

Social Cohesion and Boundary Spanning in Water Resource Governance Networks in the uMngeni River Catchment

Report to the
Water Research Commission

by

Catherine Pringle^{1, 2, 3}

¹ Institute of Natural Resources NPC, Pietermaritzburg

² Resilient Systems Institute, Pietermaritzburg

³ Centre for Complex Systems in Transition, Stellenbosch University

WRC Report No. 2853/01/19

ISBN 978-0-6392-0097-2

January 2020

Obtainable from

Water Research Commission

Private Bag X03

Gezina, 0031

orders@wrc.org.za or download from www.wrc.org.za

DISCLAIMER

This report has been reviewed by the Water Research Commission (WRC) and approved for publication. Approval does not signify that the contents necessarily reflect the views and policies of the WRC, nor does mention of trade names or commercial products constitute endorsement or recommendation for use.

EXECUTIVE SUMMARY

1 Introduction

Conventional approaches to water governance appear to have reached their limits and new ideas are needed particularly in the context of rapid global change. One idea is that of adaptive governance which includes the range of interactions between actors, networks, organisations and institutions emerging in pursuit of a desired state for social-ecological systems. The enabling contexts for adaptive governance include knowledge generation and learning, organisational learning, collaboration, devolution of management rights or power sharing, participation, organisational flexibility, trust, leadership, social memory, and the formation of actor groups or teams. Most of these criteria are a function of social capital.

Definitions of social capital generally emphasize relationships of trust that encourage reciprocity and facilitate establishment of common norms, rules and sanctions, thereby enabling coordination and cooperation for mutual benefit. However, social capital is less concerned with structural positions of individuals and more with cohesiveness based on the existence of reciprocal ties among actors in the network. In this regard, social capital is considered a pre-requisite for social cohesion. Social cohesion is defined as the willingness of members of a society to cooperate with each other in order to survive and prosper.

Boundary spanning is considered a useful tool for building cohesion. Boundary spanners are individuals that serve as a connection between two constituencies. The gap between these constituencies may be of a physical nature, a cultural or cognitive difference, or the actors are maybe uncertain of the trustworthiness of others. Boundary spanning activities bridge these gaps by connecting different actors, mediating and managing conflict, making knowledge more accessible, and creating an environment in which collaboration can flourish.

Although the literature on boundary spanning has increased steadily over time, empirical research on the enabling conditions which contribute to boundary spanning activities, particularly in natural resource governance networks (including water), is limited. The current study set out to address this gap and investigated the relationship between boundary spanning behaviours and contextual conditions in the uMngeni catchment, South Africa. A deepened understanding of these enabling conditions may be useful for building better and more adaptive governance systems.

The broad objectives of the study included:

- Exploring the role of boundary spanners in creating cohesion to promote better water governance;
- Investigating the conditions that enable boundary spanners to function effectively; and

- Recommending further research to test the usefulness of the concept of social cohesion for understanding and improving water governance.

2 Approach to the study

The study adopted a two-pronged approach: a qualitative assessment of 17 interviews, using Interpretative Phenomenological Analysis (IPA); and a half-day workshop with selected boundary spanners, to explore the contextual conditions that aid or hinder their boundary spanning activities. IPA offers a thorough and structured framework to guide a process of interpreting lived experiences described by research participants during in-depth interviews.

As part of the IPA process, a snowball sampling approach was used to identify boundary spanners in two key areas of the water governance network, namely formal water management institutions (as prescribed by the National Water Act) and governance structures associated with water-linked natural resources in the uMngeni catchment. This entailed asking members of the Msunduzi Catchment Management Forum (CMF), upper uMngeni CMF and the uMngeni Ecological Infrastructure Partnership (UEIP), to provide names of individuals who were thought to engage in these activities. The list of names provided was reviewed and two key issues emerged: 1) the lack of boundary spanners in the upper levels of the water governance hierarchy, and 2) the lack of boundary spanners of some race groups.

The lack of boundary spanners of some race groups was considered particularly important for two key reasons. Firstly, given decades of apartheid rule, there are significant variations in contextual conditions across different race groups particularly in terms of access to financial resources, economic opportunity and quality education. Secondly, race is arguably one of the most significant “boundaries” in South Africa and influences participation and power in water governance. Boundary spanners who can operate across racial boundaries are required to make cross-cultural collaboration a success. Additional steps were therefore implemented to identify and include boundary spanners from missing groups in the study. This entailed asking invited participants to provide additional names of boundary spanners, with a focus on black individuals. A similar attempt was made to include individuals at higher levels in the governance hierarchy.

Interviews were conducted with identified individuals using a broad framework of guiding questions which sought to address the following:

- Question 1 identified and captured the key stakeholders and fora that the participant engaged with, and their perspective on whether these groups were cohesive.
- Question 2 explored which boundary spanning activities he/she participated in and sought examples of how they engaged in such activities.
- Question 3 onwards sought to understand the contextual conditions that enabled or hindered their boundary spanning activities, with a specific focus on leadership and management, resources, and legal and/or policy requirements.

The interviews were transcribed and analysed as per the IPA steps. Finally, a half-day workshop was also held to sense-check the initial findings of the study and to explore how the findings could be used to enhance water governance in the uMngeni catchment.

3 Boundary spanners and cohesion in the uMngeni catchment

Eleven boundary spanners were initially identified in the uMngeni catchment. A further six, comprising black individuals and those at higher levels in the organisational hierarchy, were identified after prompting the initial boundary spanners for additional names. Of the 17 boundary spanners, six were women and 11 were men. Participants ranged in age from 30 to 60, with three individuals falling into the 30-39 age category, seven in the 40-49 category, six in the 50-59 category, and one in the 60+ category. More than half the participants were white, six were black and two were Indian. Almost all the participants had either grown up in the catchment or had been living and working in the area for more than 10 years. The participants included a diverse group from provincial and local government, research institutions, parastatals, and non-governmental organisations. No boundary spanners were identified from the business or commercial agriculture sectors or from the Department of Water and Sanitation (DWS). The participants expressed similar attitudes to conservation versus development. Most sought a balance between the need to conserve natural resources on the one hand and a need to use them on the other.

During the interviews, the boundary spanners were asked to comment on the level of cohesion within the UEIP and the CMFs. In this instance, cohesion was defined as working towards a common goal. The participants expressed mixed views on the cohesiveness of the UEIP and CMFs. Some participants highlighted the diverse array of actors involved in these structures, and suggested that this may enhance or reduce cohesion, depending on the views of the actors. Other participants recognized pockets of cohesion in both the UEIP and CMF. They suggested that ties between some members were much stronger than between members and non-members. They linked this to the frequency of interaction (for a variety of purposes), the size of the group and the sense of belonging felt by some individuals. These comments presuppose the presence of sub-groups. The existence of sub-groups in a network creates challenges for joint action and the governance of common pool natural resources because of the risk of “us and them” attitudes. The presence of sub-groups also negatively impacts structural cohesion. However, the formation and maintenance of sub-groups can have positive impacts on processes affecting natural resource governance, particularly the generation and transfer of tacit knowledge. Hence there is a need to balance overall structural cohesion with the presence of sub-groups.

During the interviews, participants were asked whether there were additional actors that they felt should be included in water governance in the uMngeni catchment. Several respondents highlighted the need to engage with local communities, both at a grassroots level and with the traditional leadership. Many participants also highlighted the need to engage private sector,

particularly industry, commercial agriculture and forestry. However, it was acknowledged that the inclusion of these sectors may require a different approach.

Engagement with some government entities, particularly the Department of Mineral Resources, the Department of Environmental Affairs and some municipalities, was flagged as problematic by some participants. These challenges were attributed to a lack of capacity within these organisations, and their perceived role in environmental management.

4 The personal attributes and skills of boundary spanners in the uMngeni catchment

The contribution of personal traits to boundary spanning behaviour is contested in the literature. However, there are many examples of particular qualities and aspects of personality that are thought to contribute to the boundary spanning role. A total of 10 personal attributes and skills were identified in this study including:

- Positive personal attributes
- Self-confidence
- Understanding and empathy
- Passion for the common good
- Experience and trans-disciplinary knowledge
- Willingness to share and learn
- Effective communication
- Risk-taking, rule-breaking and innovating
- Ability to see or create opportunities, and
- Systems thinking.

