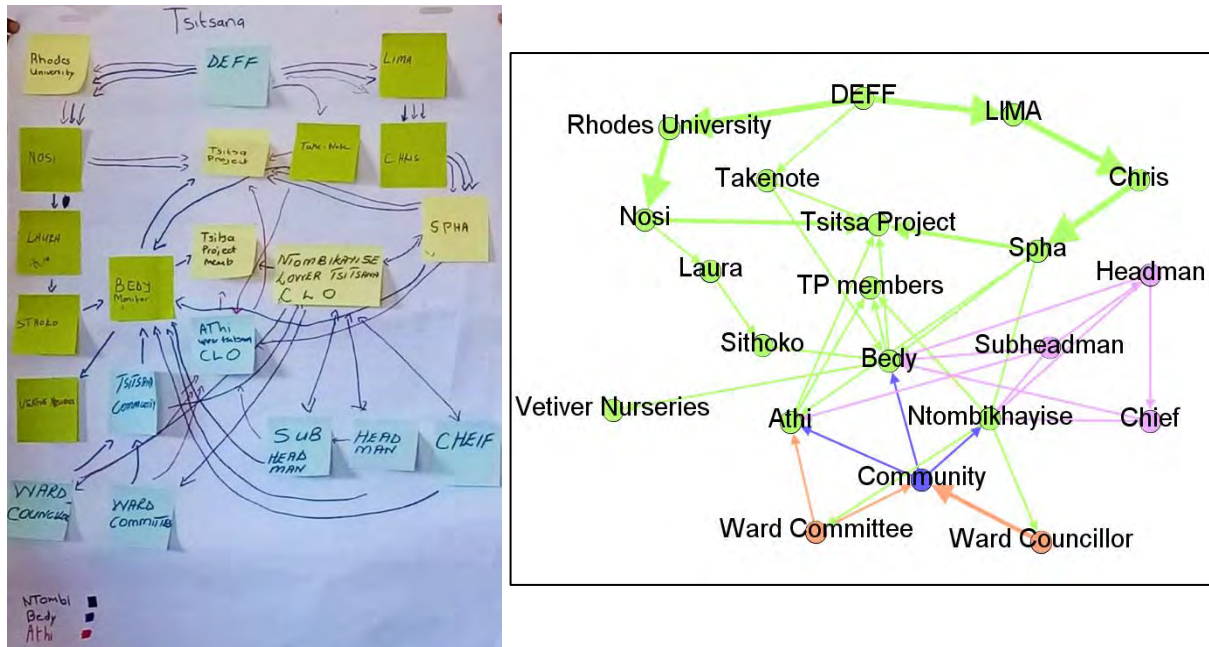


Figure D.25. Group map drawn by the group of Tsitsa Project employees from Tsitsana. The left image shows the group's hardcopy actor map, and the right image is the Gephi rendering of their map.

Reflections

Participant reflections from the third module suggested that the participants learnt new skills by mapping their relationships. Comments included:

- “Ndazi ba imephu yenziwa njani eyobuhlobo” (I know how to make a map of relationships)
- “Uba uqala kwiHeadman phambi uye kwiChief” (That you start with the headman before you get to the chief)

D.10 Mapping relations in the Living Catchments project

Introduction

In February 2021, I was asked by Tsitsa Project's Project Manager to conduct a mapping process. This mapping process was suggested to support the work of the Living Catchment Project, a collaboration between the Tsitsa Project and an organisation based in Matatiele called Environmental and Rural Solutions (ERS). Part of their strategizing was to conduct a stakeholder mapping process that could allow them to create a shared picture of where and how they are working. In her email to me, she described the situation: *'It's definitely starting to feel like there are networks, within networks, within networks, and my head starts spinning trying to keep track who is connected and should be connected and where and how.'* This request presented an opportunity to not only help the project through a valuable process but also get an up-to-date picture of the Tsitsa Project's network when considering the recommendations coming out of this thesis. Furthermore, it was an opportunity to put the skills I gained through the research journey into practice in an engaged session. Given the COVID-19 restrictions, the session was facilitated on ZOOM, and Draw.io was used to co-create an actor map in real time with the group of four participants representing the Tsitsa Project and ERS.

I will now describe the method, which can retrospectively be **categorised into 6 phases**, which are emboldened in the explanation below. After participants gave consent for the session to contribute to my research, we started by **clarifying the purpose of the session (1)**. The purposes can roughly be categorised as tangible outcomes and learning by participating (these were elicited from participants):

1. Map actors (tangible outcomes)
 - a. Create a usable, working document.
 - b. Visualize linkages and network strengths.
 - c. Weak and strong links.
 - d. Not only focus on existing, but go beyond and visualise future networks, strategize for expansion.
2. Learn to map actors (learning by participating)
 - a. Practical and theoretical considerations.
 - b. Personal interest for learning the skill.

I then gave a short presentation explaining **the various variables that can be represented (2)** on an actor map. For example:

- **Line variables** – thickness, colour, arrow, type (single, dotted, double).
- **Circle variable** – size, colour, shape.
- **Position** – using the different axis.

After the presentation, participants reflected on the presentation and identified any specific variables that they would like to represent on the map. The participants found the presentation helpful in adjusting their perceptions of what actor maps are useful for and how much can be represented. From the purpose, the aim ideas identified were a strong emphasis on the different kinds of connections and some exercise engaging with future scenarios – these were crucial for deciding **which variables to represent (3)**.

The next step was to set the scene by **clarifying whose perspective (4)**. Most of my mapping processes involved a community group or a governance actor in the middle of the map. For this specific process, it was the relationship between Tsitsa Project & ERS at the centre.

I then **elicited actors and discussed connections (5)** through a simple series of questions ‘Which institutions do you work with daily?’ and then ‘What is the nature of the connection?’ This first round of questions sets the stage for the rest of the map as subsequent discussions are done. Comparatively, i.e., ‘is this connection stronger or weaker than that one?’ We then move through the temporal scales (weekly, monthly), identifying more and more tenuous connections.

Once the map reached a level of complexity sufficiently challenging for the two-hour session we were engaging, we paused to reflect and discuss the progress. The process up until now gave a good summary of the primary connections. The conversation now **shifted to future collaborations (6)**. We added a red square with ‘NEEDS WORK’ to signal where the Living Catchment Project members wanted to expand their network.

Findings

The purpose of the session was linked to the work of an associated project called the Living Catchments project (LCP), which aims to establish better-resourced communities of practice that are involved with managing the built and ecological infrastructure within important water catchments under the South African National Biodiversity Institute, the Water Research Commission and the Department of Science and Innovation. LCP is a collaboration between Tsitsa Project and Environmental Rural Solutions (ERS), with whom I had interacted at various times during my research – most notably an actor mapping session on a field trip in 2019, which gave me important insights into the value of actor mapping. ERS is one of the driving partners of the Umzimvubu Catchment Partnership.

This opportunity to assist with a mapping exercise allowed me to focus more directly on the Tsitsa Project’s connections. Besides helping the project through the mapping skills I gained, I was also interested in looking back at where the Tsitsa Project is, and its potential power lies. This final mapping process was a final exploration of actor mapping and the skills I had gained throughout this research journey. In facilitating the process, I was careful about setting clear boundaries and guiding the process, but also allowing flexibility to ensure that the map reflected what the different groups wanted to get out of the process.

In reflecting on the process, both groups were happy with the process as it enabled a generative space; for example ‘the more that one talked about partners, the more the other one talked’ this allowed them to make realisations about the other - ‘I knew they were involved, but I didn’t know the extent of their relationships.’

The map created showed an overwhelming number of informal connections. The previous maps created with governance actors were characterised predominantly by working relations predicated on contractual and legal obligations. In this map, it was clear that the formal relations were all related to funding streams, while the vast majority were informal and collaborative. The ability to create informal connections is one benefit of being an entity outside the formal government, which can move with more flexibility through governance spaces and create mutually beneficial connections rather than spending all time locked into pre-designated arrangements. The map highlights the collaborative way that the Tsitsa Project works.

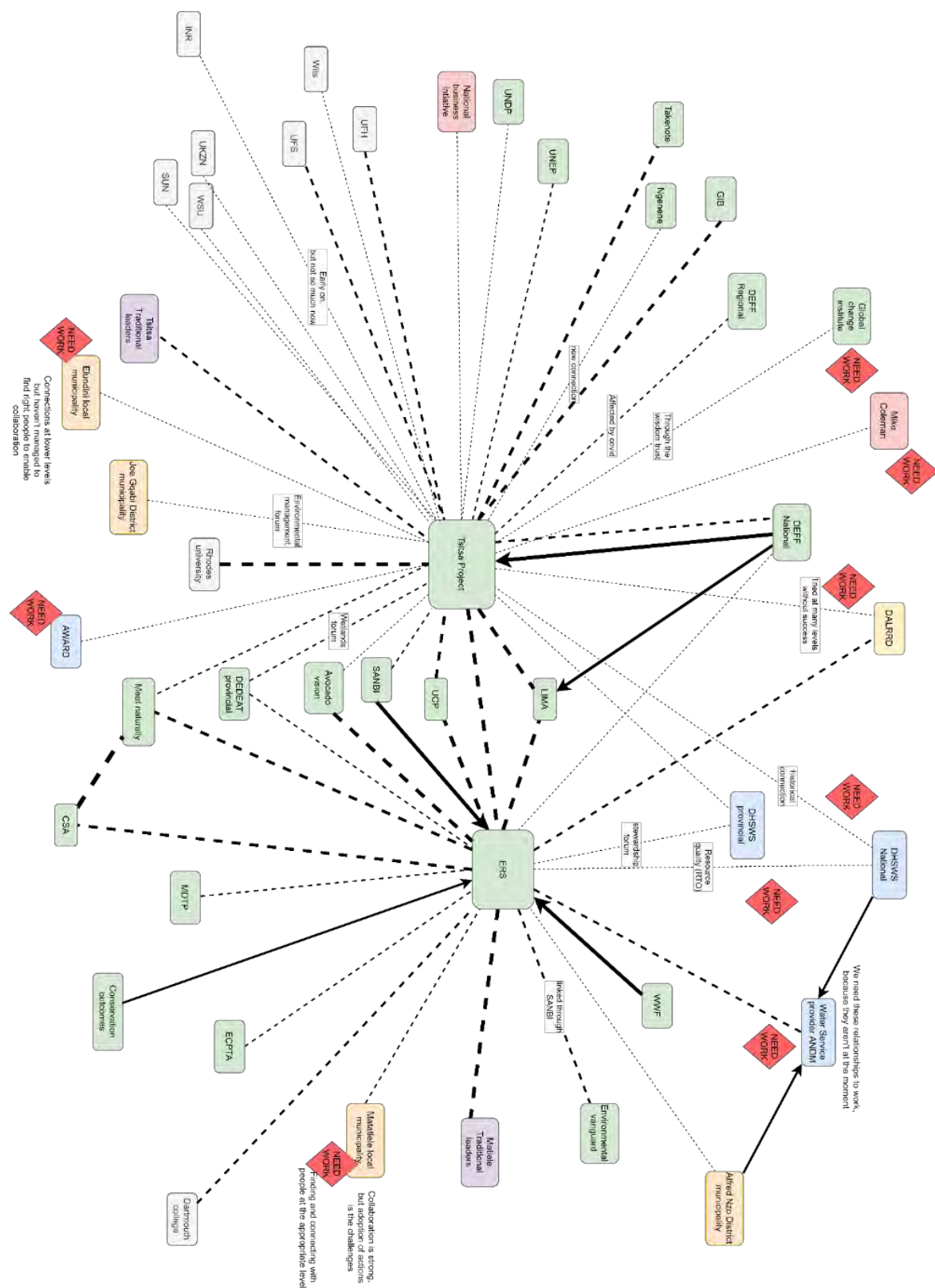


Figure D.26. Map generated as part of the Living Catchments Project. The map is focused on the relationship between the Tsitsa Project and Environmental and Rural Solutions (ERS). Connections are unidirectional (solid with arrow) or bidirectional (dotted without arrow). Actors are colour coded according to sector. The red 'NEED WORK' shapes indicate the actors which Tsitsa Project and ERS representatives agreed were important for future work.

The map clearly shows where funding is coming in and how many connections are being generated from these funding pools. We discussed the social capital generated from financial capital and the power of informal relations. There was some discussion about formal relations that are supposed to be there contractually but are not and the seeming paradox present where informal relations are sometimes stronger than formal ones.

In some cases, ERS and Tsitsa Project use their social capital to help others, sometimes being paid to facilitate interactions. Discussions in the session also alerted me to the work of these projects as systems convenors (Wenger-Trayner & Wenger-Trayner, 2021). Rather than attempting to span boundaries within their work areas, or between themselves and others, these organisations are looking holistically at the network and considering ways to improve relationships outside of these.

One difference between the Tsitsa Project and ERS, was ERS's more diverse funding streams. This has been discussed as a possibly fatal flaw in the design of the Tsitsa Project, and indeed the contractual delays in the latter half of 2021 confirm these concerns.

Both organisations highlighted their weak links to the national Department of Human Settlements Water and Sanitation (DHSWS) and the local and district municipalities. Within municipal relations, Tsitsa Project and ERS have worked with the local municipality. However, both seem to have been limited in their ability to reach key decision-makers. While communication and cooperation are fairly easy to do, collaboration, formal adoption, and actions are challenging. They have not been able to access the people of influence they would like.

Appendix E. Chapter Six supplementary material

The material in this appendix supports the systemic analysis presented in Chapter Six.

The systemic analysis drew on mental models elicited from interview participants as well as observation data collected through participant observation.

This appendix includes the following:

- Appendix E1 is the individual mental models presented as causal loop diagrams.
- Appendix E2 is a worked example of how individual mental models were converted into key variable diagrams (presented in Chapter Six).
- Appendix E3 is an example of a collaboratively drawn causal loop diagram.
- Appendix E4 is a summary of the observation data.

E.1 Participant mental models

Within each of the semi-structured interviews, I elicited mental models, which were then recorded as systemic diagrams for analysis. The method for eliciting and drawing these mental models is given in Chapter Six.

KEY INFORMANT #1 MENTAL MODELS

Key Informant #1 is a community development worker employed by the Department of Cooperative Governance and Traditional Affairs (COGTA) and works with the local municipality. The main aim of the CDW is to assist people with a range of issues, including evictions, gun violence, crime, abuse, and unemployment. The CDWs support the implementation of government services to overcome these challenges. Community policing forums and crime awareness campaigns to address crime issues are generally well attended, and people respond positively. Unfortunately, unresponsive social workers do not help resolve cases of abuse. Educating people about their constitutional rights is another tool to overcome people being evicted from their informal settlements. Formalisation and certification are other processes to assist people with their challenges. People do not have high school certificates, which leads to their inability to find employment. People do not appreciate the value of education, leading to high dropout rates. One of the challenges with assisting people is the far distances and big rural areas. The CDWs overcome this challenge by being present and meeting people one-on-one, door-to-door. By wearing casual clothes and not being intimidating, CDWs can assist people directly.

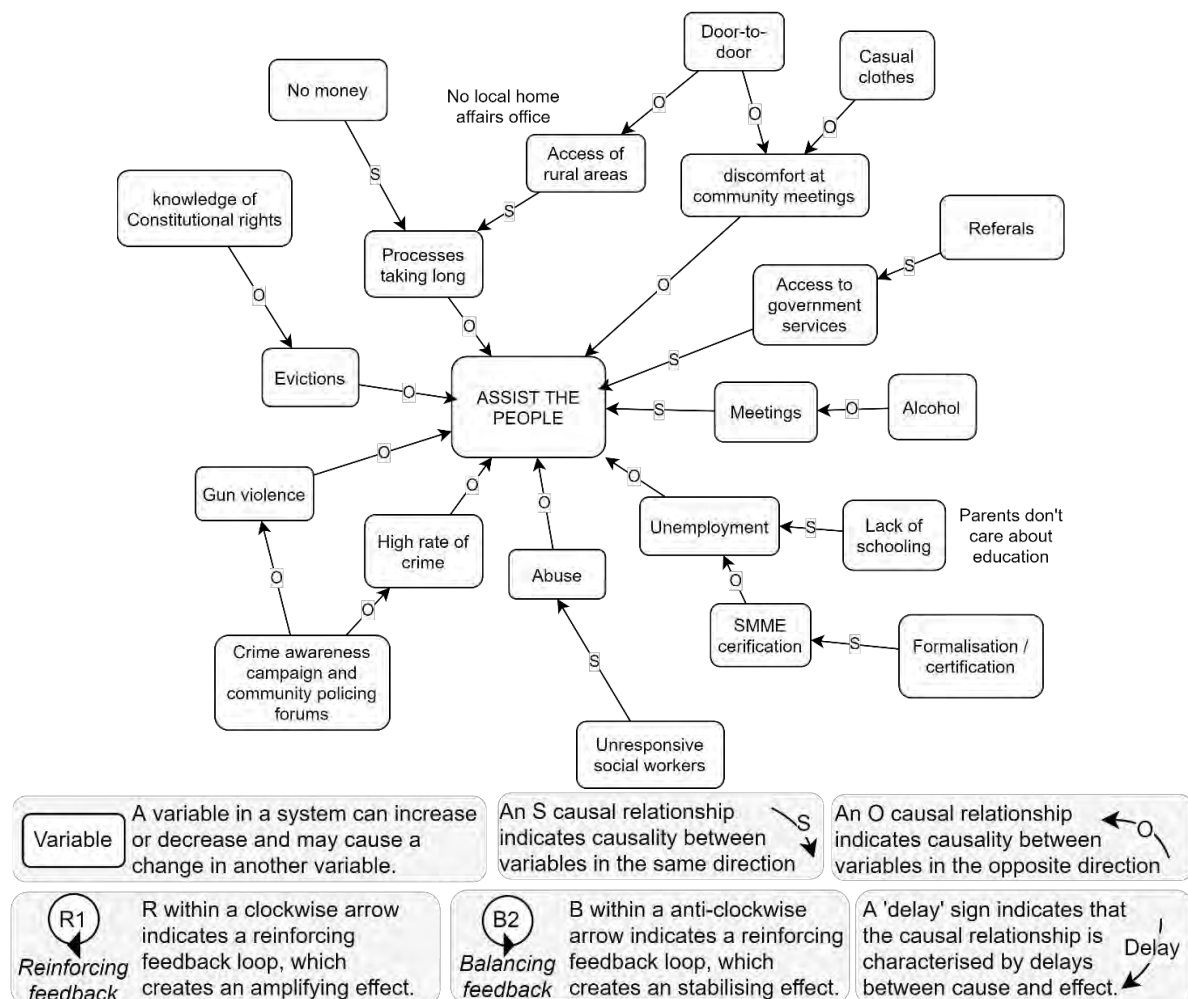


Figure E.1. Key informant #1 mental models.