In reality, individuals seldom exhibit all of the above traits. Some traits may also be more dominant than others and are employed at different times depending on the situation. Based on the interview information, the personal traits listed above were linked to each participant. Individuals were also asked to classify themselves as either a reticulist, entrepreneur or interpreter. Individuals who identified themselves as interpreters also seemed to display many of the traits associated with the interpreter role, particularly understanding and empathy, and effective communication. Similarly, those who identified with the entrepreneurial role, displayed a willingness for risk-taking, rule-breaking and innovating. The results of this study appear to align well with the different types of boundary spanners and associated traits, detailed in the literature.

5 Contextual conditions that enable or hinder boundary spanning activities in the uMngeni catchment

Although boundary spanning behaviour is likely to be influenced by the interplay between personal characteristics and context, research on the facilitating conditions or antecedents of boundary spanning behaviour is limited. This study identified contextual conditions thought to

enable or hinder boundary spanning behaviour in the uMngeni catchment and captured these conditions into 12 key themes and 27 sub-themes. These are summarised in the Table below.

Key theme	Sub-themes	Scale
Self-imposed and social limitations	• Perceptions of one's self and your comfort zone • Socially constructed boundaries	Individual
Trust and time in the community	• Trust and social interaction • Time in the community/sector	Individual/Organisational/Group
Organisational influences	• Type and size of organisation • Credibility of organisation • Professional obligations • Time availability and management	Organisational
Team effectiveness and legitimacy	• The influence of others • Legitimacy	Group
Platforms and level of authority	• Platforms • Level of authority	Group
Network characteristics	• Integration across the network • Size of the network/sector	Group
Resources	• Financial resources • Skills and human resources	Societal/Organisational
Legal and policy arena	• National legislation • Internal policies and contractual obligations	Societal/Organisational
Socio-political dimensions	• Emotional connection • Understanding and prioritisation of the environment • Changing administrations and loss of people from the network • Politics	Societal
Corruption	• Corruption	Societal/Organisational
Leadership	• Leadership at a group level • Leadership at an organisational level • Leadership from government	Societal/Group/Organisational
Complexity of the system	• Complexity of the system	System

Key findings of the study suggest that self-imposed limitations may hinder boundary spanning activities while high levels of trust and social interaction are facilitating conditions.

The type and size of an organisation can aid or hinder boundary spanning behaviour. In the context of the uMngeni catchment, NGOs were viewed as working for the public good and many seemed to encourage their staff to participate in boundary spanning activities. A major advantage of NGOs is that they are flexible and have the ability to innovate at grassroots level. However, NGOs also have several drawbacks including access to resources which was highlighted as a challenge by several NGOs in the uMngeni catchment.

In contrast, study participants situated in government organisations and parastatals suggested that their ability to perform boundary spanning activities was hampered by rigid job descriptions and the need to navigate numerous internal policies. However, South Africa's constitution is unusual because it places such a strong and explicit emphasis on cooperative government. Although this refers more to cooperation within government than outside government, there are very strong and direct imperatives for government officials to reach across boundaries, whether formally or informally.

In addition, participants themselves cited a strong culture of informal relationships (not codified through MoUs) between individuals across the network. Given that this framework promotes collaboration, it is likely that the challenges highlighted with job descriptions and internal policies may instead relate to other factors, such as corruption. For example, many of the tools and internal policies aimed at reducing corruption and ensuring transparency and accountability, may inadvertently also hamper boundary spanning activities.

The importance of other actors in influencing, aiding or restricting boundary spanning behaviour also surfaced as an important condition. Arguably one of the most critical factors is leadership (including leadership from a principal, executive support and political leadership). Effective leaders build trust, create platforms and space for boundary spanners to operate, and develop processes and procedures which enable collaboration and innovation. Interestingly most boundary spanners were either a principal themselves, or their principal did not sit in their office. This provided them with the necessary space and flexibility to undertake their tasks. Issues of corruption were also thought to negatively affect leadership and resources, with consequent impacts on boundary spanning behaviour. While not explicitly highlighted in the interviews, it is likely that the historical structure of water governance in the catchment may also play a role.

6 Interacting contexts and windows of opportunity

Although boundary spanners help to galvanize collaboration, the interactions between several different dependent or independent contexts might also be important. These contexts may combine in different ways to create windows of opportunity that boundary spanners can exploit.

Windows of opportunity are defined as identified moments in time in which there is a heightened probability that efforts to alter a system state will be more likely to succeed. Windows of opportunity are important because they enable the transformation of a social-ecological system from an undesirable trajectory to a new one that may be founded on adaptive co-management (which is a component of adaptive governance).

If contexts play a key role in transformation towards adaptive governance, the next question is can we help create them, and in so doing increase the likelihood of windows of opportunity for

boundary spanning behaviour, and transformation to adaptive governance? To investigate this question, I asked boundary spanners in the uMngeni catchment to 1) identify and rank the most important contexts for boundary spanning behaviour, 2) identify impediments to these contexts, and 3) suggest ways to overcome these.

Most participants identified trust, platforms and leadership as the most important contextual conditions for boundary spanning activities. These contextual variables were considered as pre-conditions for many other contextual factors and can therefore be considered as important levers for change.

Trust was identified as an emergent property that arises through other activities such as social interaction. In the uMngeni catchment, the UEIP and CMFs provide an important platform for social interaction and potentially enable the formation of trust. However, other actors need to be drawn in and leadership is needed to ensure that all perspectives are adequately considered, and any conflicts are effectively managed.

The identification of leadership as an important context for boundary spanning behaviour is consistent with the literature. Although participants in the uMngeni study acknowledged that boundary spanners have little control over which leaders are elected or appointed, they do have the ability to influence these individuals. This may entail framing and communicating information in a way that influences attitudes towards environmental problems. While influencing leaders may make leaders more sympathetic to water resource issues, it is unlikely to address the underlying challenge of developing and appointing effective leaders who positively influence boundary spanning behaviour. Thus, there is a dire need to pro-actively find ways of attracting good leaders to the water sector particularly Black women professionals. In addition, the approach of ‘leaders developing leaders’ holds promise for the water sector.

The importance of platforms in creating windows of opportunities was also identified by workshop participants. While some studies refer to the importance of platforms for information exchange and learning, there is limited literature on their value for other boundary spanning activities and their contribution to windows of opportunity. Meijerink and Huitema (2010) view boundary spanners as institutional entrepreneurs at a group level and found that they employ a unique set of strategies to catalyse change. One strategy is venue manipulation and venue-shopping, in which they use or create venues to insert new ideas into decision-making processes. These venues include forums which bring people together (in this sense, ‘venues’ equates to ‘platforms’ in the uMngeni study). Venue shopping proved to be an effective strategy in realizing water policy transitions in several other case studies.

7 Conclusions and suggestions for further study

Boundary spanning has proved a valuable concept for exploring and understanding water governance issues. While adaptive governance offers a flexible approach that can deal with the

complexity and unpredictability of SES, transitioning to a more adaptive system of governance will require functioning social networks that connect individuals and organisations across multiple levels and scales. In this context, the essential role of boundary spanners who can build trust, vision and meaning, connect different actor groups, and enable the transfer of knowledge, must be recognized.

This study revealed the need for further local-level research that addresses three major questions:

1. What are the levels of cohesion in other parts of the water governance network? Is there evidence of sub-groups in the network that may be hampering water governance? What might be the best network structure to enhance cohesion and promote more adaptive governance?
2. Within these different sectors, structures and departments, what boundary spanning behaviours or strategies are employed? Are there specific tools that aid boundary spanning behaviour such as catchment management plans which set out a common vision or goal?
3. What contexts aid or hinder this boundary spanning behaviour? Are there contexts that frequently combine to create windows of opportunity, and can these be influenced to increase the frequency of occurrence of these windows? How can boundary spanning be enhanced to promote more adaptive governance?

More broadly, the research agenda in the boundary spanning field would benefit from:

- 1) An improved understanding of the similarities and differences between the range of terms used to describe boundary spanners and their behaviour, including terms, such as convener, institutional entrepreneur and policy entrepreneur, to name a few.
- 2) Consideration of whether groups that successfully exploit windows of opportunity include individuals who are also able to perform each role (namely interpreters, reticulists and entrepreneurs).
- 3) An investigation of whether boundary spanners could be actively recruited to water governance processes.

In some ways, the present study has generated more questions than answers. However, it is seen as an important first step in exploring a novel approach which could enable a transition to adaptive governance. In so doing, it may help to realise the core principle embodied in the National Water Act of *Some, for all, forever*.

ACKNOWLEDGEMENTS

This project was funded by the Water Research Commission, for whose assistance I am sincerely grateful. The following is a list of the members of the reference group responsible for this project. I wish to thank them for their interest and helpful comments.

Mr J Dini	Water Research Commission (Chair)
Dr NP Gola	South African National Biodiversity Institute
Dr S Stuart-Hill	University of KwaZulu-Natal (CWRR)
Dr B Ncube	Cape Peninsula University of Technology
Mr N Mkhize	Department of Water and Sanitation
Dr N Methner	University of Cape Town
Dr K Schachtschneider	WWF
Ms F Brownell	Duzi uMngeni Conservation Trust
Ms N Funke	Council for Scientific and Industrial Research
Ms A Gcanga	Stellenbosch University

A special acknowledgement goes to the Centre for Complex Systems in Transition (CST) at Stellenbosch University for funding the interview transcriptions, and to the National Research Foundation (NRF) and International Water Security Network (IWSN) for co-funding this study through my PhD bursaries. I would also like to thank my supervisor, Oonsie Biggs, for providing helpful thoughts and direction along the way, and Örjan Bodin for his valuable inputs on the study design.

Special thanks go to the ‘boundary spanners’ in the uMngeni catchment for their willingness to share their thoughts and time with me. Thank you also for tirelessly working to serve the interests of the public good.

A final thank you to Rona van Niekerk, for patiently editing numerous versions of this report.

This page was intentionally left blank

TABLE OF CONTENTS

EXECUTIVE SUMMARY	iii
ACKNOWLEDGEMENTS.....	xi
TABLE OF CONTENTS.....	xiii
LIST OF FIGURES	xvi
LIST OF TABLES	xvi
LIST OF ABBREVIATIONS	xvii
1 INTRODUCTION.....	1
2 BACKGROUND TO BOUNDARY SPANNING	5
2.1 Who are the boundary spanners?	5
2.2 Boundary spanners and cohesion.....	5
2.3 Personal attributes and skills of boundary spanners	7
2.4 Boundary spanning roles and competencies	8
2.5 Linking roles and competencies of boundary spanners	10
2.6 Structure, agency and context	11
2.7 What are the enabling contexts?	11
2.7.1 Management and support	11
2.7.2 Access to resources	12
2.7.3 Institutional and legal requirements	13
3 APPROACH TO THE STUDY	14
3.1 Overview of the case study	14
3.2 Methodology	15
3.2.1 Interpretative Phenomenological Analysis	15
3.2.2 Workshop	19
3.2.3 Interpretations and outcomes	20
3.3 Limitations of the study	20
4 BOUNDARY SPANNERS AND COHESION IN THE UMNGENI CATCHMENT ...	21
4.1 Who are the boundary spanners in the uMngeni catchment?	21
4.2 Cohesion in the uMngeni water governance network.....	21
4.3 The inclusion of other actors.....	23
5 THE PERSONAL ATTRIBUTES AND SKILLS OF BOUNDARY SPANNERS IN THE UMNGENI CATCHMENT.....	27
5.1 Positive personal attributes	27
5.2 Self-confidence	28
5.3 Understanding and empathy.....	29
5.4 Passion for the common good.....	29
5.5 Experience and trans-disciplinary knowledge	30

5.6	Willingness to share and learn	32
5.7	Effective communication	33
5.8	Risk-taking, rule-breaking and innovating.....	35
5.9	Ability to see or create opportunities	36
5.10	Systems thinking	37
5.11	Profiling boundary spanners in the uMngeni catchment	38
6	CONTEXTUAL CONDITIONS THAT ENABLE OR HINDER BOUNDARY SPANNING ACTIVITIES IN THE UMNGENI CATCHMENT	41
6.1	Self-imposed and social limitations	42
6.1.1	<i>Perceptions of one's self and your comfort zone</i>	42
6.1.2	<i>Socially constructed boundaries</i>	42
6.2	Trust and time in the community	42
6.2.1	<i>Trust and social interaction</i>	42
6.2.2	<i>Time in the community/sector</i>	44
6.3	Organisational influences.....	44
6.3.1	<i>Type and size of organisation</i>	44
6.3.2	<i>Credibility of an organisation</i>	45
6.3.3	<i>Professional obligations</i>	46
6.3.4	<i>Time availability and management</i>	47
6.4	Team effectiveness and legitimacy	48
6.4.1	<i>The influence of others</i>	48
6.4.2	<i>Legitimacy</i>	49
6.5	Platforms and level of authority.....	49
6.5.1	<i>Platforms</i>	49
6.5.2	<i>Level of authority</i>	50
6.6	Network characteristics.....	50
6.6.1	<i>Integration across the network</i>	50
6.6.2	<i>Size of the network/sector</i>	52
6.7	Resources	52
6.7.1	<i>Financial resources</i>	52
6.7.2	<i>Skills and human resources</i>	53
6.8	Legal and policy arena	54
6.8.1	<i>National legislation</i>	54
6.8.2	<i>Internal policies and contractual obligations</i>	55
6.9	Socio-political dimensions.....	57
6.9.1	<i>Emotional connection</i>	57
6.9.2	<i>Understanding and prioritisation of the environment</i>	57
6.9.3	<i>Loss of people from the network</i>	58
6.9.4	<i>Politics</i>	59
6.10	Corruption	60
6.11	Leadership	62

6.11.1	<i>Leadership at a group level</i>	62
6.11.2	<i>Leadership at an organisational level</i>	63
6.11.3	<i>Leadership from government</i>	64
6.12	Complexity of the system	65
7	INTERACTING CONTEXTS AND WINDOWS OF OPPORTUNITY	67
7.1	Inter-dependencies and interactions between components	67
7.2	Boundary spanning and windows of opportunity	68
7.3	Creating windows of opportunity	70
8	SUMMARY, CONCLUSIONS AND SUGGESTIONS FOR FURTHER STUDY	73
9	REFERENCES.....	78
	Appendix 1. Name generator questionnaire.....	87
	Appendix 2. Guiding interview questions	89
	Appendix 3. Full list of extracts from interviews in support of sub-themes and themes related to contextual conditions.....	91

LIST OF FIGURES

Figure 1. Schematic presentation of some network types (adapted from Bodin and Crona, 2009).	6
Figure 2. The uMngeni catchment in KwaZulu-Natal, South Africa	14
Figure 3. The nine step IPA process, as set out by Smith et al. (2009)	16
Figure 4. Roles and competencies for boundary spanners (extracted from Williams, 2010)..	39
Figure 5. Linkages and inter-dependencies between contextual conditions in the uMngeni catchment	67
Figure 6. Ranking of contexts by boundary spanners in the uMngeni catchment.....	70

LIST OF TABLES

Table 1. Summary of the literature review on the roles and competencies of boundary spanners	9
Table 2. Summary of personal attributes and skills of boundary spanners in the uMngeni catchment	39
Table 3. Participants' classification of themselves as entrepreneurs, reticulists or interpreters.	40
Table 4. Summary of the contextual conditions that affect boundary spanning activities in the uMngeni catchment.....	41

LIST OF ABBREVIATIONS

CAB	Commonwealth Agricultural Bureau
CAS	Complex Adaptive Systems
CBO	Community-based organisation
CMC	Catchment Management Committee
CMF	Catchment Management Forum
CST	Centre for Complex Systems in Transition
DWS	Department of Water and Sanitation
IMF	International Monetary Fund
IPA	Interpretative Phenomenological Analysis
IWSN	International Water Security Network
MoU	Memorandum of Understanding
NGO	Non-governmental organisation
NRF	National Research Foundation
OECD	Organisation for Economic Co-operation and Development
SANBI	South African National Biodiversity Institute
SASSA	South African Social Security Agency
SES	Social-ecological system
UEIP	uMngeni Ecological Infrastructure Partnership
WWF	World Wildlife Fund

This page was intentionally left blank

1 INTRODUCTION

Throughout history, societies have used laws to manage, control, develop and sanction the use of water. One of the earliest written laws to deal with water issues was the Code of Hammurabi, a Babylonian code of law of ancient Mesopotamia, developed by King Hammurabi more than 3,800 years ago (Dellapenna and Gupta, 2013). Since then, water law has developed in a highly contextual manner which reflects the history, geography and political systems of the respective countries. Today, there are almost 200 national law systems as well as numerous regional, and international or global laws which deal with water (Dellapenna and Gupta, 2013). In addition, some communities of water users still apply indigenous law, or community-based water laws, to manage their water resources even though these laws often lack formal legal recognition (Dellapenna and Gupta, 2013; Van Koppen et al., 2007). Despite this comprehensive legal system, a number of challenges exist, and the limits of these legal measures to manage water are becoming more apparent (Bohensky, 2006).