KEY INFORMANT #2 MENTAL MODELS

Key Informant #2 is a community development worker employed by the Department of Cooperative Governance and Traditional Affairs (COGTA) and works with the local municipality.

A: CDWs have three means to support social development and service delivery. These include their presence on the ground, going directly to people, and informing them about government systems. By being physically present and going directly to people, CDWs bring services closer to people, thus overcoming the long rural distances and saving people time and money. By informing people about government systems and how they work, CDWs address the problem of lack of awareness, which results in wasting time and disrupting service delivery.

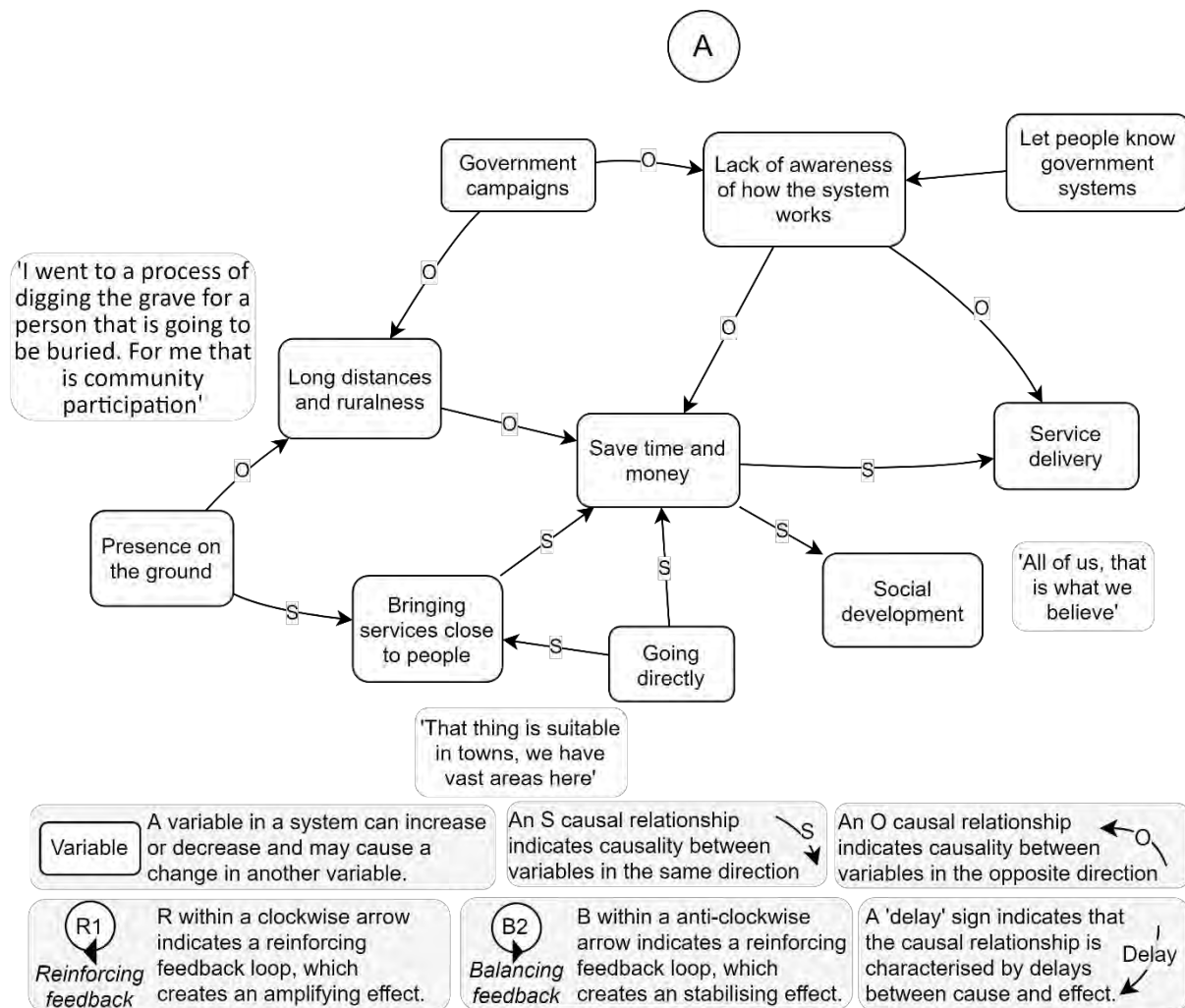


Figure E.2. Key Informant #2 mental models.

B: There is some informality in the governance system, which allows for system flexibility and in some cases, people can choose. For example, an individual may choose between the traditional leader or the municipal official, depending on the problem and their alliances.

C: Municipalities are under strain because of service delivery backlogs. Service delivery backlogs, in turn, result in further strain on municipalities. This is a reinforcing loop as long distances and lack of access roads worsen service delivery. The service delivery challenges within the local municipality mean a lack of safe drinking water access.

D: The permanent position of the CDW findings in a diverse set of interests that can build and be developed over time. By being flexible and open to new ideas and ways to help people, CDWs can increase the utility of their role.

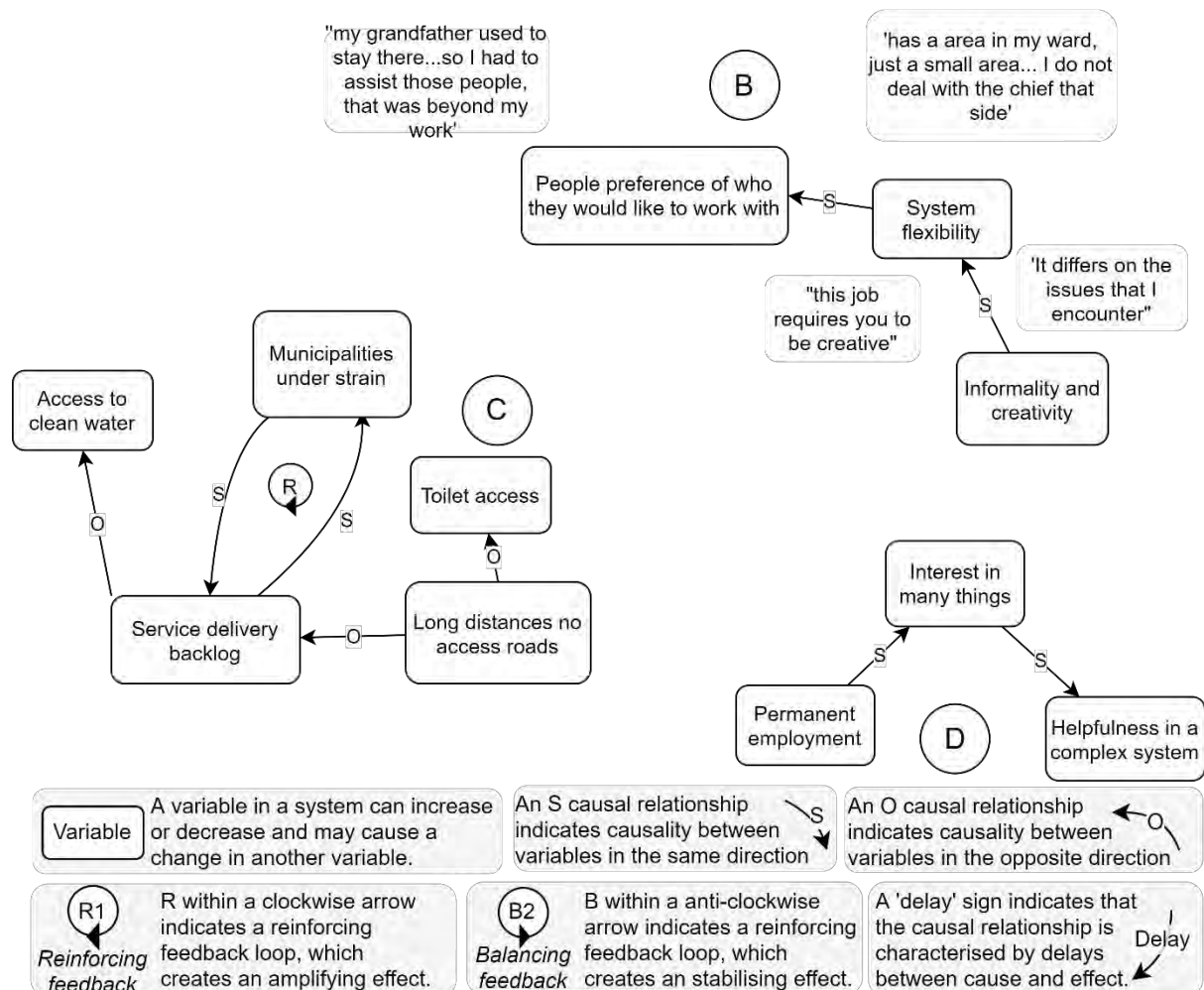


Figure E.3. Key Informant #3 mental models.

KEY INFORMANT #3 MENTAL MODELS

Key Informant #3 is a community development worker employed by the Department of Cooperative Governance and Traditional Affairs (COGTA) and works with the local municipality.

A: Being present on the ground supports the spread of information so that people can receive services.

B: Working with departments is the tool CDWs have to improve people's lives. This is made difficult when government departments are slow to respond to requests.

C: External assistance can help to bring projects into an area. Projects decide to work in an area because of high poverty levels. Having development projects supports skills development and generally better people's lives. If the socio-economic conditions in a community improve, then projects will be less likely to come as there will be other areas in need.

D: Accessing opportunities is key to reducing poverty and ensuring people have money. If people have money, they can get transport to town and access opportunities - a reinforcing loop. Money can reduce poverty in the area, and reduced poverty can increase access to opportunities.

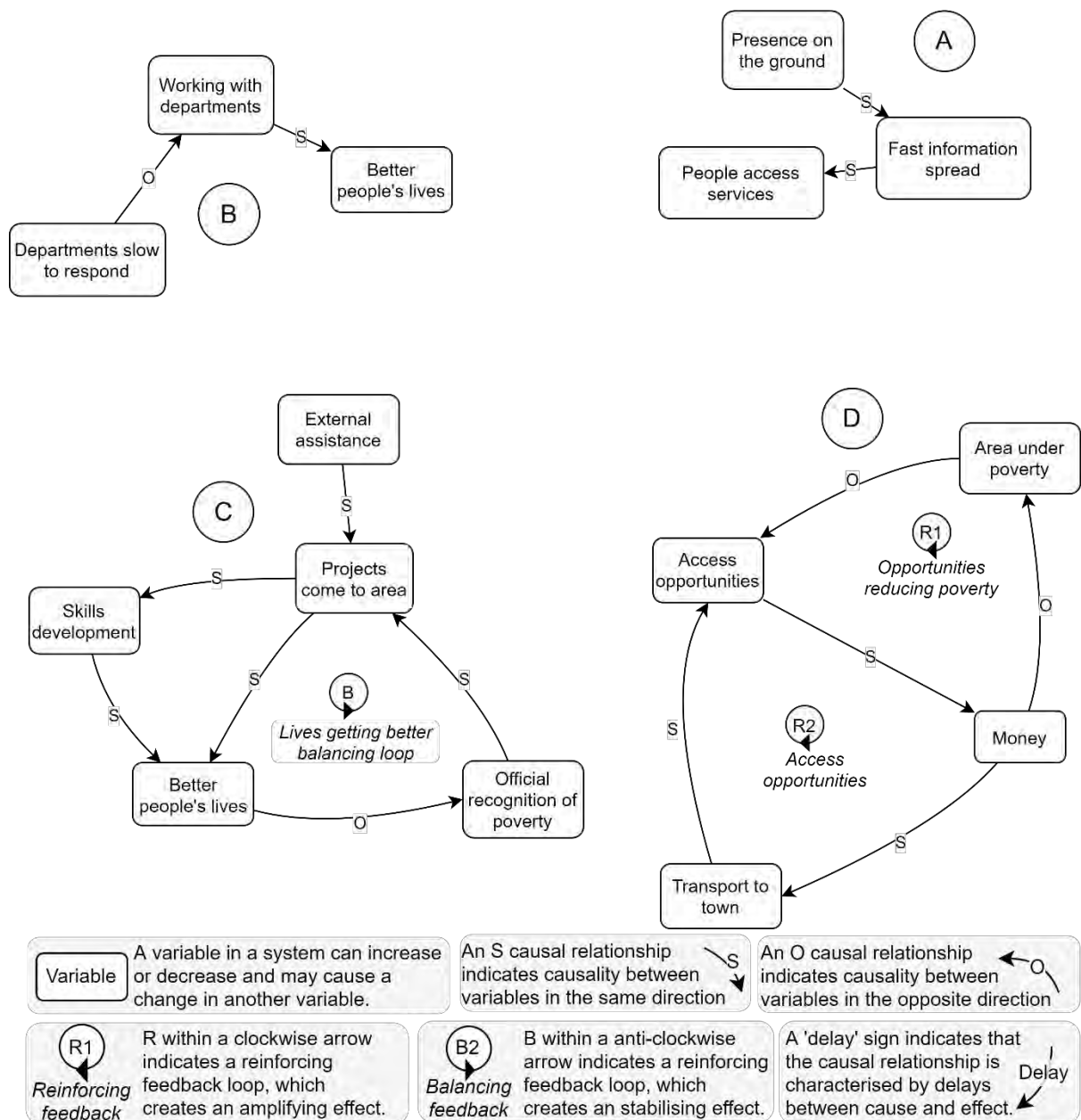


Figure E.4. Key Informant #3 mental models.

KEY INFORMANT #4 MENTAL MODELS

Key Informant #4 is the Tsitsa Project's Catchment Coordinator.

A: Integration of work is key to the aims of the Tsitsa Project. Integration of work is done formally through planning together but also happens less formally through ad hoc engagements and the building of common ground (or shared understanding). Regular communication supports the building of quality relationships which support increased value to be added through work through the relationship. Good relationships with individuals support valuable interactions – 'you get more out of them.' Planning together to build common ground and integrate work does not generally happen as these activities are not prioritised.

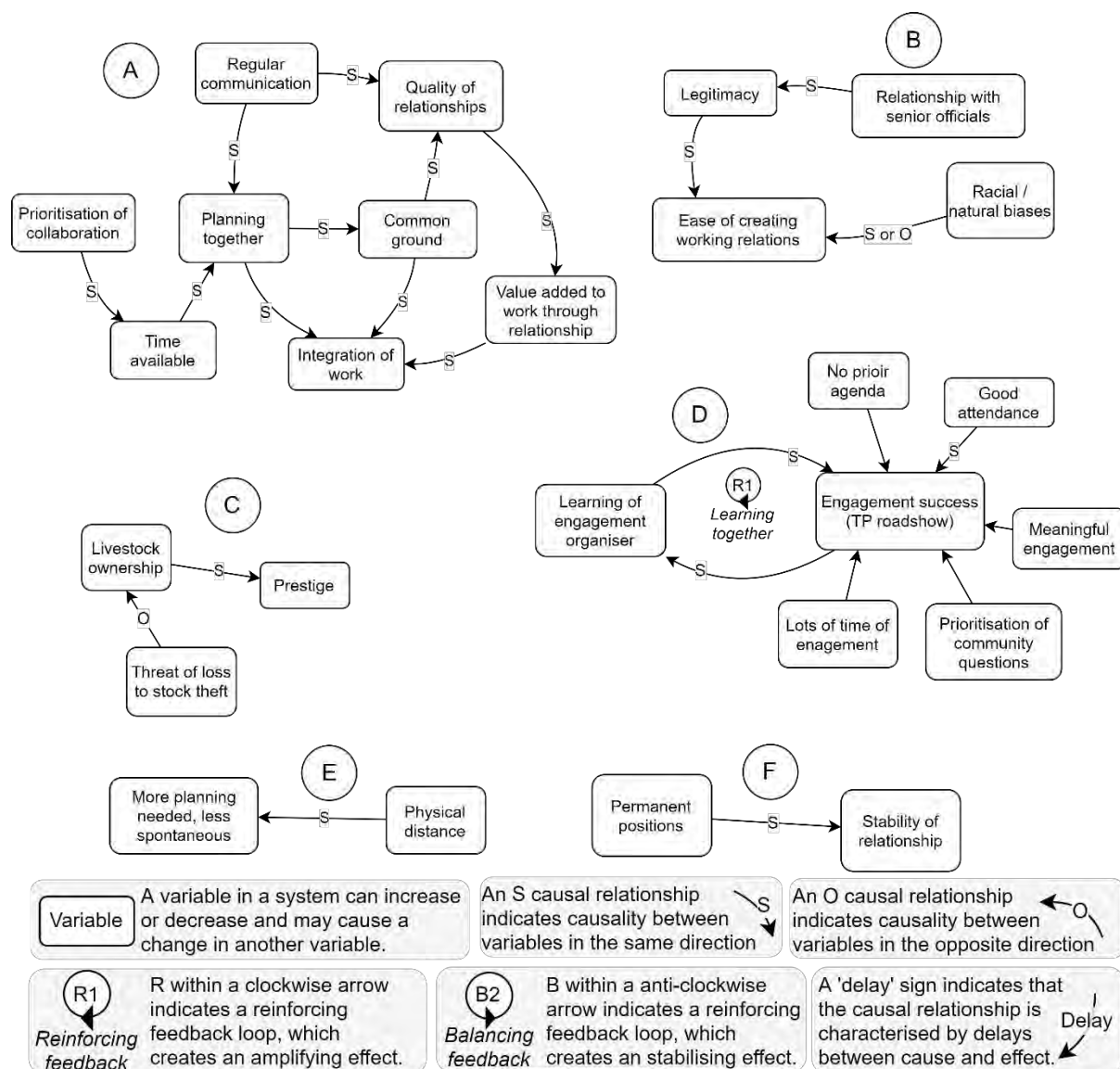


Figure E.5. Key Informant #4 mental models.