Perhaps nowhere has the need to reform the way water is governed been more obvious than in South Africa, a country shaped by racial segregation and unequal access to water resources (Bohensky, 2006). In 1994, thirty-five percent of South Africans had no access to a basic water supply, and fifty-three percent lived without property sanitation (Funke et al., 2007). In an effort to address these inequities, the nation's leaders seized an opportunity at the close of the apartheid era to overhaul the previous water law and replaced it with the Water Services Act of 1997, and the National Water Act of 1998, one of the most progressive pieces of water legislation in the world (Funke et al., 2007; Bohensky, 2006).

While the National Water Act signalled a commitment to ecological and social sustainability, moving from legislation to action on the ground has proved challenging, as is evident in the declining state of our water resources and the significant backlog in service delivery (Van Deventer et al., 2018; Statistics South Africa, 2017). Bohensky (2006) and Pollard et al. (2011) argue that a better understanding of the complex relationships between ecology, hydrology and society is needed for more effective water governance in South Africa.

A social-ecological systems (SES) perspective of water resources, which encompasses the ecological components of water and its ecosystem services, as well as the social elements of the people they support and the institutions that govern them, provides a useful framing for exploring the causal relationships between these elements and the opportunities for action (Bohensky, 2006). Pahl-Wostl et al. (2002) emphasize that an understanding of the range of social processes that affect water governance is just as important as understanding the biological and physical processes. In fact, they attribute the emerging water crisis to challenges of water governance rather than to the condition of the resource base itself (Pahl-Wostl et al., 2012).

Water governance refers to the structural features and transient processes at both rule-making and operational levels (Pahl-Wostl et al., 2012). It encompasses the system of institutions (including rules, laws, regulations, policies, and social norms) and organisations involved in governing the protection and use of water resources, and covers a variety of different approaches (Pahl-Wostl et al., 2012; Chaffin et al., 2014).

One approach is that of adaptive governance (Chaffin et al., 2014). Chaffin et al. (2014) define adaptive governance as *a range of interactions between actors, networks, organisations, and institutions emerging in pursuit of a desired state for social-ecological systems*. They consider adaptive governance as an emergent form of environmental governance that is increasingly used to manage uncertainty and complexity in social-ecological systems (Chaffin et al., 2014).

Given the uncertainties associated with rapid global change, water governance systems need to be highly adaptive (Chaffin et al., 2014). Top-down governance systems, usually applied by state entities, often suffer from problems of fit which arise from challenges associated with connectedness and interdependence between ecological and social systems (Galaz et al., 2008). These governance systems have also been criticized for their tendency to prioritize scientific “expert” knowledge which excludes and alienates other actors, including local people and their internal resource management schemes (Smith, 2008). In response, an increasing number of bottom-up approaches to governance have emerged via local actor groups, social networks and collaborations of community leaders (Chaffin et al., 2014). These bottom-up approaches are not without limitations. They too suffer from coordination problems across complex geographies and are not always inclusive of all voices, particularly marginalised communities (Chaffin et al., 2014). Hence, there is a need to explore new approaches to water governance which are sufficiently flexible to address and adjust to dynamic and complex SESs (Chaffin et al., 2014).

Adaptive governance is one way to address this need (Dietz et al., 2003; Folke et al., 2005). In their review of the literature on adaptive governance, Chaffin et al. (2014) highlight that the concept is *unanimously viewed as a system of environmental governance with the potential to mediate the complexity and uncertainty inherent in SESs*. The enabling contexts for adaptive governance have been explored by Folke et al. (2005). They articulated the first comprehensive set of criteria to enable transformation towards adaptive governance which included knowledge generation and learning, organisational learning, collaboration, devolution of management rights or power sharing, participation, organisational flexibility, trust, leadership, social memory, and the formation of actor groups or teams. Most of these criteria are a function of social capital (Folke et al., 2005; Chaffin et al., 2014).

Although it is widely acknowledged that social capital is a multi-faceted concept, there is lack of agreement on what constitutes it (Bodin and Prell, 2011). Several definitions emphasize relationships of trust that encourage reciprocity and facilitate establishment of common norms, rules and sanctions, thereby enabling coordination and cooperation for mutual benefit (Ostrom

and Ahn, 2003; Pretty, 2003; Putnam, 1995; Barnes-Mauthe et al., 2015). Others define social capital as the range of resources embedded in social networks, and exclude collective assets such as culture, norms and trust (Lin, 1999; Coleman, 1988). Bodin and Prell (2011) explain that social capital is less concerned with structural positions of individuals and more concerned with cohesiveness based on the existence of reciprocal ties among actors in the network. In this way, social capital is closely linked to social cohesion. Some authors argue that social capital is in fact a prerequisite for social cohesion, and that a lack of social cohesion would point to a lack of social capital (Cloete, 2014; Forrest and Kearns, 2001).

Stanley (2003) describes social cohesion as the willingness of members of a society to cooperate with each other in order to survive and prosper, while Roca and Helbing (2011) define social cohesion as a function of cooperation (contributions of work or good to achieve a common end) and agglomeration (establishment of relationships between peers).

Boundary spanning is a useful tool for building cohesion and commitment between stakeholders (Bordogna, 2019). Boundary spanners are defined as individuals that serve as a connection between two constituencies (Williams, 2010). The gap between these constituencies may be of a physical nature (such as geographic location), a cultural or cognitive difference (such as divergent disciplines), or that actors are uncertain of the trustworthiness of others (Long et al., 2013). Boundary spanning activities bridge these gaps by connecting different actors, mediating and managing conflict, making knowledge more accessible, and creating an environment in which collaboration can flourish (Long et al., 2013).

Many of the issues that faced in water governance and management span numerous boundaries, including scales, domains, levels, organisations and actors, and can be defined as ‘wicked problems’ (Pollard et al., 2011; Williams, 2010). Wicked problems are complex and intractable in nature, go beyond the capacity of any one organisation to understand and respond, and require engaged actors to work across both internal and external organisational boundaries to solve, or at least to manage them (Rittel and Webber, 2013; Ison, 2010). Edelenbos and Van Meerkerk (2015) suggest that boundary spanning activities may play an important role in achieving the systemic, multi-sector and interdisciplinary approaches needed to address wicked problems.

Although the literature on boundary spanning has increased steadily over time, empirical research on the enabling conditions which contribute to boundary spanning activities, particularly in natural resource governance networks (including water), is limited (Lee and Sawang, 2016; Van Meerkerk and Edelenbos, 2017). Instead, research in this space has largely focused on the role of boundary spanning in information and knowledge exchange (Cunningham et al., 2016; Grygoruk and Rannow, 2017; Hunter, 2016; Johnson, 2011; Jons and Freytag, 2016; Michaels, 2009; Safford et al., 2017; Seijger et al., 2016; Shaw et al., 2013) and to a lesser extent on innovation and collaborative governance (Klerkx et al., 2010; Coleman and Stern, 2018). One exception is Van Meerkerk and Edelenbos (2017) who examined the

role of other actors in creating context (through facilitative project management and executive support) that enables boundary spanning activities in urban governance networks.

The current study set out to address this gap and investigated the relationship between boundary spanning behaviours and contextual conditions in the uMngeni catchment, South Africa. A deepened understanding of these enabling conditions may be useful for building better and more adaptive governance systems. The broad objectives of the study included:

- Exploring the role of boundary spanners in creating cohesion to promote better water governance;
- Investigating the conditions that enable boundary spanners to function effectively; and
- Recommending further research to test the usefulness of the concept of social cohesion for understanding and improving water governance.

2 BACKGROUND TO BOUNDARY SPANNING

2.1 Who are the boundary spanners?

Formal organisations draw a distinction between members and non-members. The exclusion of some allows an observer to draw a boundary around the organisation (Aldrich and Herker, 1977). Other boundaries also exist, for example, between geographic locations, disciplines, sectors, generations, cultures or political affiliations (Williams, 2010; Jons and Freytag, 2016). Boundary spanners serve as the link between these different constituencies and occupy a bridging position in the network (Williams, 2010; Long et al., 2013).

There are numerous descriptors that have been used to describe these individuals including bridges, brokers, gatekeepers and go-betweens (Long et al., 2013). The term has also been linked to institutional entrepreneur or champion, although Dudua et al. (2018) argue that these terms are not synonymous. They suggest that institutional entrepreneurs identify the need, whereas boundary spanners simply facilitate contact between organisational boundaries, rather than creating new institutions in between (Dudua et al., 2018). As such, boundary spanning is more consistent with informal leadership, whereas institutional entrepreneurship is more closely linked with positional leadership (Dudua et al., 2018).