B: Creating good working relationships can be difficult. One way to make relationships easier is to gain legitimacy by associating with senior officials. If people meet you while you are with a senior official, they are more likely to take you seriously. Racial biases can help in some situations where actors are from similar backgrounds or make it more difficult to create relationships if actors are heterogenous.

C: Livestock is a symbol of prestige in rural areas. However, the threat created by stock theft makes it less desirable to own livestock, and thus, fewer people own livestock.

D: The success of an engagement is based on several factors. This mental model looks specifically at the Tsitsa Project Roadshow conducted in 2019, which was seen as successful. Firstly, there was good attendance from community members who engaged meaningfully in the event –discussions, questions, and answers. The engagement was enabled by the Tsitsa Project researchers coming in without a prior agenda and outcomes required. Community questions were the priority, and lots of time was allowed for engaging. The event was a further success in that the organisers learnt from the process.

E: The physical distances in the catchment and the distance between Rhodes University in Makhanda and the TsRC make the work less spontaneous and opportunistic. More planning is involved, which limits Tsitsa Project's ability to respond in real-time to changes in the TsRC.

F: Permanent positions enable stable relationships. When actors are constantly changing, building relationships is difficult. It is easier when people are around for a long time and can build knowledge of the context and the required relationships to do work.

KEY INFORMANT #5 MENTAL MODELS

Key Informant #5 coordinates the integrated planning processes facilitated by the Tsitsa Project.

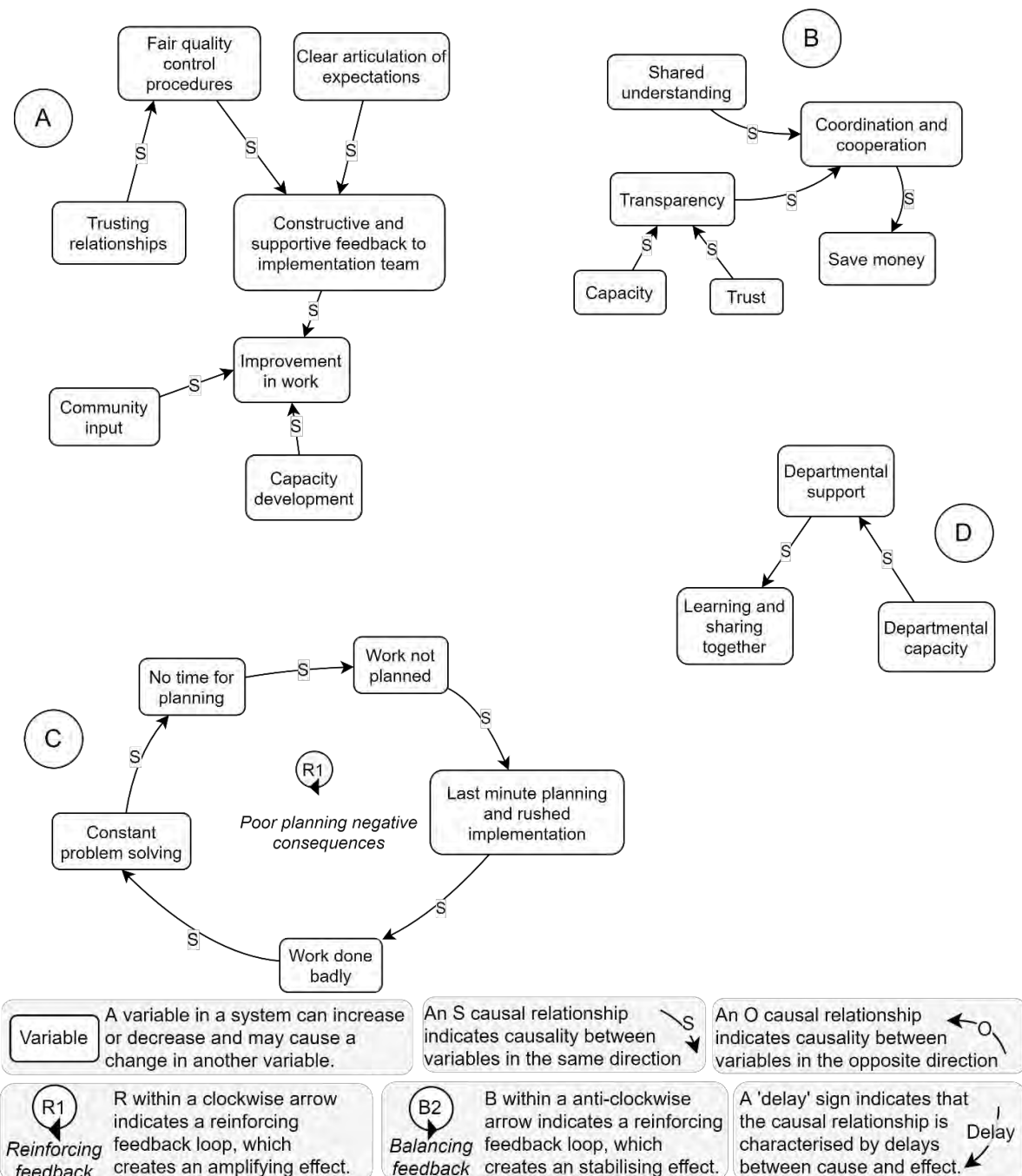


Figure E.6. Key Informant #5 mental models.

A: Integrated planning aims to improve the work being done. Improvement of work relies on a functioning, adaptive management cycle in which fair quality control can support constructive feedback. Improvement of work is also supported by community input into planning, allowing community and implementing priorities to align. Building the capacity of the implementing teams is another crucial activity to ensure that work is improving. As a manager sees that work is inadequate, capacity development can be adjusted to inform capacity development. A clear articulation of expectations by managers is key to ensuring that feedback is constructive and helps to improve work. Trusting relationships also support fair quality control measures, as the implementing teams will not worry about quality control but instead see the process as an opportunity to learn.

B: Another important goal of integrating work is to save money. Saving money is enabled by coordinating and cooperating activities so that they are complementary rather than repetitive or even counterproductive. Coordination and cooperation are enabled by transparency and shared understanding among cooperating partners. Transparency is enabled by two variables, capacity, and trust. There can be trust in a relationship that enables transparency, but transparency also requires that both parties do their job to intelligibly share information in ways that make sense to each other.

C: Poor planning negative consequences reinforcing feedback loop (R1). By constantly problem-solving urgent problems, local governance actors do not have time to plan, which means that work is not planned. This leads to last-minute planning and rushed implementation, which results in work being done badly. Work poorly done is more likely to result in problems in the future, and therefore the need to constantly problem solve is reinforced, and the cycle continues.

D: Learning and sharing together, between Tsitsa Project researchers and DFFE representatives is enabled by departmental support. The amount of support that DFFE can provide depends on the capacity of the department to provide support.

KEY INFORMANT #6 MENTAL MODELS

Key Informant #6 is employed by DFFE national to support district and local municipalities.

In this subsection, I present a single mental model, as was elicited from Key Informant #6, employed by DFFE national to support district and local municipalities. The mental model illuminates the interaction between a government department official (representing the Broader Story) and the various municipalities (within the Catchment Story) with whom he works. Among the supporting roles that Key Informant #6 plays are building capacity among municipal officials to improve routine management activities such as tariff collection and proposal writing. The central variable in Figure E.7 is *governance capacity*. In this mental model, *governance capacity* refers to the capacity of the local municipality specifically and is influenced by *financial resources*, *time available*, and *capacity development*.

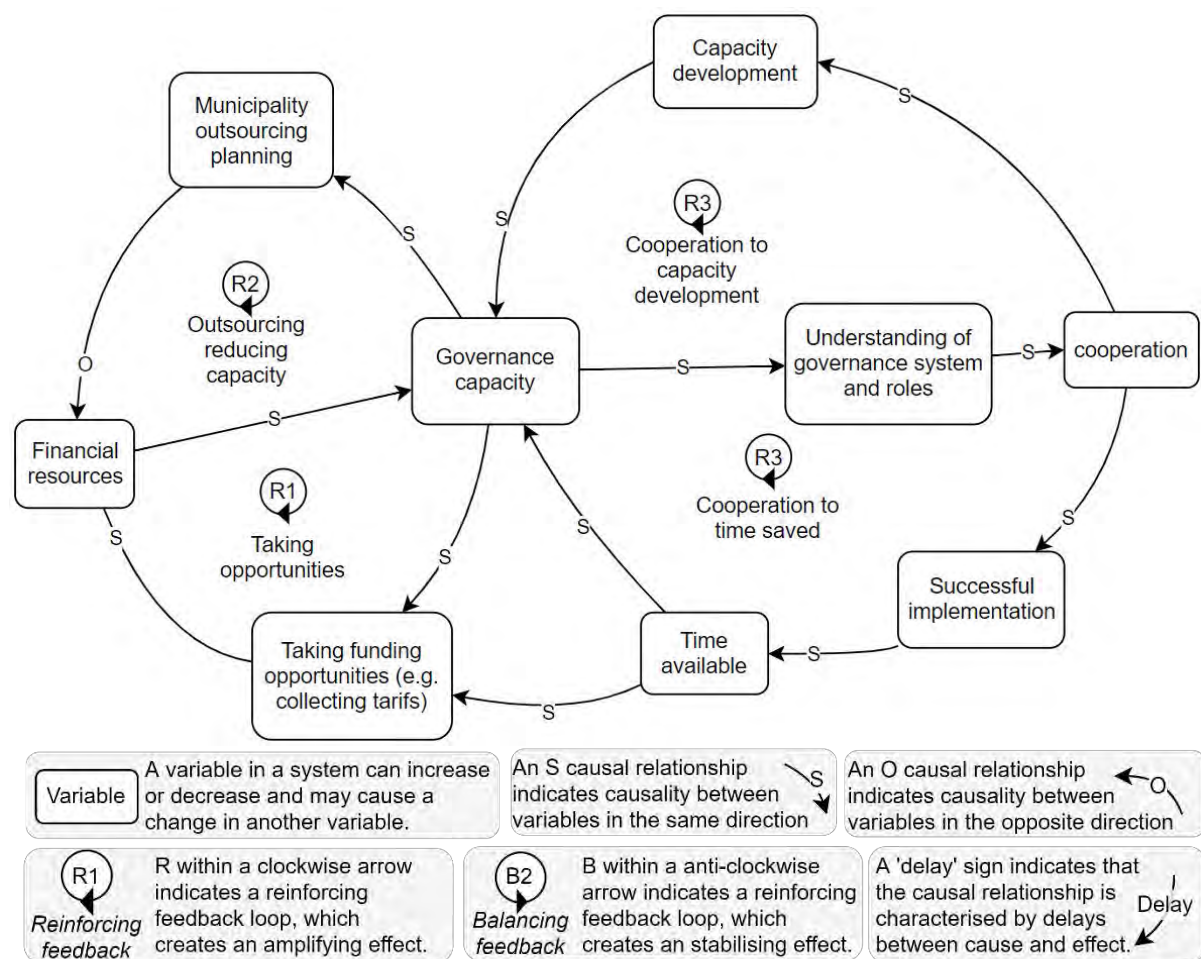


Figure E.7. Key Informant #6 mental models.

Four reinforcing feedback loops influence governance capacity. Each of the loops can be either vicious, leading to undesirable outcomes, or virtuous, leading to desirable outcomes.

R1: Taking opportunities shows how municipalities with *governance capacity* can *take funding opportunities*, thus enabling them to build *financial resources* and reinforce their *governance capacity* (virtuous). Municipalities that cannot *take opportunities* to fall into financial crisis as *financial resources* decrease (vicious).

R2: Outsourcing reducing capacity shows how *municipalities outsourcing planning* reduces *financial resources* (vicious). If municipalities can build *governance capacity* and reduce reliance on external consultants, thus freeing up financial resources to support governance capacity, then the reinforcing loop has the potential to become virtuous.

R3: Cooperation to time saved shows how municipalities (in a virtuous cycle) can increase *governance capacity*, which increases *understanding of the governance system and the roles* of different actors. An increase in understanding would lead to *cooperation* which can contribute to *successful implementation*, thus making more *time available* which contributes to an increase in *governance capacity*. In the vicious cycle, a lack of *understanding* reduces municipal officials' desire to cooperate; thus, there is an increase in resistance to *cooperation*. A lack of *cooperation* leads to failed projects, which reduces the *time available* and overall *governance capacity*.

R4: Cooperation to capacity development shows that if municipalities would *cooperate* with the DFFE local government support, which is trying to build *governance capacity*, then *capacity development* would increase, and the municipal capacity would increase.

KEY INFORMANT #7 MENTAL MODELS

Key Informant #7 is employed by Joe Gqabi District Municipality to manage its natural resource management programs. DFFE predominantly funds the programs.

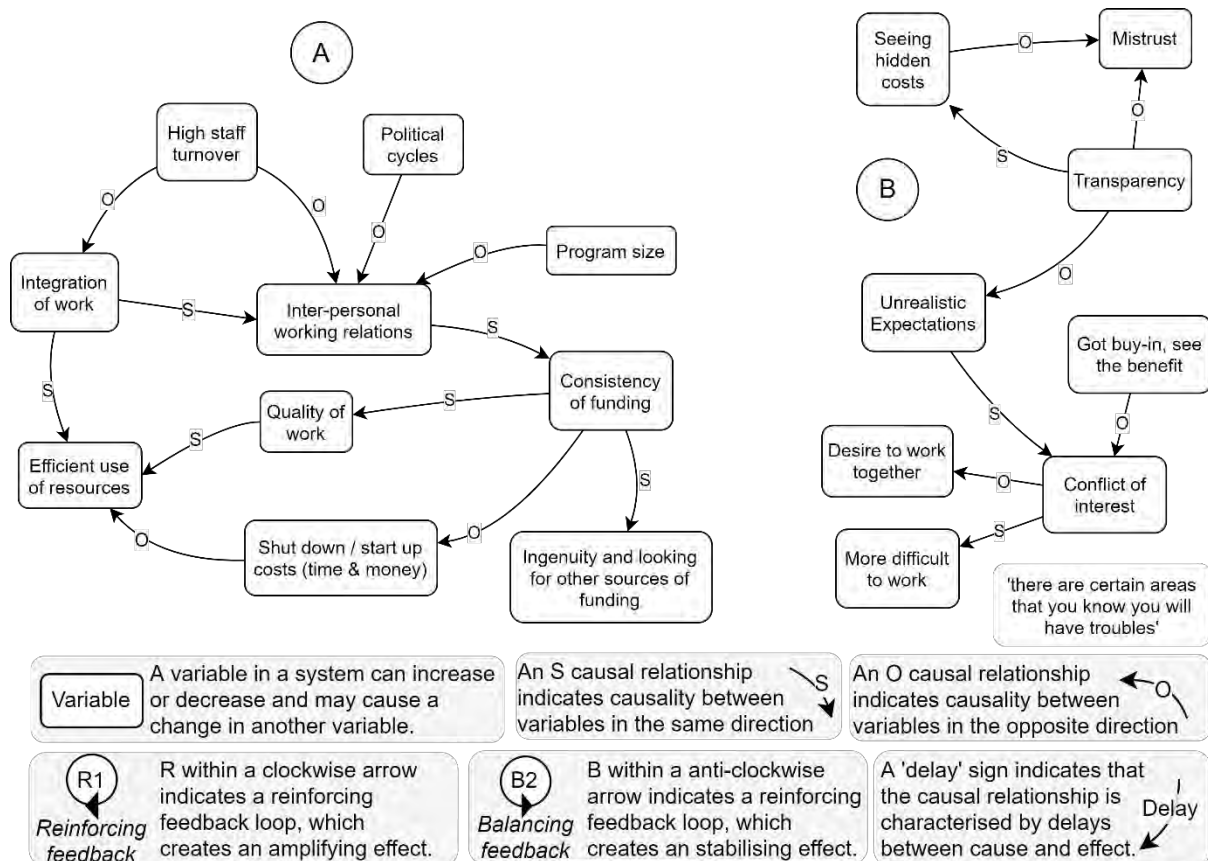


Figure E.8. Mental model of Key Informant #7, a restoration implementing agent.

The implementing agents work under the district municipality and conduct 'Working for' restoration work. A explores inter-personal working relationships. B explores expectation management, transparency, and conflicts of interest.

A: The most important link in Figure E.8 is between *interpersonal working relations* and the *consistency of funding*. *Interpersonal working relations*, between implementers (from the Catchment Story) and funders (from the Broader Story) supports the *consistency of funding*. *Interpersonal working relations* enable Key Informant #7 to call their funders directly if there is a problem and know they will receive support.

Figure E.8 also indicates enablers and barriers to *interpersonal relationships*, as well as the potential benefits and unintended consequences of *consistent funding*. *High-staff turnover* and *political cycles* indicate personnel changes, disrupting the slow work of building *interpersonal working relations*. On the other hand, actors in *permanent posts* are less likely to change and are thus able to sustain *interpersonal working relations*. He commented that 'you get a lot more out of them.' Key Informant #7 does implementation work for a variety of the Working for programs. He finds that the Working

for Wetlands program, which is the smallest program in terms of budget and number of projects, is the easiest program to build *interpersonal working relations*.