Williams (2010) suggests that there are two types of boundary spanners. The first are those who have a dedicated job role or responsibility to work in collaborative environments such as partnership coordinators (an example would be the co-ordinator for the uMngeni Ecological Infrastructure Partnership (UEIP)). These individuals facilitate the process of collaboration between a diverse set of actors and interests (Williams, 2013).

However, because of the increasingly complex and interrelated issues facing society, more individuals are involved in cross boundary working as part of their job functions (Williams, 2013). The second type of boundary spanner therefore relates to the leaders, managers and practitioners who perform this function (Williams, 2010). These individuals are sometimes referred to as “collaborative public managers” (O’Leary and Bingham, 2009).

2.2 Boundary spanners and cohesion

Cohesion is a multi-level concept, and group members are connected to one another in different ways (Forsyth, 2010). At the individual level, specific group members may be more attracted to some group members than others. For example, some members of a sports team may have been friends prior to being teammates. These personal relationships reflect as stronger bonds between these individuals than within the team (Forsyth, 2010). At the group level, members are attracted to the group itself rather than to specific individuals within the group (Forsyth, 2010). Furthermore, each local team may be embedded within a city league, and each city league may participate in a state league. As such, players in the local team are not only linked to their specific team but also to these larger groups (Forsyth, 2010).

These relational patterns can be expressed as networks and represented as either graphs or matrices. Graphs or sociograms comprise points or nodes that represent individuals, actors or organisations, and lines or edges that correspond to social ties, relationships or interactions between the nodes (Wasserman and Faust, 1994). It is also possible to detect groups and subgroups within a network. Groups and subgroups refer to sets of individuals (within the network) who are grouped together according to some clearly defined criteria (Bodin and Prell, 2011; Katz et al., 2004). Sub-groups have significantly more ties between their group members than between members and non-members (Bodin and Crona, 2009). They are defined either through an exogenously determined or imposed category (such as a family or sports team) or as a structural feature of the network (Katz et al., 2004).

The level of cohesion is considered an important network characteristic. Wasserman and Faust (1994) define cohesion as the extent to which the network hangs together rather than being divided into separate sub-groups. A network with high structural cohesion therefore, lacks a set of clearly distinguishable sub-groups (Bodin and Crona, 2009). This is shown schematically in Figure 1A.

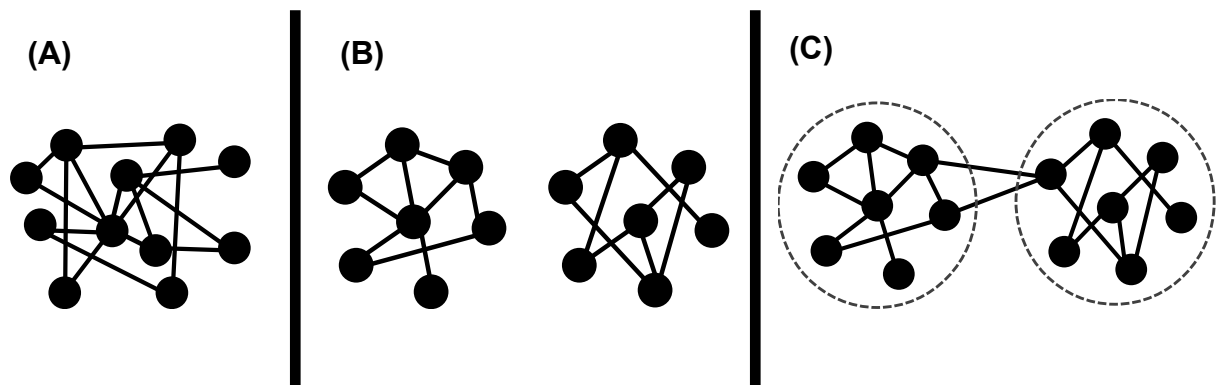


Figure 1. Schematic presentation of some network types (adapted from Bodin and Crona, 2009).

(A) represents a network without any distinguishable sub-groups (high cohesiveness), whereas (B) represents a network divided into two isolated sub-groups (low overall cohesiveness) and (C) represents a network with two distinguishable sub-groups (dotted lines), which are connected via two bridging ties (Bodin and Crona, 2009)

The existence of sub-groups in a network creates challenges for joint action and the governance of common pool natural resources because of the risk of “us and them” attitudes (Borgatti and Foster, 2003). This is shown schematically in Figure 1B. Granovetter (1973) suggests that if a social network is less cohesive (i.e. there are several clearly distinguishable subgroups present and the density of relational ties between groups can be regarded as low), this could have negative effects on the capacity for collaborative processes. Within cohesive sub-groups, social forces operating through direct contact among members forces the group towards uniformity. Collins (1988) indicates *that the more tightly that individuals are tied into a network, the more they are affected by group standards*. Individuals within these groups therefore tend to have

homogeneous beliefs. Although these sub-groups express relative cohesion within compared to outside the sub-group, the group itself may also become closed to outsiders (Wasserman and Faust, 1994).

The formation and maintenance of sub-groups can however have positive impacts on processes affecting natural resource governance, particularly the generation and transfer of tacit knowledge (Bodin and Crona, 2009). Bodin and Crona (2009) suggest that the presence of multiple sub-groups may contribute to both 1) the development of knowledge itself by creating opportunities for continuous interaction, and 2) the generation of a diversity of knowledge by enabling knowledge to develop in each of the sub-groups. However, they note that specialised knowledge is of limited use when governing complex social-ecological systems, and thus it is necessary that the different sub-groups interact. This requires balancing overall structural cohesion on one hand with the presence of sub-groups on the other (Bodin and Crona, 2009).

Cohesive sub-groups are said to consist of bonding ties (i.e. the ties that develop between people with similar interests and backgrounds). In contrast, bridging ties refer to the ties that connect different sub-groups (Bodin and Crona, 2009). This is shown schematically in Figure 1C. While bonding ties promote trust, reciprocity and cohesion within communities, bridging ties enable knowledge transfer, information exchange, and access to external resources. Importantly, bridging ties in natural resource governance, foster trust between previously unconnected groups and facilitate collective action among different types of actors (Bodin and Crona, 2009). In so doing, bridging ties enhance the capacity for innovation and for finding solutions to complex problems (Bodin and Crona, 2009).

Methner (2014) suggests that *a network that consists of several groups in which a certain level of connectedness among them is provided by bridging actors may exhibit the necessary cohesion for the coordination of action and for trust to develop in order to engage in collective action*. Similarly, Hahn et al. (2006) showed that critical bridging ties among actors were to a large extent created by a very small set of key individuals. These individuals often occupy influential positions in the network and can use this position to benefit others in the network or to influence governance outcomes.

For the purposes of the current study, these individuals are defined as boundary spanners. Understanding them, and the contexts that enhance or hinder their ability to function is necessary for effective water governance.

2.3 Personal attributes and skills of boundary spanners

The personality and personal attributes of boundary spanners are a theme that emerges in the literature. Beresford and Trevellion (1995) suggest that boundary spanners have collaborative values of honesty, commitment and reliability while Fairtlough (1994) describe their strengths

as diplomacy, tact, passion and honesty. Gladwell (2002) lists curiosity, self-confidence, sociability and energy as key personal attributes.

The links between personality and behaviour have been explored extensively in the literature. However, there is little consensus about the importance of personality as a predictor of actions, attitudes and behaviour. Williams (2010) proposes that an actor's personal attributes or traits are likely to influence the manner in which he/she undertakes their boundary spanning role. A similar view is held by Gladwell (2002), who indicates that it is these specific personal attributes that enable "connectors" to span different worlds.

2.4 Boundary spanning roles and competencies

Boundary spanners perform several roles and competencies (Table 1). They were initially identified for their role in managing the interface between their organisations and their environment (Katz and Kahn, 1966). Boundary spanners are able to access and process information and control its dissemination. However, this conceptualisation of boundary spanning between organisations and their environment does not adequately reflect multi-organisational and multi-sector environments which involve collaboration with outside actors and interests (Williams, 2013). In these environments the role of boundary spanners in facilitating information flows is perhaps even more apparent.

Boundary spanners perform a brokerage role by filtering and selecting relevant information and translating or tailoring it for the other side of the boundary (Ebers, 1997; Van Meerkerk and Edelenbos, 2017; Hunter, 2016; Cunningham et al., 2016). This is particularly relevant in the field of water resource management, where there is often a gap between the information produced by science and the need for information by different actors (Grygoruk and Rannow, 2017; Hunter, 2016; Johnson, 2011). Boundary spanners help to bridge this gap by enabling access to novel information and facilitating the transfer of knowledge across the network (Long et al., 2013).

Information flows are closely linked to learning. Newig et al. (2010) describes two functions of networks needed to foster learning, namely information transmission (in which actors gain access to relevant information through relatively little effort) and deliberation which refers to the genuine exchange of ideas and arguments irrespective of power asymmetries.

Boundary spanners enable both information transmission and deliberation thereby contributing to learning. These individuals often adopt a relatively neutral position. From here, they are able to resolve interactional uncertainties and impasses (Klerkx et al., 2010). By enabling the deliberation of multiple and often conflicting views they facilitate the production of creative ideas and solutions (Newig et al., 2010). Their knowledge brokering role creates and sustains the capacity for innovation (Michaels, 2009). Boundary spanners themselves are also often

creative, lateral thinkers who combine information, skills and experiences in new ways to foster innovation (Williams, 2010).

Table 1. Summary of the literature review on the roles and competencies of boundary spanners

Role or Competency	Description	References
1) Facilitating information flows and knowledge transfer	- Facilitate access to information - Filter and select information - Translate information - Tailor information to actor needs - Facilitate transfer of knowledge	Van Meerkerk and Edelenbos, 2017; Long et al., 2013; Grygoruk and Rannow, 2017; Ebers, 1997; Coleman and Stern, 2018; Cunningham et al., 2016; Hunter , 2016; Johnson, 2011
2) Fostering social innovation	- Create the space for innovation - Combine information, skills and experience to foster innovation - Resolve uncertainties and impasses to enhance innovation	Safford et al., 2017; Ebers, 1997; Williams, 2010; Klerkx et al., 2010; Michaels, 2009; Tushman, 1977
3) Enhanced learning	- Enable information dissemination and deliberation thereby enabling learning - Create the space for learning	Newig et al., 2010; Klerkx et al., 2010; Williams, 2010
4) Developing social networks	- Connect or link different people and processes - Building and sustaining good organisational and inter-personal relationships - Knowledge and understanding of different actors	Van Meerkerk and Edelenbos, 2017; Long et al., 2013; Michaels, 2009; Edelenbos and Van Meerke, 2015; Williams, 2013
5) Vision building	- Generating shared meaning and common goals - Coordinate effort across the network	Edelenbos and Van Meerkerk, 2015; Long et al., 2013; Coleman and Stern, 2018
6) Building trust	- Enhance trustful relationships	Edelenbos and Van Meerkerk, 2015; Williams, 2010

Boundary spanners are possibly most recognised for connecting people who would not otherwise meet. They are skilled networkers and can develop and exploit inter-organisational and inter-personal relationships (Edelenbos and Van Meerkerk, 2015). They are also able to empathize with others and have a feeling for social construction (Edelenbos and Van Meerkerk, 2015). The latter requires that they have an in depth knowledge of different individuals and agencies, including their roles, responsibilities, cultures, histories and purposes (Williams, 2013). Their ability to understand other actors' needs enables them to search for shared meanings (Edelenbos and Van Meerkerk, 2015; Williams 2013). In this way, they can help establish a common vision and set of goals (Williams, 2010; Coleman and Stern, 2018). This in turn facilitates better co-ordination across the network (Long et al., 2013).

The development of trust is an important ingredient for the maintenance of inter-personal relationships (Williams 2010). Trust is often developed in informal network structures. Boundary spanners are critical in creating these informal spaces for interaction, and thus in creating conditions for trust to evolve between actors in the network (Edelenbos and Van Meerkerk, 2015). The more individuals interact and develop mutual trust and common norms, the more likely collaboration is to occur (Putnam, 1995). Building trustful relationships is therefore viewed as a very important aspect of a boundary spanners work (Williams, 2010).

2.5 Linking roles and competencies of boundary spanners

In his work on boundary spanners in the UK public sector, Williams (2010) identified a number of key aspects of the boundary spanning role. These include reticulist, entrepreneur and interpreter/communicator. Each of these aspects is defined by a set of competencies (defined as skills, abilities, knowledge and experience). Importantly, the research highlighted a high degree of connectivity and interplay between these competencies. In practice however, they are usually deployed differently depending on the circumstance presented (Williams, 2010).

Reticulists are defined as *individuals who are especially sensitive to and skilled in bridging interests, professions and organisations* (Williams, 2010). Reticulists have an ability to cultivate a network of personal relationships that can be used to achieve personal and organisational goals. They are keenly aware of the structure of formal and informal relationships and the roles of different actors. They also have an appreciation of problem structures and the organisational context within which they are embedded. They have good political skills and know when to adopt bargaining, persuasive or confrontational modes of behaviour (Williams, 2010).

The entrepreneurial aspect of the boundary spanning role rejects conventional approaches and instead requires the adoption of new ideas, creativity and lateral thinking (Williams, 2010). These individuals are often regarded as risk-takers and possess a range of political and managerial skills that enable this approach. They are problem-solvers and whole-system thinkers who combine visionary thinking with opportunism to create innovative solutions (Williams, 2010).

The interpreter or communicator aspect of the boundary spanner reflects the importance of inter-personal skills for enabling collaboration. The interpreter is able to get on with people and builds strong inter-personal relationships. These relationships are built on an ability to see the perspective of others, to communicate effectively, and to empathise and understand (Williams, 2010). Trust building is also considered to be an important competency of the interpreter (Williams, 2010). Trust, in turn, is based on an assessment of the level of risk of the alliance as well as the trustworthiness of the other person (West et al., 2003).

2.6 Structure, agency and context

The exploration of boundary spanning competencies surfaces the classical debate on structure versus agency (Williams, 2010). This debate deals with the extent to which actors are able to disengage from their social context in order to effect change (Leca et al., 2008).

Within broader institutional theory, this debate is referred to as the paradox of embedded agency (Garud et al., 2007). Leca et al. (2008) frame this paradox as follows: *How can organisations or individuals innovate if their beliefs and actions are determined by the institutional environment they wish to change?* Within this debate, structuralists believe that social, political and economic outcomes can be explained by structure including form, function, context and setting. The opposing view of behaviouralists is that agency is determined by the ability or capacity of actors to act consciously (Williams, 2010).

In reality, outcomes are likely to be influenced by the dynamic interplay between the two. Scott (2001) suggests that *individual actors carry out practices that are simultaneously constrained and empowered by existing social structure*. Similarly, Jessop (1996) adopts a strategic-relational approach which focuses on the interaction between strategic actors and the strategic context. I adopt a comparable view in this project, and explore the relationship between boundary spanning individuals and the contexts that enable or constrain their competencies.

2.7 What are the enabling contexts?

Contexts can be described at a number of different scales. The individual-group-organisation-society framework is a useful tool for defining these scales. At the smallest scales the focus is on individuals or groups in their personal setting. The organisational level addresses the individual institutions and includes a range of factors such as the leadership style, financial resources and institutional goals and policies. The societal context addresses factors external to the institution and encompasses the broader social, political, economic and legal contexts. This framework has been applied in assessing contextual conditions in this study.

Through a review of the literature, three broad contexts were identified that warranted further investigation: management and support, access to resources, and institutional and legal requirements. While these contexts were used to guide the interview framework for this study, additional contexts emerged through the discussion. An overview of the three initial contexts is provided below and the additional contexts are discussed in Chapter 6.

2.7.1 Management and support

Williams (2013) suggests that boundary spanners may lack the formal status of managers and leaders. However, they often have access to the formal organisational hierarchy (Challis et al., 1988). Their focus is generally outward-looking and they are often less connected into internal networks and mainstream management (Williams, 2013). Challis et al. (1988) note that they are less bound by the accepted channels of organisational behaviour and are encouraged to be

unconventional. As such, their managers can play an important role in creating a context in which boundary spanning behaviour is triggered (Van Meerkerk and Edelenbos, 2017).

In their study on urban governance networks, Van Meerkerk and Edelenbos (2017) explored two potential antecedents of boundary spanning behaviour, namely facilitative management and executive support. Facilitative management aims to create a constructive platform for interaction and dialogue between actors. It is characterized by engaging activities that promote relationship building among actors (Van Meerkerk and Edelenbos, 2017). Van Meerkerk and Edelenbos (2017) found a positive relationship between facilitative project management and boundary spanning behaviour.

Executive support, or support from principals, requires executive managers to show commitment to a project. It is characterised by providing support and resources (money, time, attention) and creating the mandatory space for project managers to prepare and execute a project (Van Meerkerk and Edelenbos, 2017). Van Meerkerk and Edelenbos (2017) found that executive support indirectly contributes to boundary spanning behaviour via facilitative management. These outcomes are supported by an extensive body of literature on the effect of leadership on team performance. For example, in their study on team climate and performance, Pirola-Merlo et al. (2002) found that facilitative leadership directly affects team climate, and subsequently impacts team performance. Similarly, Kerzner (1987) suggests that project management is unlikely to succeed unless there is support and commitment from executive management.