The mental model suggests that *inefficient use of resources* can be reduced through *integration of work*. The suggestion is that if work is integrated, it can reduce replicated work and ensure that activities are complementary. Integration of work is reduced by *high staff turnover*, which reduces opportunities for working relations that enable *integration of work*.

Key Informant #7 asserted that *consistency of funding* is one of the key enablers for ensuring a high *quality of work*. *Consistency of funding* reduces the substantial financial and time implications related to shutting down and starting up when funding is inconsistent. When funding is interrupted, an implementer can lose key team members and, on starting up again, will need to reinvest in training for new teams and buy equipment.

The one benefit of inconsistent funding is that it incentivises *ingenuity and looks for other sources of funding*. The suggestion was that instances where funding is inconsistent force small implementers not to become reliant on certain funding streams but to remain agile in their work.

B: The central causal chain is that *transparency* reduces *unrealistic expectations*, which reduces *conflicts of interest*. Transparency also enables *hidden costs* to be revealed rather than suppressed. Because when *hidden costs* do eventually get revealed, then this generates *mistrust*. Thus, *seeing hidden costs* early through transparency can reduce *mistrust* in the future.

Expectation management is a key process for implementers working in the Village Story, and it requires careful communication of what can be expected from a project. Unmet expectations resulting from unrealistic expectations lead to conflicts of interest, disrupting local actors' desire to work together and generally complicating the situation. Certain conflicts of interest in areas of the TsRC have led Key Informant #7 to believe that 'there are certain areas that you know you will have troubles' when trying to work with the local leaders and community members.

Along with expectation management, *getting buy-in* and ensuring that community members and local leaders can *see the project's benefit* are also important mechanisms for reducing the number of *conflicts of interest*.

INTERVIEWEE #1 MENTAL MODELS

Interviewee #1 is a headman from the upper TsRC within the traditional leadership structure.

A: By helping people become *able to access institutions*, headmen can increase the number of *people being serviced*. Interviewee #1 has two means to help people access institutions: his *authority* as a traditional leader and his *physical presence* within the community. Being *physically present* in the community, even the poorest members of the community, who cannot afford to pay for transport into town, can talk to him. Through his *authority*, he can access institutions that disempowered or impoverished community members would not be able to. By helping people access institutions, he is doing two things. Firstly, he is ensuring that the *speed of service* is increased so that the number of *people being serviced* increases. Secondly, he is ensuring that the people in need can receive services - being embedded in the community, interviewee #1 knows who the poorest members of his community are and what is required. Thus, he can support their access to institutions and services.

B: *Farming* in the Village Story is influenced by both *motivation to farm* and the *money* required to buy the resources to farm. *Government support* also increases *farming*. *Stock theft* reduces the amount of money residents have access to and their *motivation to farm*. Headmen can help to register

livestock and thus increase *livestock owner legitimacy*, which can help them to recover livestock in the event of *stock theft*. *Livestock owner legitimacy* is a means used to reduce livestock theft. *Bringing stakeholders together* is another means traditional leaders use to stand up against and reduce livestock theft.

C: A lack of support from the department of basic education has led to a shortage of teachers, which has been detrimental to education in schools and contributes to drug abuse.

D: Fighting among community members reduces the number of saving clubs. Saving clubs help people save money and are beneficial for social development. Social development within the community could help reduce in-fighting. This is an example of a balancing loop.

E: the variables influencing community safety. *Safety* is negatively impacted by *crime*, which interviewee #1 attributed to the increased *drug abuse* in the community. As *crime* increases, *safety* decreases. In the same way as interviewee #1 can help people access services by being *physically present*, he is also able to improve *safety* through his role as a traditional leader, which includes monitoring and coordinating efforts by the community to reduce crime themselves. Another means interviewee #1 has for improving safety is *bringing people together* to resolve problems collectively and disincentivise future undesirable activities such as *crime* and *drug abuse*. *Police support* is another means to improving community safety, although the nearest police station is a 45-minute drive away, and thus, there are necessarily some mechanisms for community self-policing. Finally, *safety* contributes to *poverty alleviation*. A lack of safety can thwart poverty alleviation interventions in several ways. For example, the problem of livestock theft results in people's livelihoods, and saving mechanisms can be directly disrupted. Even if a *poverty alleviation* strategy aims to improve livestock management, livestock theft can render these programs completely useless.

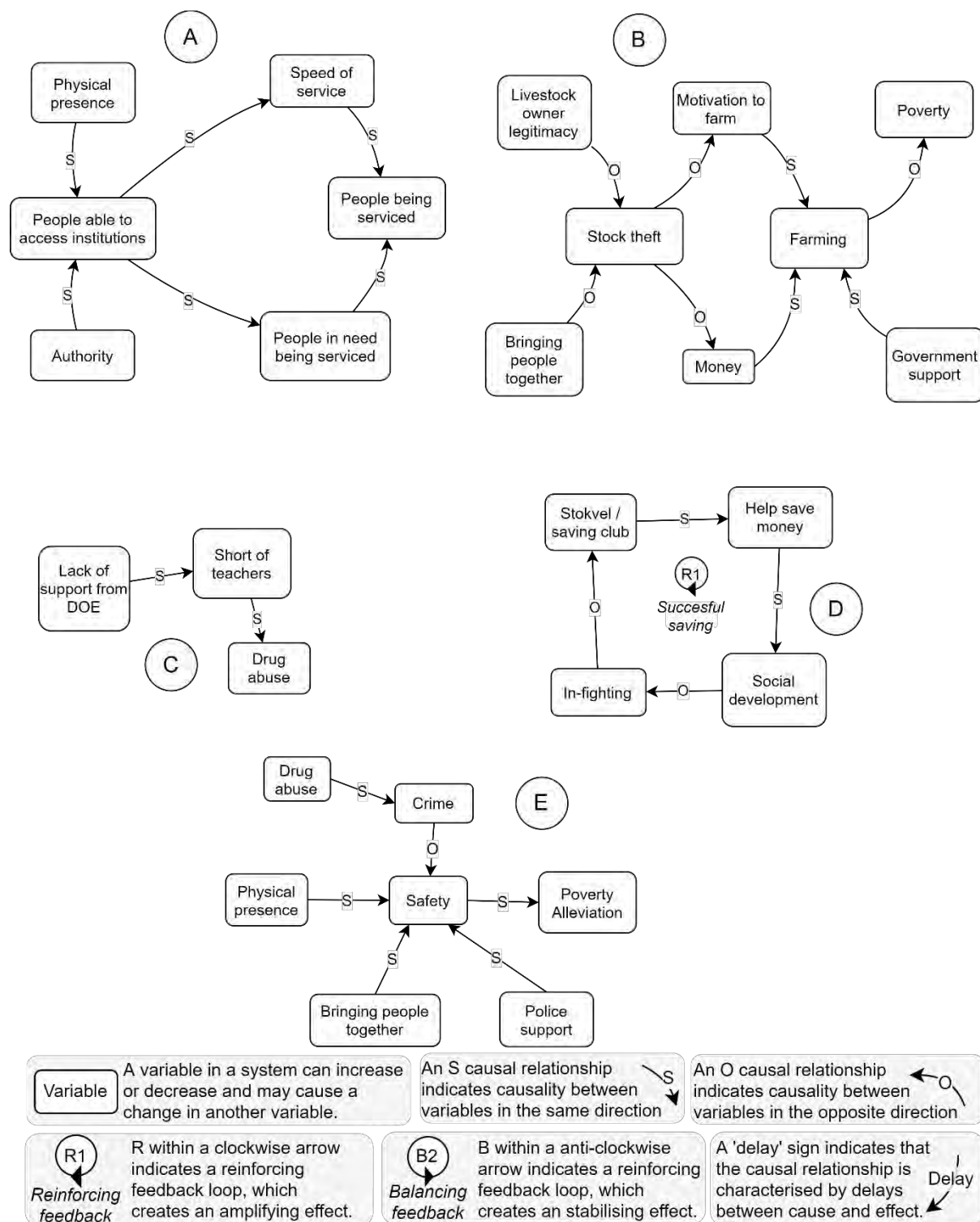


Figure E.9. Interviewee #1 mental models.

INTERVIEWEE #2 MENTAL MODELS

Interviewee #2 is a headman within the traditional leadership structure.

A: *Drug abuse* is a serious hindrance to thriving communities. Access to drugs has become more prevalent as *young people who come back from the city bring back bad habits, including drug abuse*. There has also been an increased trend in *drug dealers exploiting a rural market*. The increase of access

to drugs was also blamed on *foreign* people migrating from other African countries who sell drugs to local people. *R1: Drugs and unemployment* is a reinforcing feedback loop showing the reciprocal relationship between *drug abuse* and *unemployment*. As people are unemployed, they are more likely to use drugs, and this *drug abuse* will reduce the likelihood of an individual obtaining or keeping stable employment.

'*Cheekiness*' and *disobedience* of community members are other variables influencing crime rates. *Cheekiness* and *disobedience* increase when *corporal punishment* and *finest* decrease. The decrease in *corporal punishment* has come about because of an increase in *human rights* associated with the election of a *democratic government*. The *democratic government* has also reduced the *power of the headmen to discipline* community members. The increase in *disobedience*, coupled with the decrease in the ability of traditional leaders to discipline community members, has led to increased *crime*. Interviewee #2 stated that 'the biggest problem, I think, now since there is this new government, there is a lot of human rights about people, they are not so obedient as they used to be. They have their own rights. They are very cheeky sometimes; they do things on their own. They think they are free that they can do anything...They have more rights. They can be cheeky and then go to the government, they can go to the police, the magistrate and the fines are not so harsh so they can do those things. They are free.'

B: Paydays, when employees and people who receive social grants, are not good days to have meetings as people will not attend.

C: Institutional functionality helps speed up service delivery and ensure people can live happily.

D: A reinforcing loop in which farming creates crops that can be harvested and sold. With more money, farmers can do more farming and generate more income. Farming is desirable as it creates food, and jobs, and enables people to live. Stock theft is reducing farmers' money and the number of people who can farm. Thus, farming is decreasing, and more people are resorting to crime.

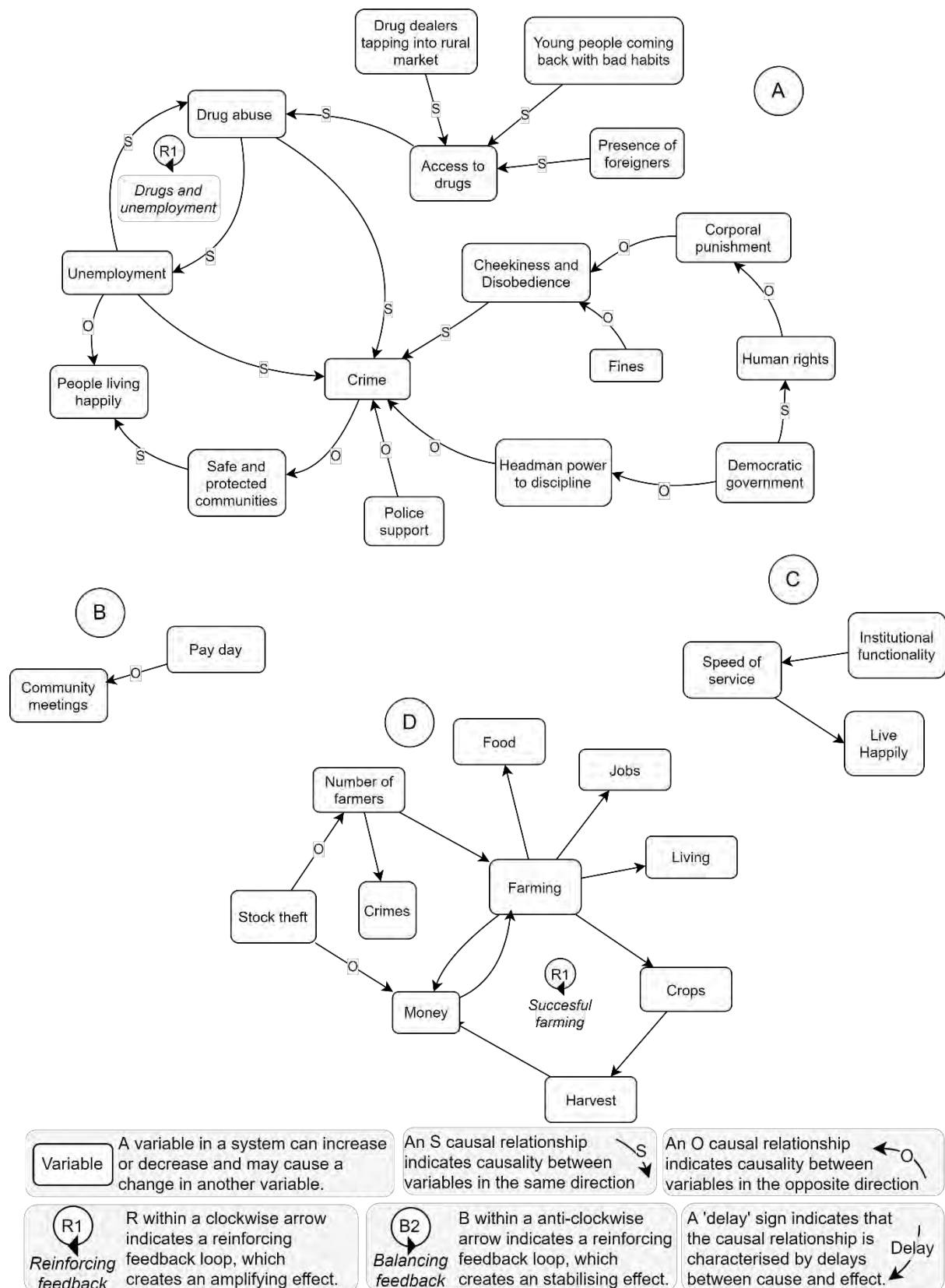


Figure E.10. Interviewee #2 mental models.

INTERVIEWEE #3 MENTAL MODELS

Interviewee #3 is a headman in the lower TsRC within the traditional leadership structure.

A: Development of rural communities is desirable to create work to reduce poverty, empty stomachs, and crime. A lack of opportunities leads to a lack of people working. Development is enabled through financial resources, external assistance and traditional leaders looking after the people and land.

B: Farming is enabled through fencing, external assistance, space to farm, and money.

C: Having work to do is great for enabling people to feed their families, which can reduce poverty and the problems in A. However, work also creates expectations for future work and pay, making people buy furniture and appliances with credit. This means they must pay instalments, and this leads to debt. Inconsistent pay reinforces the tendency of people to go into debt.

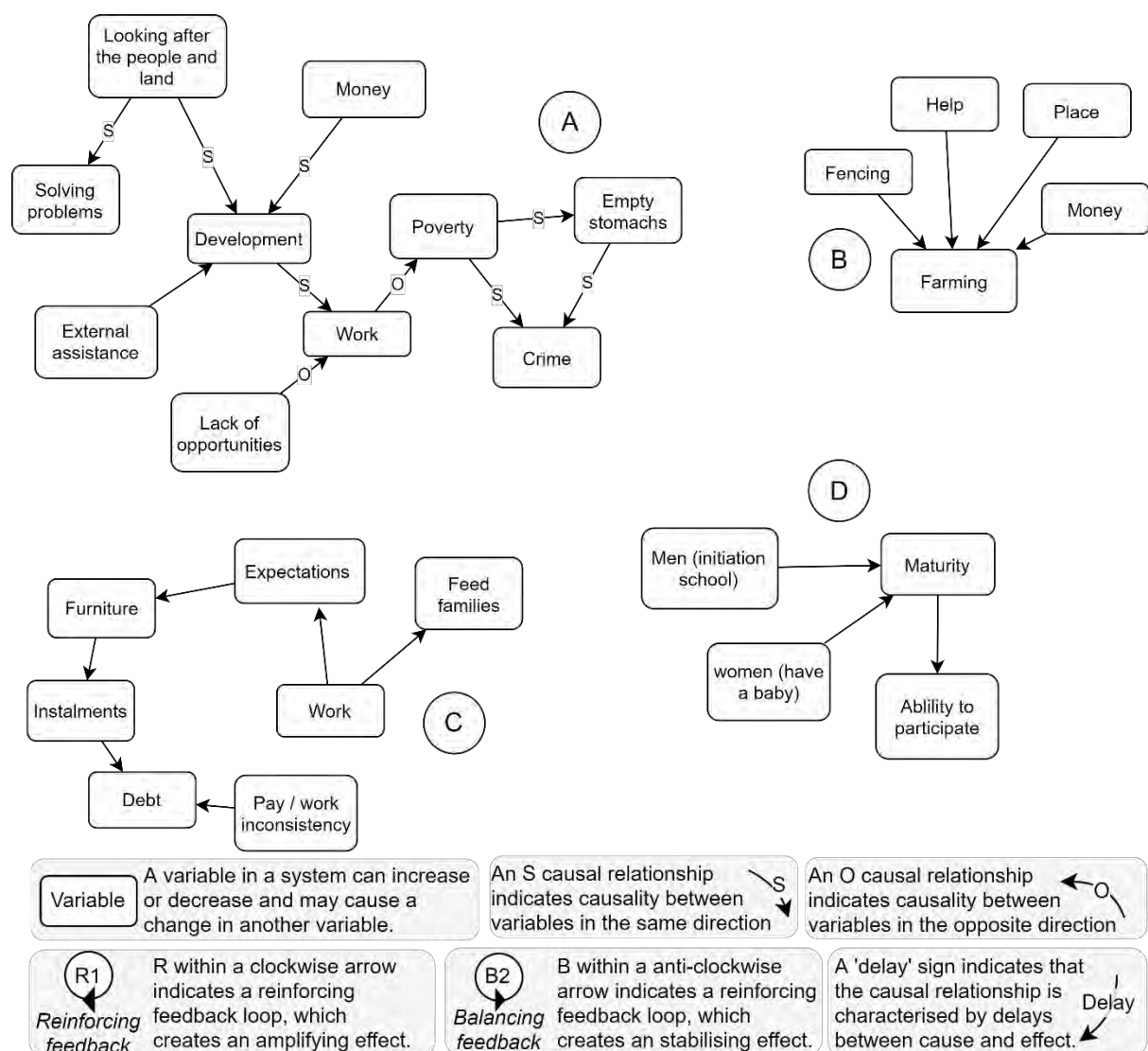


Figure E.11. Interviewee #3 mental models.

D: Community members can only participate when they are mature enough. Men are seen as mature when they have been to initiation school. Women are seen as mature once they have had a child. These rules are flexible.

INTERVIEWEE #4 MENTAL MODELS

Interviewee #4 is the local municipality's integrated development plan manager responsible for performance evaluation and integrated planning.

Figure E.12 was elicited from Interviewee #4, the manager of the local municipality's integrated development planning (IDP) process. The IDP manager works in the Catchment Story with all of the municipality's departments, but his work is heavily dependent on the involvement of Broader Story actors in the planning process. Furthermore, the IDP process is supposed to support public participation and thus involve actors from the Village Story. The mental model in Figure E.12, therefore, spans all three stories.

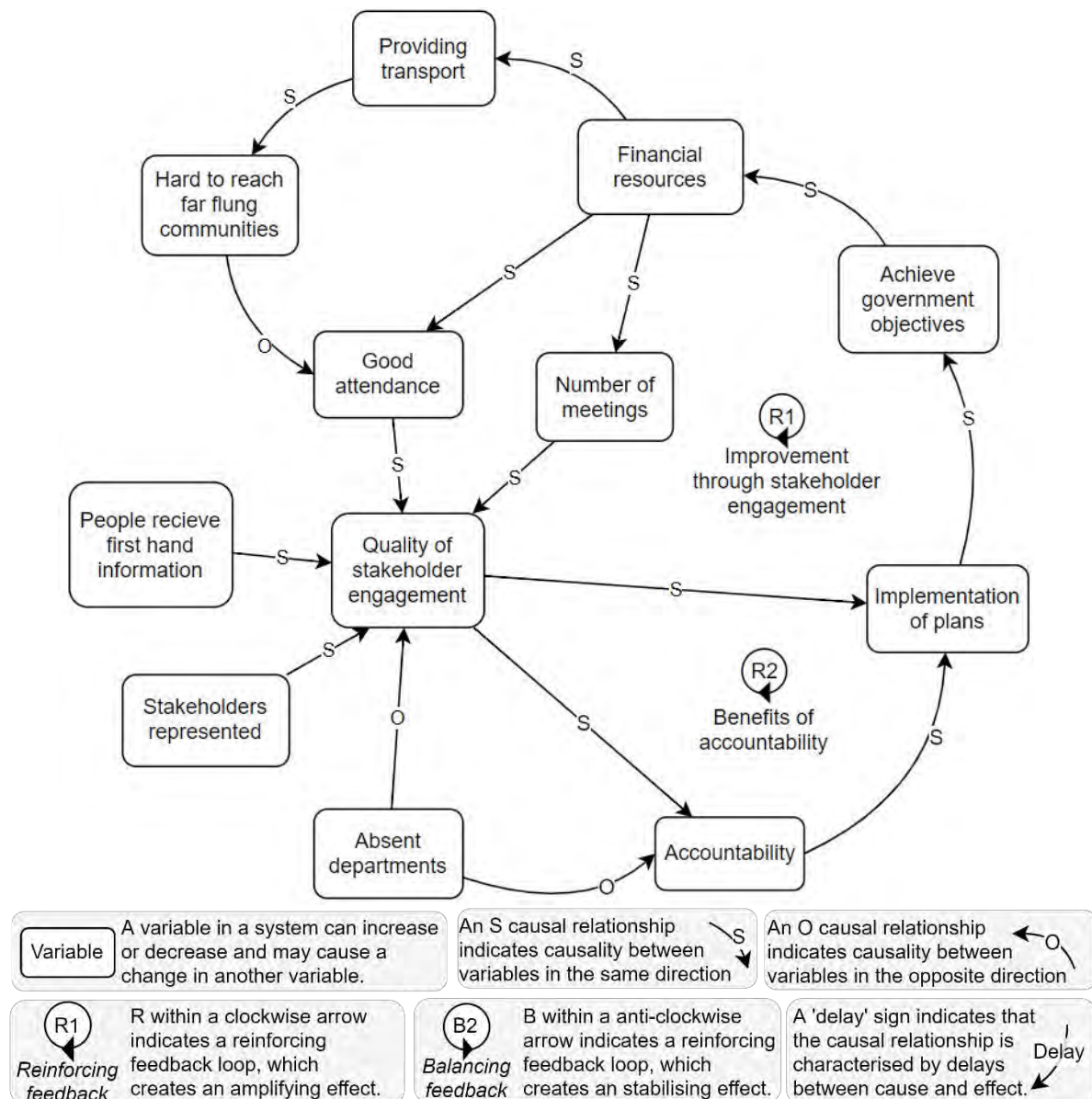


Figure E.12. The mental model was elicited from Interviewee #4.

Interviewee #4 manages the local municipality's integrated development planning (IDP) process. Mental model explores the variables influencing, and the potential benefits of quality stakeholder engagements.

Figure E.12 illuminates the variables influencing the *quality of stakeholder engagement*. The mental indicates five primary variables influencing the quality of stakeholder participation. These include *good attendance*, *number of meetings*, *people receiving first-hand information*, *stakeholder representation*, and *absent departments*. *Stakeholder representation* influences the *quality of stakeholder engagement* as the presence of actors from different departments is necessary for sharing plans to fulfil the IDP's integration mandate. I will discuss the other four variables in relation to the two reinforcing feedback loops.

R1: improvement through stakeholder engagement shows that, in a virtuous cycle, an increase in the quality of stakeholder engagement increases the *implementation of plans* as laid out in the IDP. Supporting the *implementation of plans* is the key role that the IDP plays in helping the *government achieve its objectives*. *Achieving objectives* will increase the *financial resources* available, enabling the municipality to provide more *transport* to include *hard-to-reach far-flung communities* to have good attendance and increase the *number of stakeholder engagements*. Increasing these variables can increase the *quality of stakeholder engagement* conducted by the municipality. A vicious version of the reinforcing loop is one in which a decrease in *financial resources* leads to a decrease in attendance and the number of engagements, decreasing the *quality of stakeholder engagements* and reducing the *implementation of plans* which ultimately decreases the *financial resources* available to the municipality.

R2: Benefits of accountability suggest that accountability is a key variable in supporting R1. Unfortunately, *absent departments* who do not attend the stakeholder engagements disrupt the representation of stakeholders and the *implementation of plans* – which the IDP process is trying to support. Absent departments disrupt the ability of Village Story and Catchment Story governance actors to hold Broader Story actors *accountable*. If departments are absent, then they cannot be held accountable when they do not implement the plans described in the IDP. People receiving *first-hand information* directly from a government department is crucial for stakeholder engagement to achieve their goal. The municipality operates between the national and provincial government departments and the local communities. They often receive a large portion of the blame for systems not functioning without being able to provide the service directly. Thus, having national and provincial departments present to communicate directly with people (*first-hand information*) is key.

Interviewee #5 MENTAL MODELS

Interviewee #5 is the chairperson for a local agricultural project which is supported by an NGO called RAFI.

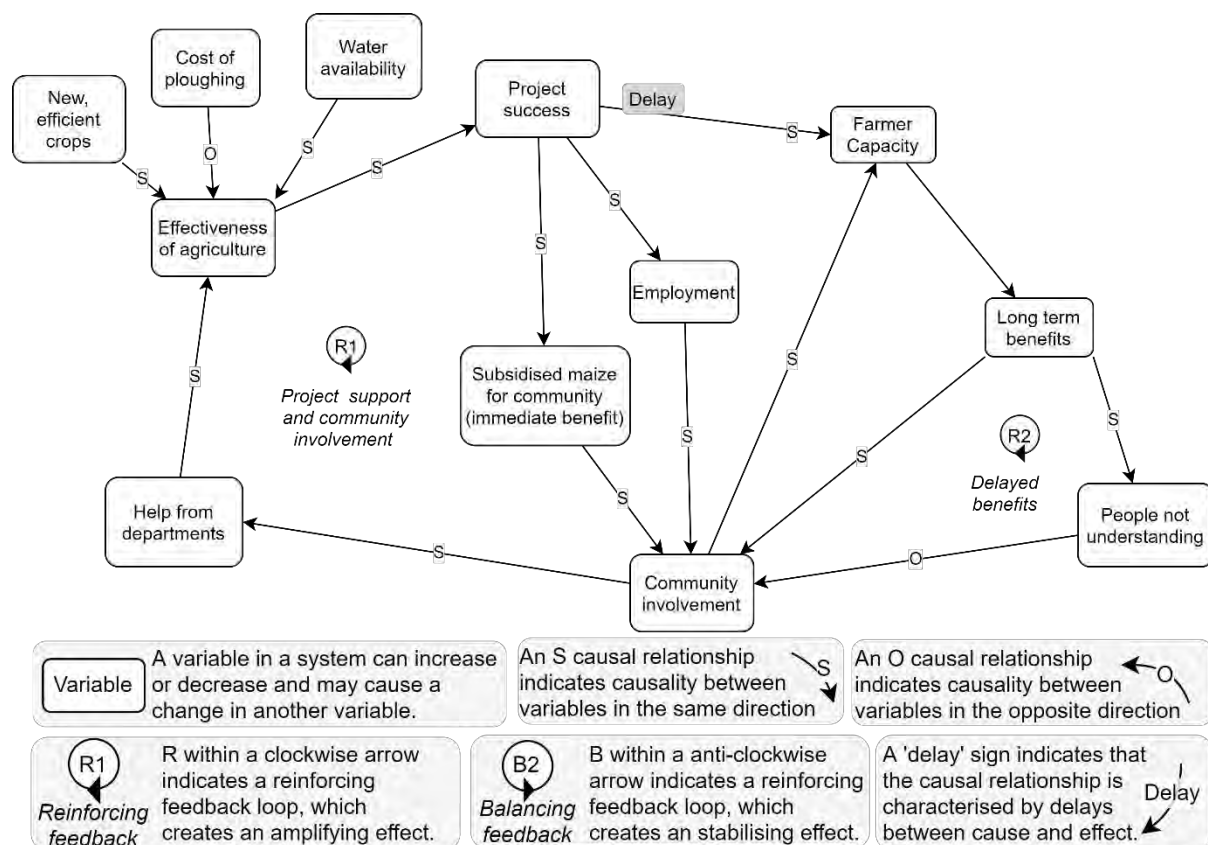


Figure E.13. Interviewee #5 mental models.

The RAFI project aims to improve the effectiveness of agriculture by finding new and efficient crops to plant, reducing the cost of ploughing, and improving water availability. If agriculture can become more effective, then the project can be successful and make money to provide benefits to the community in which it is situated. Short-term benefits include employment and subsidised maize for residents.

Interviewee #6 MENTAL MODELS

Interviewee #6 is the youth outreach community program coordinator employed by DFFE national; she is based at the local municipality.

A: Part of Interviewee #6's role is to reduce the amount of illegal dumping that is happening in the local municipality. Through good working relations with people living around dumping sites, she has been able to create efficient channels of communication which has enabled the reducing of illegal dumping. The process has been supported by community members giving input into the process by sending messages and taking photos.

B: Interviewee #6 works in environmental education, which aims to change people's mindsets about waste and the environment. This is done through educational awareness, which requires substantial tools and resources. Unfortunately, the program is stunted by a lack of tools and resources.

C: Interviewee #6's work is made difficult by the fact that she reports to both the municipality and DFFE. The unclear reporting lines make her work more difficult as she is required to report all her work to multiple people and get pre-authorisation from multiple people.

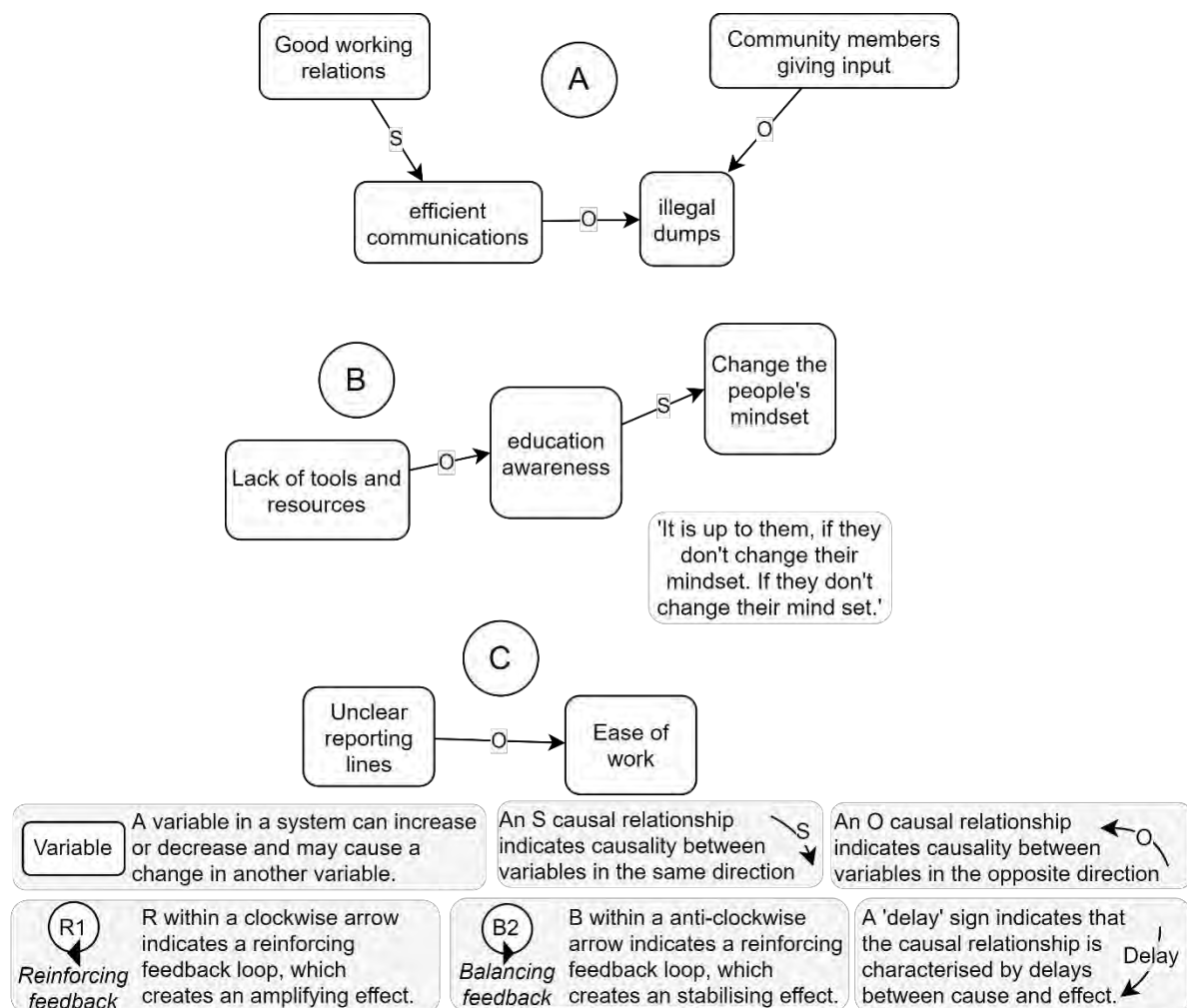


Figure E.14. Interviewee #6 mental models.

Interviewee #7 MENTAL MODELS

Interviewee #7 is an animal health technician with the local office of DRDAR. Unreliable communication channels result in people not attending events. The DRDAR office drives around rural areas in a car with a loudhailer to announce events and call people to campaigns. This direct form of communication ensures that information is directly communicated.

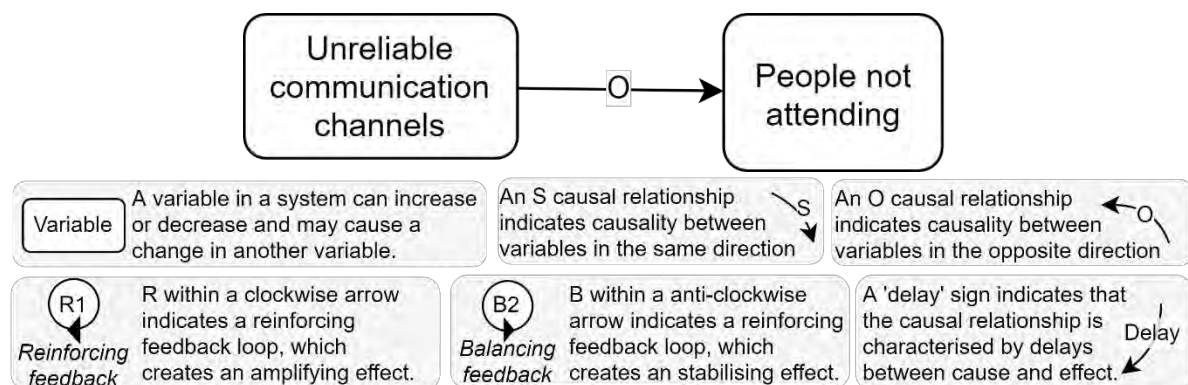


Figure E.15. Interviewee #7 mental models.