2.7.2 Access to resources

Research on the relationship between boundary spanning behaviour and access to resources is limited. However, literature on institutional entrepreneurs suggests that the success of these individuals (who perform many of the same competencies as boundary spanners) depends to a significant extent on their access to scarce and critical resources (Fligstein, 1997; Lawrence et al., 2005).

Financial resources can be used to build a coalition with other actors. Institutional entrepreneurs (and boundary spanners) are instrumental in jumpstarting collaborative initiatives and convincing stakeholders of the desirability and viability of a proposal (Dorado, 2005). Convening and convincing the relevant actors usually requires financial resources. As with institutional entrepreneurs, it is likely that boundary spanners who have access to, or are able to leverage resources, are better able to participate in other boundary spanning competencies.

The ability to access intangible resources may also influence boundary spanning behaviour. Fligstein (1997) suggests that successful institutional entrepreneurs may have high levels of social capital. In this context, social capital is defined as an actor's position in the network of

social relations. As with boundary spanners, institutional entrepreneurs are often central in the network. This position allows them to enlist numerous allies and establish alliances with more isolated actors. This in turn enables them to bring together a diverse set of actors and orchestrate collective action (Maquire et al., 2004). Their position in the network also affords them legitimacy. Legitimacy enables them to be taken seriously by other stakeholders and thereby influence relations between themselves and other actors (Leca et al., 2008). In order to gain legitimacy, it is necessary to be identified as a prominent member within a broad diverse constituency rather than a narrow group (Leca et al., 2008).

Linked to legitimacy is formal authority. Formal authority refers to an actor's legitimately recognized right to make decisions (Phillips et al., 2000). It is considered a useful resource for institutional entrepreneurs as it can help in framing stories and encouraging "consumption" of their discourse by other actors (Phillips et al., 2004). As with legitimacy, formal authority is linked to the position of the actor in the network (Maquire et al., 2004).

2.7.3 Institutional and legal requirements

Behaviour is generally regulated by a set of formal rules at both an organisational and societal level. Boundary spanning behaviour may therefore be constrained, or enhanced, by institutional rules and regulations. This assumption is substantiated in the boundary spanning literature.

A study by Perrone et al. (2003) explored the relationship of organisational context contributing to trust in boundary spanning behaviour. Perrone et al. (2003) argue *that boundary spanners with greater autonomy to manage interorganisational relations are better able to cultivate trust from their counterparts*. They suggest that when boundary spanners are freed from adhering to the rigid rules and requirements of their organisations, they are better able to uphold commitments to partner organisations (Perrone et al., 2003).

Given that trust is closely linked with many of the other boundary spanning competencies, it is likely that institutional rules and regulations may indirectly affect boundary spanning behaviour. This assumption was explored in more detail in this study.

3 APPROACH TO THE STUDY

3.1 Overview of the case study

This study was conducted in the uMngeni catchment in KwaZulu-Natal Province, South Africa (shown in Figure 2). The catchment falls within the Pongola-Mtamvuna Water Management Area and includes the 225km-long uMngeni River which rises in the uMngeni Vlei area in the west of the catchment and flows through uMgungundlovu District Municipality and the eThekwin Metropolitan Municipality before entering the Indian Ocean just north of Durban. Proportionally the uMngeni catchment supplies approximately 42.5% of the population of KwaZulu-Natal with water from a catchment that is less than 5% of the surface area of the province (Pringle et al., 2015).



Figure 2. The uMngeni catchment in KwaZulu-Natal, South Africa

The uMngeni catchment faces significant water challenges arising from intensive agricultural practices (including dairy and pig farming), industry and expanding urban areas. These challenges combined with widespread alien invasive plants and failing sewage works negatively impact the quantity and quality of available water. Jewitt et al. (2015) highlight that the capacity of the uMngeni catchment to deliver water to a wide variety of consumers who depend on it is fast approaching the point where demand will exceed supply.

The institutional landscape in the uMngeni catchment includes several institutions who have legal mandates in respect of water and sanitation services, as well as numerous organisations and stakeholders who are involved in various ways in the catchment. The National Department of Water and Sanitation is appointed the custodian of water resources in the country and is responsible for technical and administrative aspects of water resource management in the catchment. Large scale infrastructure development in the uMngeni catchment is implemented by the water utility, Umgeni Water. This water utility supplies water to the various water service authorities including the Msunduzi Local Municipality; uMgungundlovu, ILembe and Ugu District Municipalities; and eThekweni Metropolitan Municipality.

In addition to these formal structures, a number of informal structures are active. Several Catchment Management Forums (CMFs) have been established in the catchment (including the Msunduzi and upper uMngeni CMFs), and the uMngeni Ecological Infrastructure Partnership (UEIP) was launched in November 2013. CMFs are concerned groups of people that come together on a voluntary basis in a specific area.

The UEIP is an existing partnership of organisations active in the uMngeni catchment and is coordinated by the South African National Biodiversity Institute (SANBI). These organisations have signed a MoU and meet regularly to push the initiative forward. A number of sub-committees have been established as part of the UEIP and meet in conjunction with the general meetings for signatories, to discuss, for example, the various research projects that are being undertaken and to coordinate efforts (Jewitt et al., 2015).

3.2 Methodology

The study adopted a two-pronged approach: a qualitative assessment of 17 interviews, using Interpretative Phenomenological Analysis (IPA), and a half-day workshop with selected boundary spanners, to explore the contextual conditions that aid or hinder their boundary spanning activities. An overview of each of these methodologies is provided below.

3.2.1 Interpretative Phenomenological Analysis

IPA offers a thorough and structured framework to guide a process of interpreting lived experiences described by research participants during in-depth interviews (Smith et al., 2009). Smith et al. (2009) delineated the basic steps and criteria in doing IPA which were adopted in this study. For clarity, a summary of these steps is provided in Figure 3.