Interviewee #8 MENTAL MODELS

Interviewee #8 is the water manager for Elundini Local Municipality, works for the water services provider, and is employed by the water services authority at Joe Gqabi District Municipality.

A: Time spent in the area increases knowledge of the area, which can make a person more helpful. The water manager, who has been working in the area for more than 20 years, is often called by people implementing projects to support decision-making, bringing his knowledge of the area.

B: External consultants want money to motivate them to get what they want. By convincing government departments and municipalities to support their ideas, they create solutions they can implement, not what is needed on the ground or compatible with the local context.

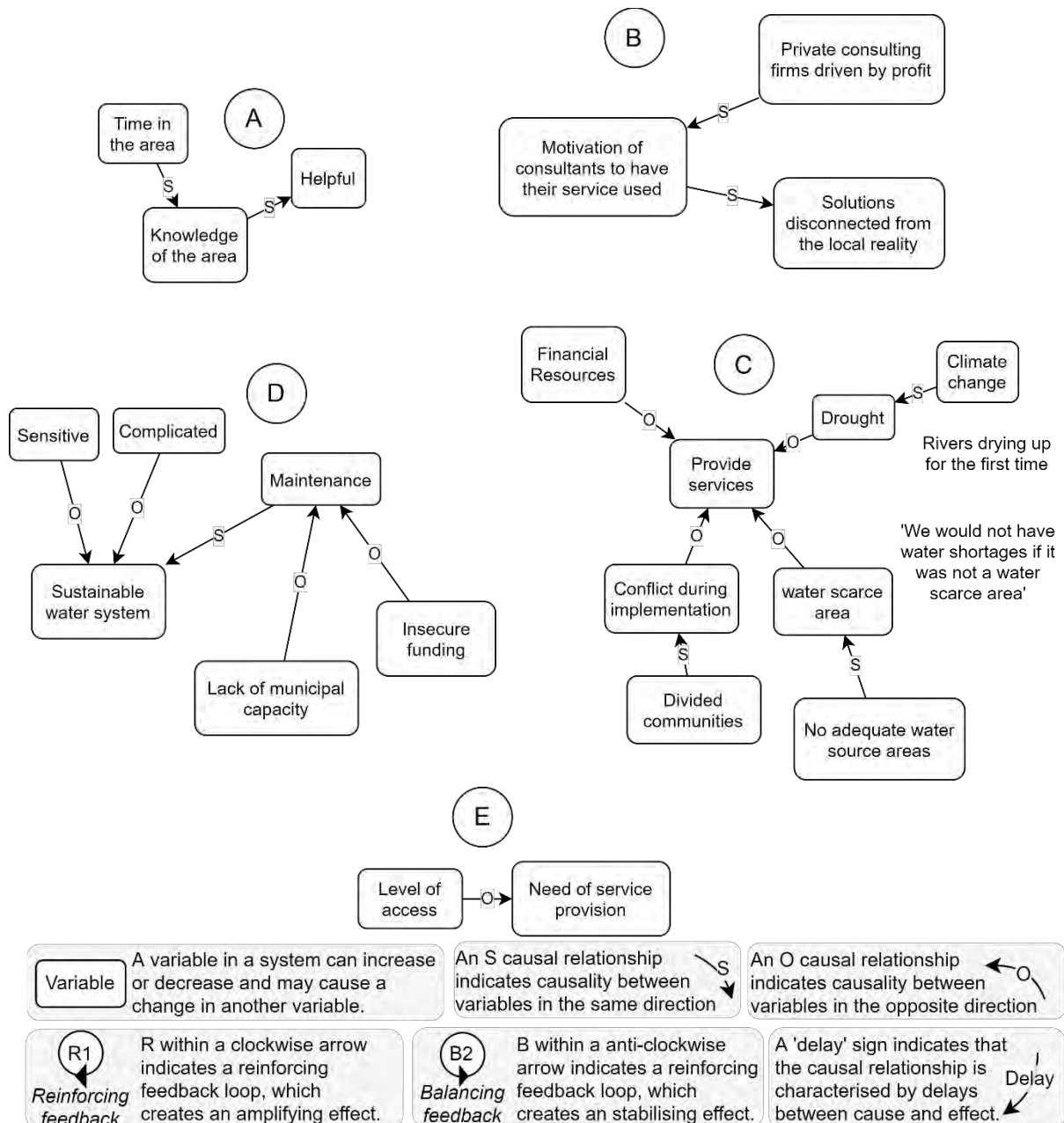


Figure E.16. Interviewee #8 mental models.

C: The goal of the water services provider is to provide water services to people. This requires financial resources. Providing services is limited by drought and climate change, water scarcity in the area and

conflict during implementation of projects. Conflicts occur when communities are divided about what is required.

D: For the water system to be sustainable, maintenance is required. However, maintenance is inhibited by a lack of municipal capacity and insecure funding. Creating a sustainable water system is further complicated by a sensitive and complex system.

E: The water services provider prioritises where to provide services by identifying areas that have poor access to services.

E.2 Key variable diagram generation example

A central part of my systemic analysis presented in Chapter Six is the key variable diagrams representing local governance actors' mental models. The key variable diagrams are causal loop diagrams (CLD) with limited scope and describe the variables that influence a particular key variable. The key variable diagrams consolidate actor mental models while attempting to maintain some of the perspectives which influenced the models rather than being a 'perspective-less' CLD. This appendix includes an overarching example of how several mental models were consolidated into a single key variable diagram.

I have broken down the key variable generation process into four steps with corresponding diagrams below.

Selecting individual mental models and finding links (Figure E.17) was the initial process of selecting mental models from the data set which all describe different aspects of the key variable, representing similar perspectives, and referring to similar scales. I wanted to avoid consolidating diagrams that referred to completely different phenomena. Using the causality in the original mental models, I could then link two diagrams with comparable variables.

Remove redundant and peripheral variables (Figure E.18) was conducted to focus on the key variable diagrams. An important feature of the key variable diagrams is that they do not include a large number of variables.

Refining with reference to data collected (Figure E.19) was a process of returning to the original data collected and the individual mental models and ensuring that I had not altered any of the causality. I also added variables that were necessary to promote readability and coherence.

Cleaning up and presenting (Figure E.20 & Figure E.21) the diagram also supported readability.

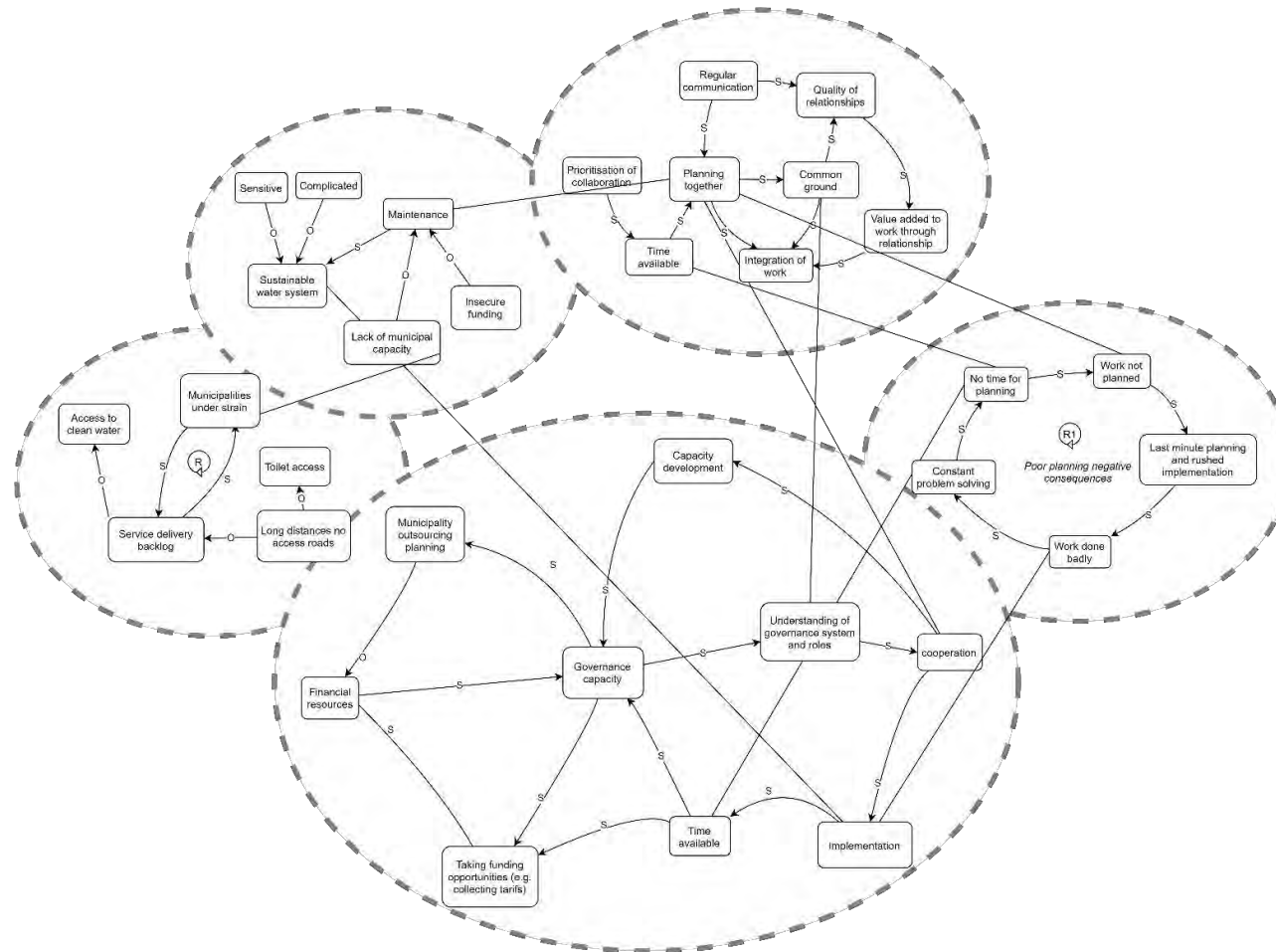


Figure E.17. Key variable diagram generation – selecting individual mental models and finding links.

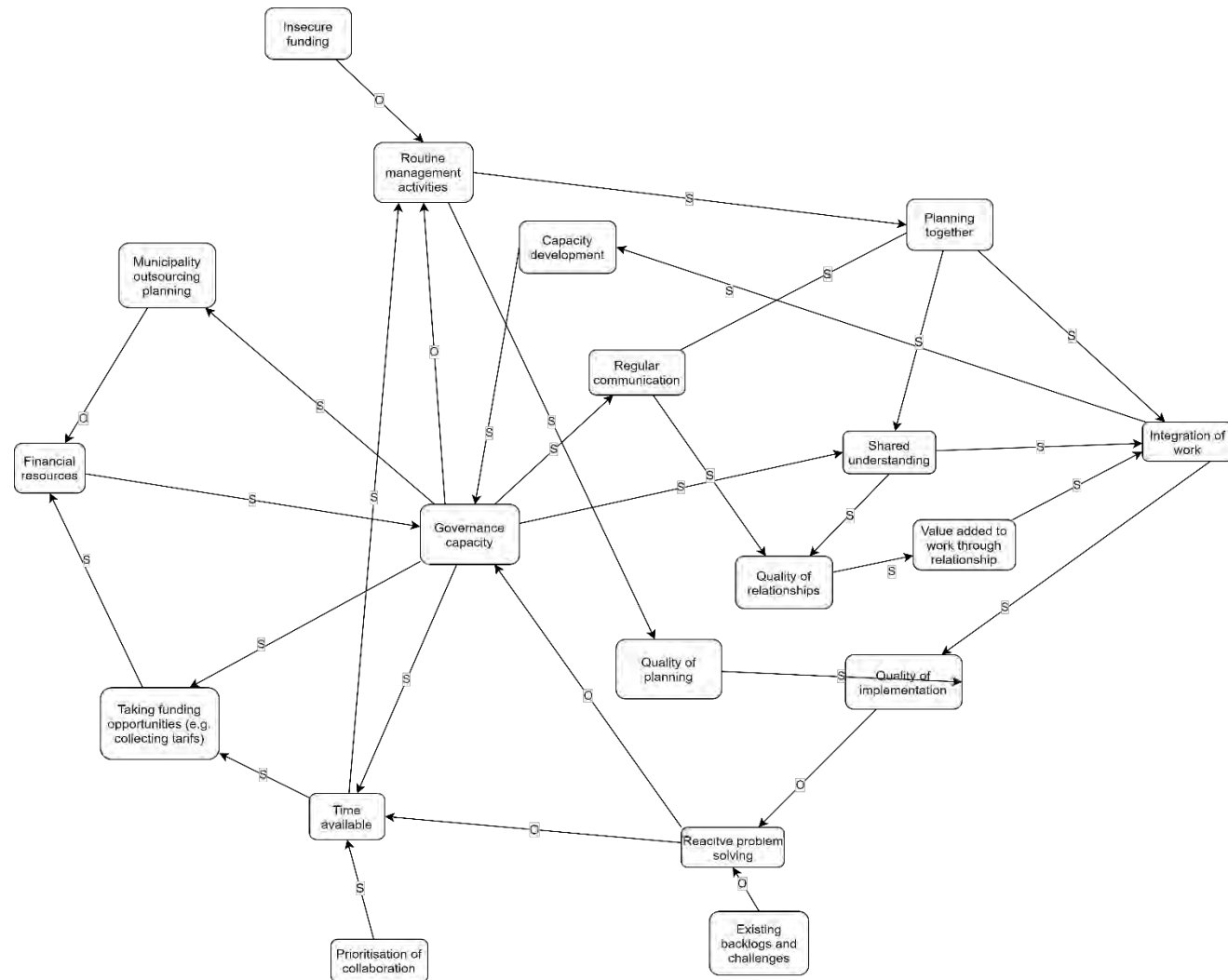


Figure E.18. Key variable diagram generation – removing redundant and peripheral variables.

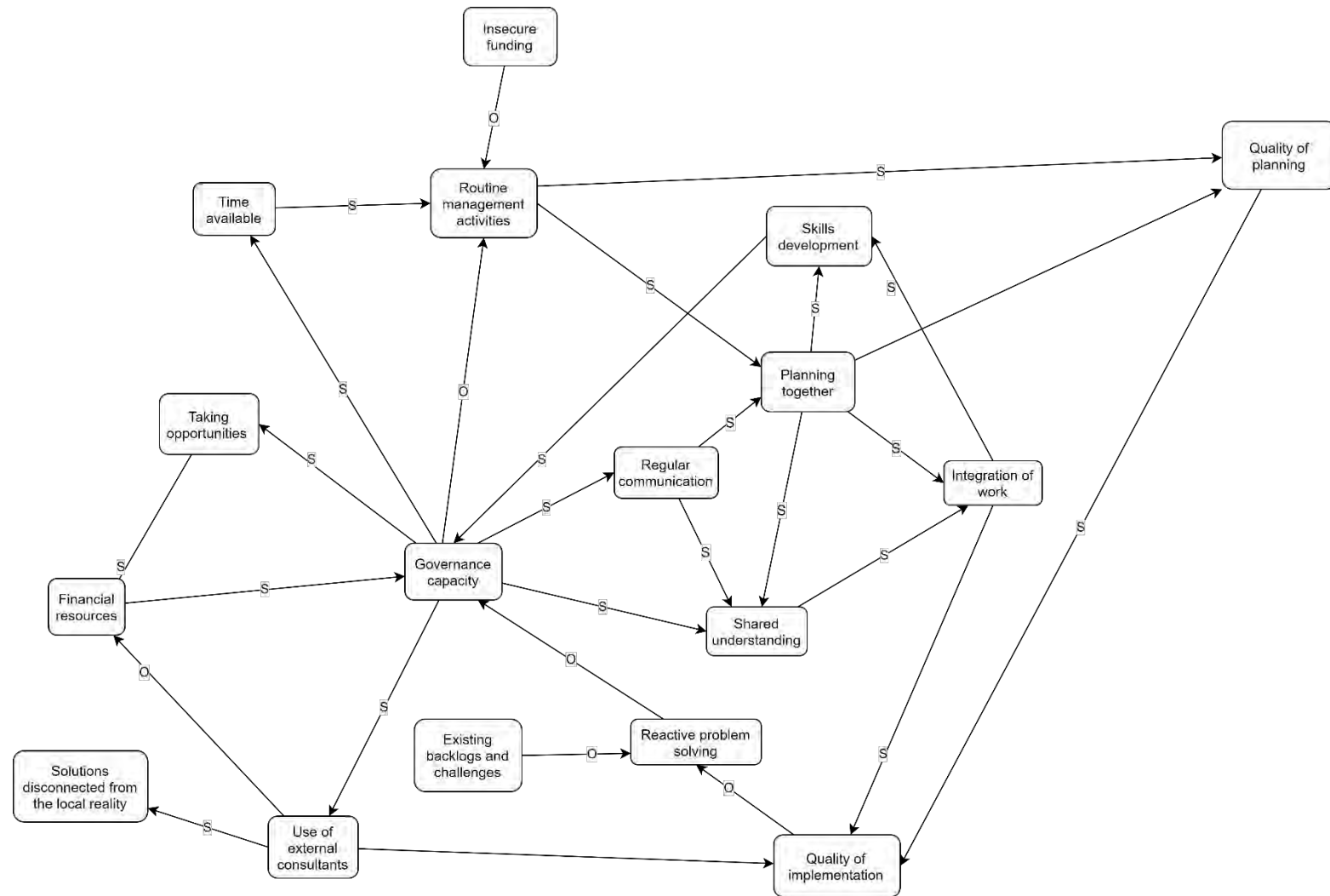


Figure E.19. Key variable diagram generation – further refining with reference to data collected.

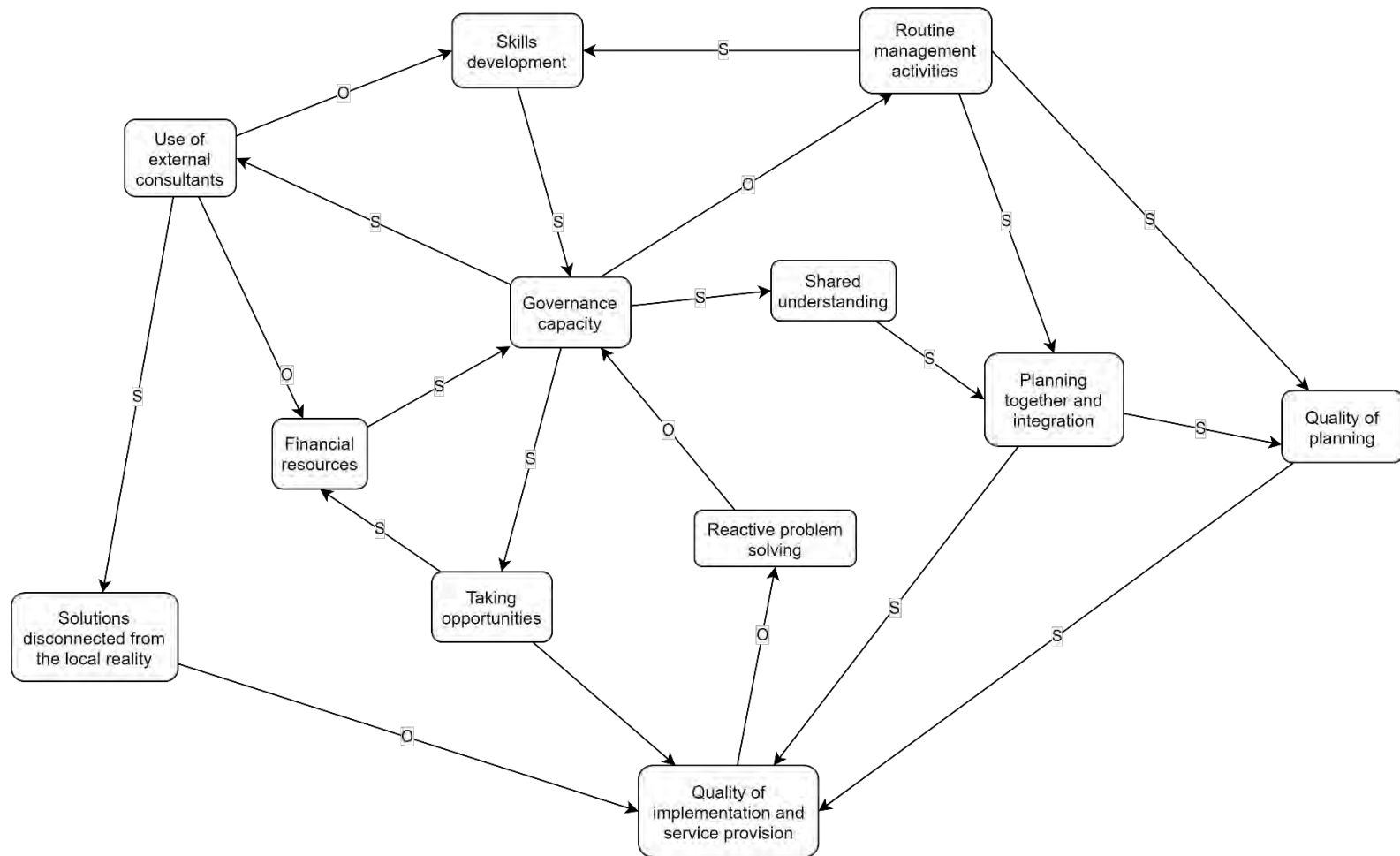


Figure E.20. Penultimate version of the capacity and resources available for participatory governance key variable diagram.

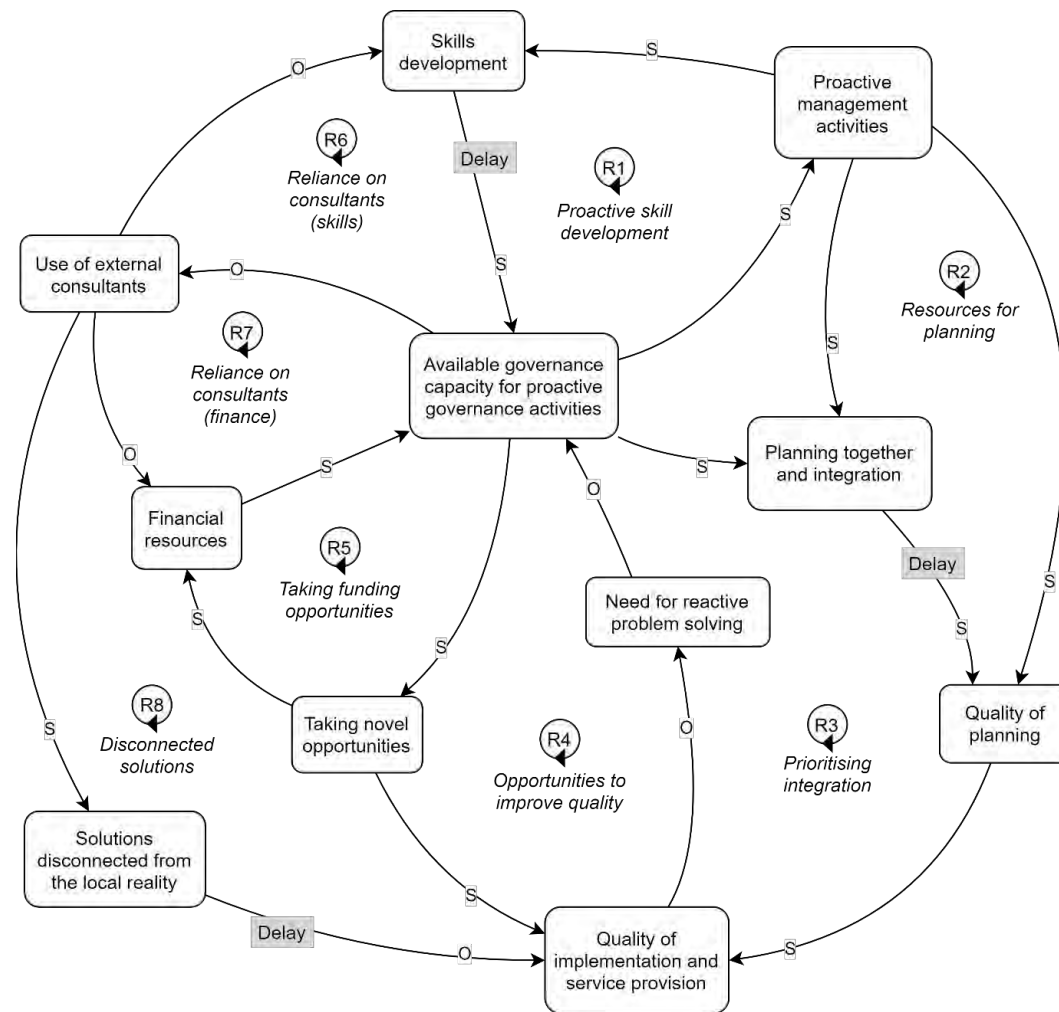


Figure E.21. Capacity and resources available for participatory governance, a key variable diagram.

E.3 Collaborative causal loop diagrams: Relationships in natural resource management

Introduction

High-level instability within natural resource management (NRM) has serious impacts at all levels of NRM - not only on the fulfilment of contractual obligations and the realisation of benefits (environmental and social) but also for the personal integrity, mental health, and safety of people on the ground. Representatives face community dissatisfaction and institutional pressure because of high-level change and instability. In the context of existing mistrust, uncertainty breeds confusion and unintentional dishonesty.

The intervention under scrutiny in this document was the 'showing up' of 'higher-level' officials to instil confidence and increase certainty in attempts to improve work and reduce the pressure on on-the-ground representatives (this is a retrospective statement of purpose relevant to the focus of this analysis). This intervention was enabled through pre-existing trust and social capital (the actual backbone of this work).

I used a similar method as described in Chapter Six. I actively participated in the meeting and was then the primary model builder—the initial diagram drawn from notes made during the meeting. Meeting notes were converted into a causal loop diagram. Member-checking and co-creation was then done with colleagues. Colour coding was done post-collaborative diagramming to support diagram readability.

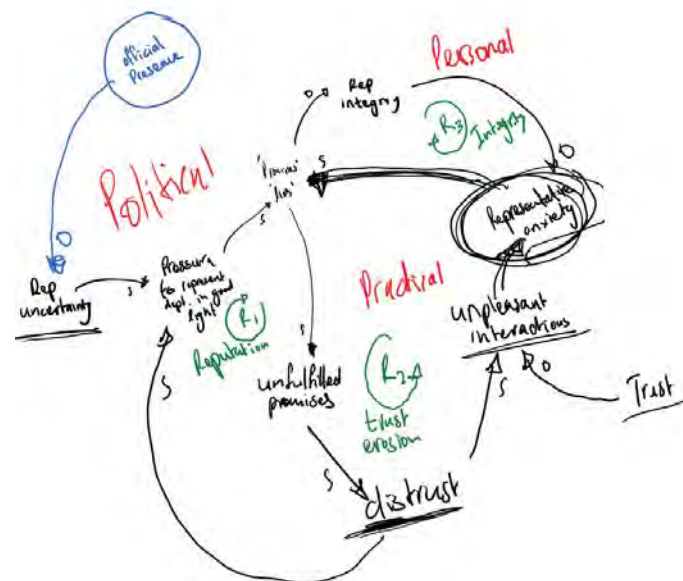


Figure E.22. Initial causal loop diagram exploring relationships in natural resource management.

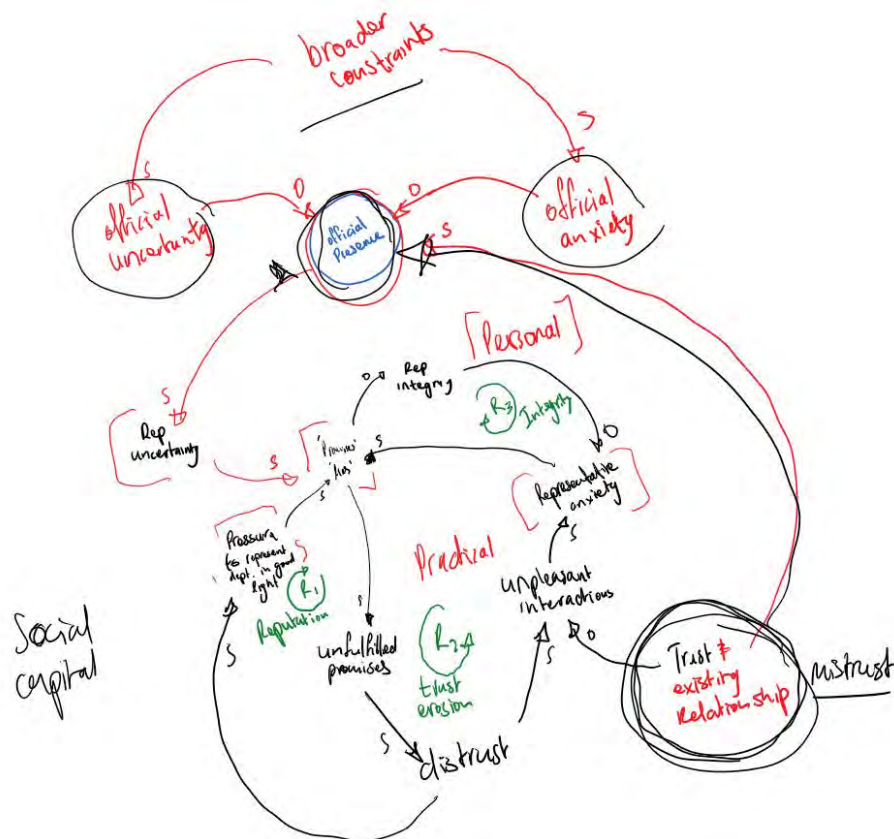


Figure E.23. Causal loop diagram created collaboratively with a Tsitsa Project collaborator. This CLD includes broader factors contributing to whether an official can buy in and be present. This CLD was used to initiate a discussion with an implementer working under DFFE.

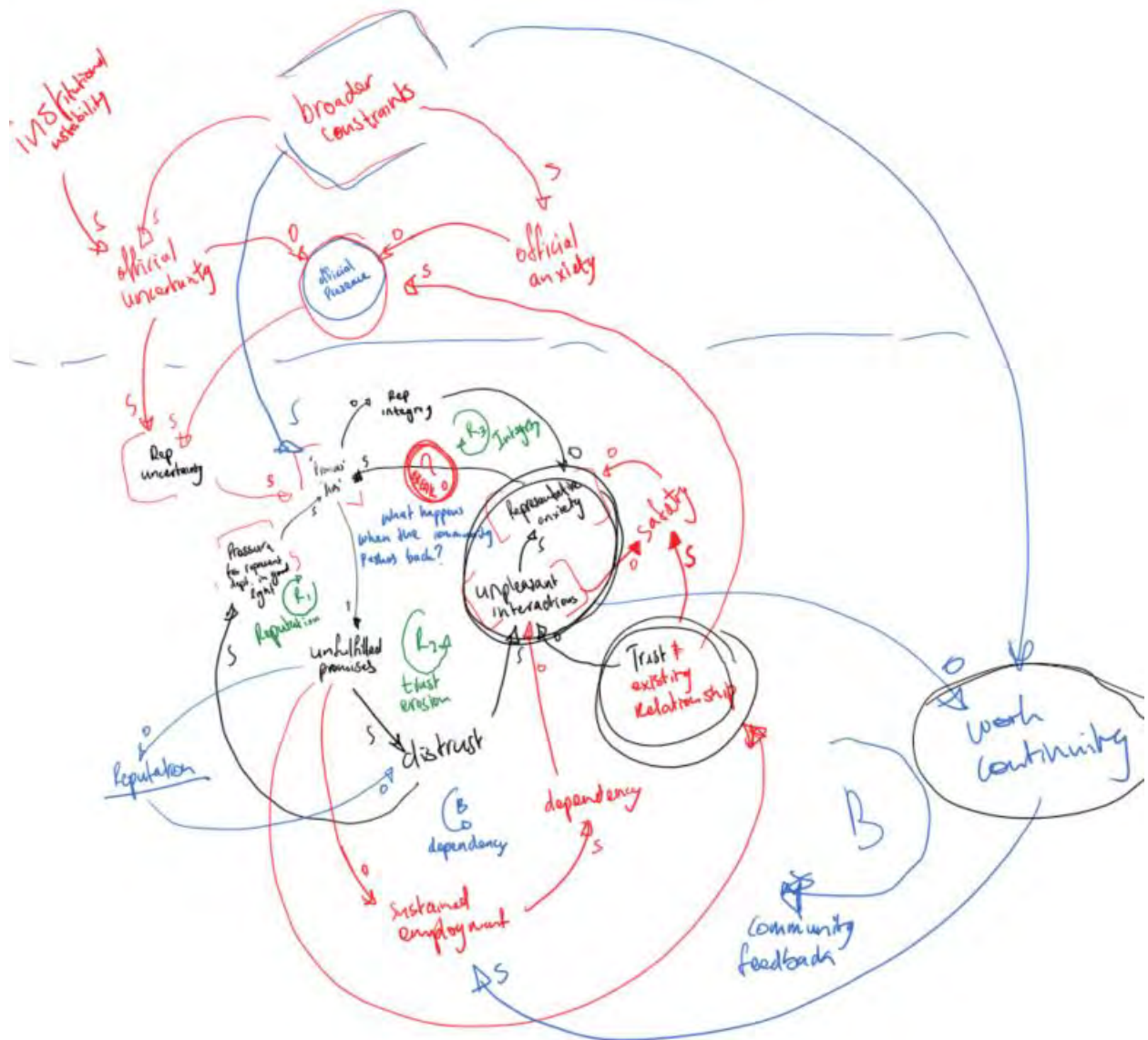


Figure E.24. Causal loop diagram further edited with research collaborators.

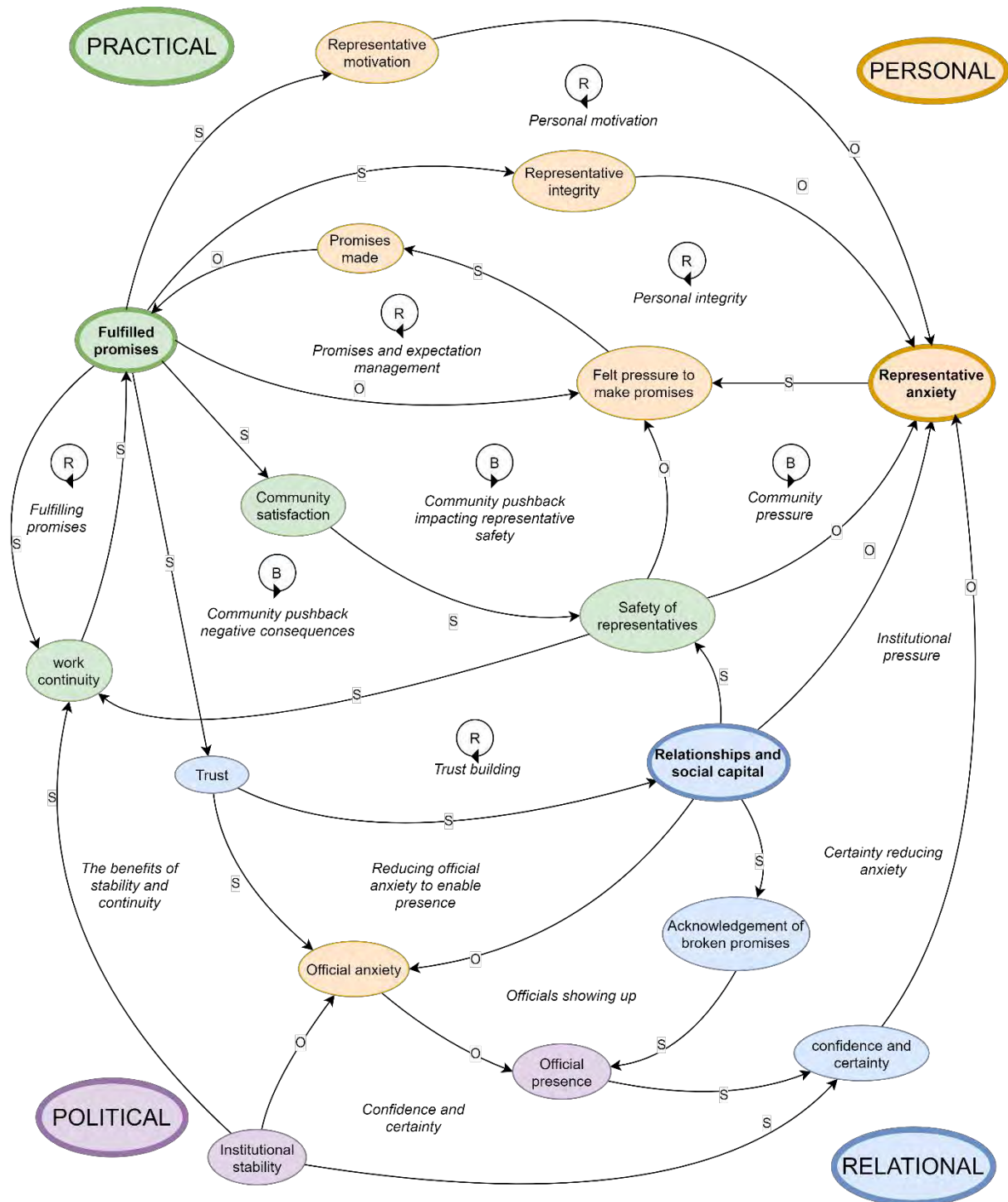
This CLD emerged from a process of ‘member checking’, which yielded further detail regarding personal safety and the benefits of sustained employment, and, importantly identified where the model breaks down in its attempts to represent our complex understanding.

Findings

The discussion and figures include three categories of actors - the ‘official’ typically from the Broader Story, the ‘representative’ involved in implementation in the Catchment Story, and the ‘community’ in the Village Story who are supposed to be benefiting from a particular project. The officials fund and provide strategic oversight for the restoration work, the representatives manage and implement the work, and the implementers employ the community.

Based on my notes from the meeting, I drew a preliminary diagram. This initial diagram included three reinforcing loops. R1, I have described as political and related to the pressure felt by representatives to keep communities happy and maintain the reputation of the institution employing them. R2, I described as practical and related to the practically unfulfilled promises and the distrust which results.

R3, I have described as personal and relates to a representative's integrity when they tell lies or make promises they cannot keep.



The three **bolded variables** provide the backbone for the diagram – fulfilling promises is crucial for maintaining relationships and the well-being of workers and representatives.

The **colour coding** helps guide the reading of the diagram (orange: personal, green: practical, blue: relational, purple: political). The political influences the relational, which influences the practical and the personal, and for the representatives, the practical has severe implications for the personal.

I wonder: what enables promises that cannot get fulfilled? Moreover, what happens (at multiple levels) when promises are broken?

Personal integrity

When promises are fulfilled, and work is happening, people see benefits, representatives feel motivated, and their integrity is intact. These motivations and integrity help to reduce anxiety and the pressure to make promises to the work teams. When the promises are not fulfilled, motivation and integrity decrease, leading to sleepless nights and difficult mornings. This anxiety increases pressure to make promises and appease the beneficiaries.

Promises

Promises here refers to statements made by representatives to manage dissatisfactions. Regularly this is about payment for services rendered by communities.

As representatives feel under pressure to make promises and keep people happy, the number of promises increases, and the chances of these promises being met decreases. However, as promises are fulfilled, then the pressure to make new promises decreases. This reinforcing cycle can be virtuous or vicious. Either more fulfilled promises reduce pressure to make more promises and the number of promises made, which increases the likelihood of all promises being met (virtuous). OR promises are not met, which increases the felt pressure and the number of promises made, decreasing the number of fulfilled promises, and thus increasing the pressure (vicious).

Community pushback and pressure

As promises are unfulfilled, the likelihood of a dangerous interaction increases, reducing the representatives' safety and increasing their anxiety. Pushback from the community can have several consequences. It could increase the felt pressure to make more promises. It could also impact work continuity as representatives decide not to work with specific communities based on negative experiences. With this discontinuity, once again, promises are not met.

How can officials support representatives when a community pushes back? Pushback is not necessarily a problem and if taken as a sign of agency, could have transformative potential – expecting a representative to facilitate the realisation of this potential is irrational.

Felt pressure to make promises

A crucial variable is the representatives' information and their confidence to share it. The improved relationship between the official and the representative, as well as the showing up of the official, are ways to reduce a representative's anxiety and uncertainty.

Importantly, how do representatives behave under pressure? How can we reduce this anxiety and pressure?

Trust building

As promises are fulfilled, trust is built. Trust is a crucial link from fulfilled promises back to building relationships that enable safety and certainty (trust between representative and community). Trust also directly reduces dangerous interactions and supports relationships that increase safety and reduce anxiety. Trust can also reduce the anxiety felt by officials - anxiety which would reduce their tendency to show up (trust between official and representative).

Certainty does not mean that something is going to happen. Certainty that something is not going to happen can be equally useful.

Relationships

Relationships and social capital unlocked through trust can enable the engagement of different groups. These relationships can also increase safety and reduce anxiety. For example, a headman supporting a representative when a community asserts its power.

Officials showing up

The presence of social capital was also key in enabling ‘high-level’ officials to receive crucial feedback detailing broken promises and, importantly, feel safe enough to be physically present. These relationships can enable officials to show up and help to reduce uncertainty, increase shared understanding, and increase confidence. This presence helps reduce anxiety on-the-ground.

The gap in understanding between an official and a community member must not be underestimated and officials showing up and sharing information needs to be done carefully to avoid further promises and unrealistic expectations.

Institutional stability

Stability increases confidence and ensures work continuity. Instability in turn reduces continuity and increases uncertainty.

The shockwaves of institutional instability are conventionally felt most severely by the community, then the representatives and finally the officials. Showing up seems to be a powerful way to spread the impact of the shocks. Careful thought and facilitation are important – especially where the existing tendency is towards mistrust.

E.4 Observation data summary

Table E.1. Summary of the observation data collected.
Data source refers to the way in which I formally recorded the observations, either in personal field notes or in reports which I submitted to the Tsitsa Project. In line with the framing of Objective Two, I identified variables as well as patterns emerging from the observations.

Activity	Data source	Emerging concepts and variables	Emerging trends and patterns
I attended and co-facilitated the first 'Learning Words' workshop in Nqanqarhu, in the Tsitsa River Catchment (TsRC) with the GovCoP (Palmer et al., 2022).	Workshop report	Language, complexity, governance capacity, adaptive, participation, reflection, connection to nature, power of nature, resource use, respect, attendance, verbal.	Lack of vocabulary among residents necessary for engaging in land and water management, people nervous engaging with new people, individual introductions supporting participants feeling comfortable, known language supporting comfort, starting with what people knows enables people to feel comfortable, multiple uses for a single resource causing conflict, difficult to translate terms across languages, being given a chance to speak makes people feel respected, verbal exchange offers richer information in comparison to written.
Participated in a fieldtrip conducted by the Tsitsa Project Catchment Coordinator introducing LIMA to the Tsitsa Project's collaborators in the TsRC.	Fieldnotes	Shared understanding, physical presence, delays.	Constant communication with traditional leaders slows processes, contractual delays stopping work, time together enabling shared understanding.
I participated in an integrated planning meeting in East London - between the Tsitsa Project, Department of Forestry, Fisheries, and the Environment (DFFE) and DFFE implementing agents (DFFE IAs).	Back-to-office report	Flexibility, collaboration, integration, communication, physical presence, boundaries, education, business, and livelihoods.	Pilot project enabling flexibility, physical presence enabling direct communication, direct communication reducing difficulty of communication, contractual issues slowing work, written agreements supporting work, public transport enabling interactions.
I attended the Umzimvubu Catchment Partnership (UCP) quarterly meeting in Matatiele as well as a Meat Naturally cattle auction.	Back-to-office report	Benefit, water sources, contractual issues, physical presence, formal power, and institutions.	Creating a new space explicitly for collaboration enables collaboration, contractual issues delaying work, building relationships takes very long but is necessary for collaboration, creating a structure outside of any individuals mandate enables collaboration.

<i>Table E.1. Summary of the observation data collected.</i> <i>Data source refers to the way in which I formally recorded the observations, either in personal field notes or in reports which I submitted to the Tsitsa Project. In line with the framing of Objective Two, I identified variables as well as patterns emerging from the observations.</i>			
Activity	Data source	Emerging concepts and variables	Emerging trends and patterns
I attended a series of two actor mapping activities with researchers for the University of KwaZulu Natal.	Back-to-office report	Language, planning, collaboration, learning, adaptability, attendance.	Municipal and traditional leader conflicts (related to boundary mismatches), rigid activity reducing efficacy, making time for reflection enables learning, adapting a process to the group enables learning, big group sessions not enabling to quiet majority to engage.
I conducted first set of interviews with local governance actors – community development workers (CDWs) and headmen.	Back-to-office report	Communication, physical presence, scale, language, culture, accessibility, literacy, power.	physical presence enabling availability and communication, increased scale of work reduces availability to individuals, traditional leaders available and willing, municipal actors difficult to contact and meet, translator/boundary spanner support communication, lack of literacy influencing participation and communication.
I joined the restoration methods field trip organised by the Sediment and Restoration CoP and attended by DFFE regional managers, DFFE IAs, and Tsitsa Project team members.	Field notes	Pilot project, restoration, erosion, patience.	poor quality of restoration work linked to inexperienced teams and poor-quality control, large scale erosion increased by human activity, local livelihood involvement essential for restoration, patience enabling collaboration.
Local Municipality's Integrated Development Planning communicators forum	Back-to-office report	Facilitation, information flows, rurality, jobs, attendance, buy-in, language, physical presence, commitment.	Informal matching of traditional and democratic boundaries (creating gaps), lack of reference to water resources, information flow and reporting enabling collaboration, physical presence indicator of commitment, rushed proceedings reducing participation, lack of buy-in reducing efficacy of engagements, verbal communication in isiXhosa written in English, ruralness reducing development.
Municipal Ward Based Planning.	Back-to-office report	Buy-in, power, attendance, spatial mismatch, engagement, interest.	Overcommitment of local actors reducing attendance, formal governance trying to create community organisations, community organisations stifled by formal institutions, different departments clustering wards differently, participants engaged and willing, lecture style engagement reducing learning.
I attended a meeting between Tsitsa Project and the local Department of Rural Development and Agrarian Reform (DRDAR) office.	Field notes	Capacity development, collaboration, staff turnover,	Agreements not being followed through with, collaboration reducing conflict between work, changing of staff reduces working relationships, lack of communication creating problems, lack of benefits creating problems.

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Activity	Data source	Emerging concepts and variables	Emerging trends and patterns
Follow up interviews, including influence and accessibility mapping with CDWs and headman.	Field notes	Power, accessibility.	Traditional leaders and municipal officials both overstate the power of their own actors.
I assisted and co-facilitated a village level planning process with the Tsitsa Project's Livelihoods CoP and the Sediment and Restoration CoP.	Field notes	facilitation, literacy, participation, adaptability.	Strong facilitation supporting meaningful engagements, diverse participants enabling peer-to-peer learning, working in rural communities requires adaptability.
I formed part of the interview panel hiring Community Liaison Officers (CLOs).	Field notes	communication, nepotism, information flows.	Using multiple methods of information sharing enables communication, divisions within the community and dominance of informal information flows means that people are often unaware, people in power pushing for their friends to be hired.
I joined a field Trip to the Chevy Chase LandCare Project run by the DRDAR.	Field notes	Community participation, collaboration, disconnection.	People not aware of each other's work and not collaborating even in the most obvious cases, lack of flow across groups in the Catchment Story.
I co-organised and co-facilitated to Tsitsa Project Roadshow 2019 with Tsitsa Project CoPs, LIMA, and CLOs.	Back-to-office report	Opportunism, community participation, agency, payment, language.	Open agenda supporting community engagement, poor waste removal and community awareness polluting river, government is giving money for everything resulting in nobody doing anything unless the government is willing to pay them for that service, Lack of contextual knowledge leading to problems, collaborative reflection enabling learning.

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Activity	Data source	Emerging concepts and variables	Emerging trends and patterns
I co-organised and co-facilitated the Module One of the Capacity Development Short Course created for the Tsitsa Project catchment-based monitors	Tsitsa Project reports	Learning environment, adapting, skills, technology, networking, confidence, external engagement, facilitation, constraints.	Feeling respected helps learning and supports cooperation, diverse participants can learn from each other, diverse learning methods support engagement, communicating online supports new ways of communicating and changes relationships with technology, stress and anxiety create apathy and reduce learning, learning enables new skills and interpersonal relationships, fun games support learning, engaging space enables networking which enables out of workshop learning and confidence, people having their voices heard supports external engagements and identity growth, a culture of learning supports knowledge cocreation and practicing together, understanding of context enables problems to be envisioned and reduced early.
I co-organised and co-facilitated the series of three Learning Words expansion workshops and village-level actor mapping focus groups	Tsitsa Project Report	water shortage, support, reflection, learning, capacity,	Communities not being supported in times of drought, outcomes of informal reflection difficult to capture, formal reflection difficult to force, people interpret tasks in different ways, people learn in different ways, lack of support from institutions has created local skills and activities.
I attended a meeting between the water service authority under Joe Gqabi District Municipality (JGDM) and the Elundini Chamber of Commerce (ECC).	Back-to-office report	Historic conflict, information flow, responsivity, communication, awareness, challenges, trust, disaster.	Local businesses helping municipality, municipality unresponsive, lack of reciprocity creating tension, making time enabling collaboration, more information would help community (especially in crisis), changing rainfall patterns, aging infrastructure causing problems, operational communication services supporting appropriate service provision, plans get made but are not followed through, declaring disaster enables fast-tracking of projects.
I attended the Tsitsa Project Science-Management Meeting 2019 in Qonce (Formerly King Williams Town). I did some co-facilitation and presented a talk entitled: <i>Community Engagement and Governance Activities 2019</i> with a colleague from LIMA.	Field notes	Community participation, integration, inviting actors, absence, staff turnover.	Collaboration limited by important actors not being invited, if you cannot get high-level actors to cooperate then you need to go to them, big money pulls participation and uncertainty reduces interest, stability of traditional leaders supporting relationship development, talk in workshops does not translate into action, busy work lives reduce collaboration and working together.

<i>Table E.1. Summary of the observation data collected.</i> <i>Data source refers to the way in which I formally recorded the observations, either in personal field notes or in reports which I submitted to the Tsitsa Project. In line with the framing of Objective Two, I identified variables as well as patterns emerging from the observations.</i>			
Activity	Data source	Emerging concepts and variables	Emerging trends and patterns
I attended a community meeting with the Tsitsa Project in a rural village, Qulungashe in the Lower Sinxako area.	Field notes	attendance, youth involvement, information flow.	historic disagreements can reduce attendance, youth not within communication channels being excluded, youth think meetings are for old people, community divisions reduce information flow, historic tensions reduce meeting efficacy.
I attended the Tsitsa Project climate change workshop with municipal officials in Mount Fletcher. Organised by the Climate Change CoP.	Back-to-office report and collaborative reflection	Information flow, cross communication, integration, reliance, governance capacity, patience, disruption, existing tensions, negative attitudes, open dialogue, learning, content appropriateness, diverse activities.	Reliance on external consultants resulting in inappropriate planning, facilitator patience enabling dialogue and reducing tension, disruption in workshop reducing concentration and learning, diverse methods supporting learning, diverse actors learning together.
I attended a Wetlands Day organised by provincial Department of Economic Development Environmental Affairs and Tourism.	Back-to-office report	venue layout, attendance, Learning, drama.	Acting and drama enabling learning, long presentations reducing learning, music used to energise the crowd.
ONLINE: Elundini Local Municipal IDP representative communicators forum.	Field notes	Accessibility, connectivity, participation, support, race and transformation, procurement, community disagreement.	Rural municipalities struggling to move online, information being fed back to departments but few departments present, lack of attendance and buy-in reducing utility of participation, screen in KFC effective communication channel, 99% of municipal staff are black South Africans, procurement stopping work, community disunity stopping projects, very little time for questions and feedback.
Actor mapping with the Living Catchments Project.	Field notes	Stakeholder engagement, collaboration, informal relationships.	Visualisation of networks aids collaboration, a lot of collaborative work depends on informal connections, formal connections can often be the least stable, the more than one participant talks, the more it fuels brain storming.

<i>Table E.1. Summary of the observation data collected.</i> <i>Data source refers to the way in which I formally recorded the observations, either in personal field notes or in reports which I submitted to the Tsitsa Project. In line with the framing of Objective Two, I identified variables as well as patterns emerging from the observations.</i>			
Activity	Data source	Emerging concepts and variables	Emerging trends and patterns
I attended a field trip to the UCP quarterly meeting in Matatiele. The visit included a meeting between DFFE and local partners about contractual challenges and delays.	Tsitsa Project report	Motivation, integrity, anxiety, promises, community satisfaction, safety, work continuity, trust, official presence, confidence, certainty, relationships, stability.	Work discontinuity creating stress, anger, fatigue, trust and social capital facilitating relationships, keeping people safe, and reducing anxiety, instability reducing confidence and certainty, representative integrity, communities not being paid creating unsafe working environments.

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