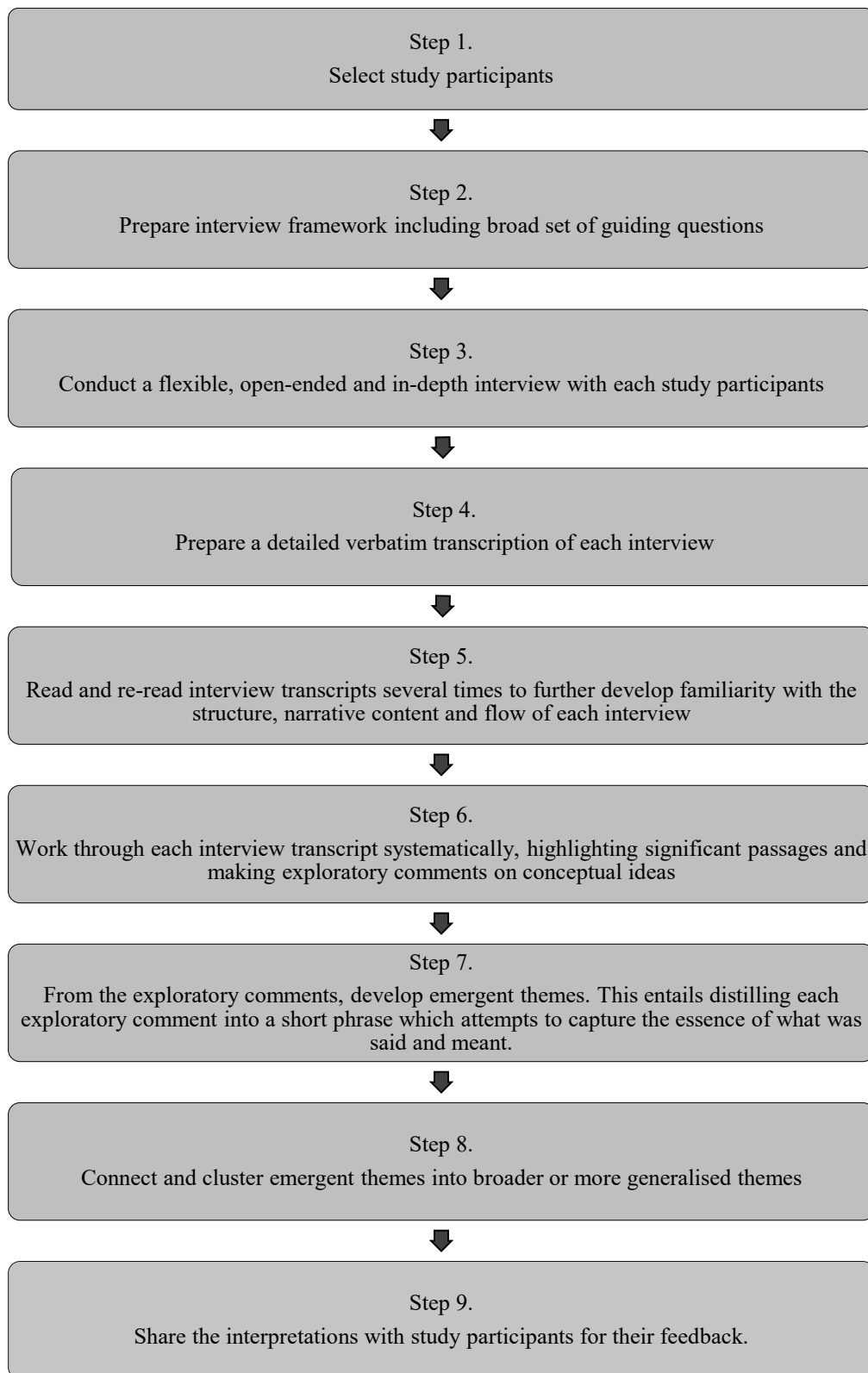


Figure 3. The nine step IPA process, as set out by Smith et al. (2009)

Step 1 of IPA entails identifying study participants. I adopted a snowball sampling approach to identify boundary spanners in two key areas of the water governance network namely formal water management institutions (as prescribed by the National Water Act) and governance structures associated with water-linked natural resources in the uMngeni catchment. As a starting point, I identified several boundary spanning activities from literature, and asked members of the Msunduzi CMF, upper uMngeni CMF and the UEIP, to provide names of individuals who were thought to engage in these activities (Appendix 1). Individuals whose names appeared more than twice were invited to participate in the study.

The list of names provided was reviewed and two issues emerged:

- 1) the lack of boundary spanners in the upper levels of the water governance hierarchy, and
- 2) the lack of boundary spanners of some race groups.

This under representation in the sample reflects an under representation in the CMF and UEIP.

The lack of boundary spanners of some race groups was considered particularly important for two key reasons:

- Firstly, South Africa remains a complex mix of different race groups with different languages and cultural identities. These identities are linked to cultural systems which include value-orientations, goals, ideologies, and norms, as well as a currency or generalized symbolic medium of communication (Abrytyn and Van Ness, 2015). The literature suggests that some boundary spanning skills, such as innovation and information exchange, may vary depending on the social position and other socio-cultural and environmental conditions (Abrytyn and Van Ness, 2015). Chaffin et al. (2014) further argue that significant contextual differences, both ecological and social, shape how individuals and networks organise and operate. Given decades of apartheid rule and the purposeful marginalization of the majority black population in South Africa, there are significant variations in contextual conditions across different race groups particularly in terms of access to financial resources, economic opportunity and quality education (Meiring et al., 2018). There is a need, therefore, to explore the contexts affecting boundary spanning behaviors across all race groups.
- Secondly, race is arguably one of the most significant “boundaries” in South Africa. Unfortunately, as a result of the country’s apartheid past, the broad South African public has not been able to develop a strong culture of participation in government processes (Funke et al., 2007). Funke et al. (2007) highlight challenges of stakeholder participation in water governance, and the amount of power that different actors have. For example, successful commercial farmers (who are often white) are likely to have greater capacity to negotiate and influence decision-making pertaining to water needs than impoverished subsistence farmers, (who are usually black) (Funke et al., 2007). An ideal governance system needs to ensure the participation of all actors at all levels and across all race groups (Funke et al., 2007). Boundary spanners who can operate across racial boundaries are required to make cross-cultural collaboration a success. These individuals need to appreciate different cultures, motivations and practices of a

wide range of individuals and organisations, articulate the frames of many actors, and interpret those frames in the context of collective action (Williams, 2013).

Given the importance of including boundary spanners of all race groups, additional steps were implemented to identify and include boundary spanners from missing groups in the study. This entailed asking invited participants to provide additional names of boundary spanners, with a focus on black individuals. A similar attempt was made to include individuals at higher levels in the governance hierarchy.

Step 2 of the IPA required the preparation of a broad framework for conducting the interviews. As this research is exploratory, I developed a broad set of questions that would provide sufficient shape to the inquiry and prompt responses relevant to the research questions, but that would not narrow the conversation by imposing a rigid agenda. The interview framework comprised an introductory section and seven guiding questions. The purpose of this introductory section was to get a sense of the interview context. Here I identified who was being interviewed, the institution or company the individual represented, their designation, the size of the organisation, the stakeholder group to which the individual belonged, their age, experience, length of time in the community, and their views on conservation and development. Stakeholder groupings were adapted from WWF and Economic Development Partnership (2018) and included national government, provincial government, local government, business sector, commercial agriculture, research institutions, parastatal and non-governmental organisations.

The guiding questions sought to address the following:

- Question 1 identified and captured the key stakeholders and fora that the participant engaged with, and their perspective on whether these groups were cohesive.
- Question 2 explored which boundary spanning activities he/she participated in, and respondents were asked to provide examples to illustrate how they engaged in such activities. This provided space for participants to express themselves without being constrained by a particular line of questioning.
- Question 3 onwards sought to understand the contextual conditions that enabled or hindered their boundary spanning activities. This included a specific focus on leadership and management, resources, and legal and/or policy requirements.

The interview framework is included as Appendix 2.

In Step 3 of the IPA, a flexible, open-ended, in-depth, one-on-one interview was conducted with each participant to elicit rich data for analysis. The duration of each interview was approximately one hour or slightly longer. All interviews were recorded, and a detailed transcript of each interview was produced (Step 4).

Step 5 of the IPA required reading and re-reading the transcripts several times to develop familiarity with the narrative content and to identify important terms and issues in the transcripts. Each reading provided new insights as often a point raised in one interview would remind me of something another participant had expressed in a different context.

Step 6 of the IPA entailed working through the transcripts systematically and making exploratory notes. These notes included thoughts, comments and observations and highlighted distinctive phrases of potential significance. This step served as a bridge between the transcripts and my interpretations by connecting the general with a more abstract idea.

In Step 7, these exploratory notes were transformed into emerging sub-themes. This involved looking at seemingly disparate ideas across the transcripts and grouping them into more general higher-order sub-themes. Although this process requires formulating a slightly higher level of abstraction, it is still grounded in the detail of the participant's account.

Step 8 of the analysis involved identifying shared sub-themes across the interviews and detecting broader or more generalised themes that could explain them. In so doing, I engaged in a form of relational analytic thinking whereby the emerging sub-themes connected to the relational themes. This required searching for patterns, connections and tensions across the data that could be used to bring each of the sub-themes together.

The final step of the IPA entailed sharing these interpretations with study participants for their feedback.

3.2.2 Workshop

A half-day workshop was also held as part of the study. The workshop invitation was emailed to each participant and included a note that their attendance would disclose their identity to other participants. Participants who had provided sensitive information were not invited to the workshop. Nine participants chose to (and were able to) attend the workshop.

The purpose of the workshop was to sense-check the initial findings of the study and explore how these could be used to enhance water governance in the uMngeni catchment. Following the welcome and introductions, a presentation of the key results was provided. This included a summary of the emergent sub-themes and themes from the IPA analysis for (1) personal characteristics of boundary spanners, and (2) boundary spanning contexts, in the uMngeni catchment. Each participant was provided with a worksheet which included a summary of these sub-themes and themes as well as the supporting quotes from the interviews. The participants were then asked to check their quotes against the interpretations and groupings into sub-themes and themes. This process formed part of Step 9 of the IPA.

The final session of the workshop included a plenary discussion on how the results could be used to enhance water governance in the uMngeni catchment. At the start of this plenary session, a second presentation was given outlining how different contexts may interact to create windows of opportunity. This presentation likened windows of opportunity to the Swiss Cheese Model of accident causation developed by James Reason. The model illustrates that, although many layers of defense lie between hazards and accidents, there are flaws in each layer that, if aligned, can allow the accident to occur. Reason (2000) argues that a systems approach focuses on the conditions under which individuals work and tries to build defences to avert errors or mitigate their effects. Examples of windows of opportunity in the uMngeni catchment were also provided. These illustrations provided a useful launchpad for discussion.

The workshop proved valuable in both sense-checking the outputs of the study and for discussing barriers to boundary spanning and opportunities for action in the uMngeni catchment.

3.2.3 Interpretations and outcomes

The final interpretations and outcomes of the data gathered during the interviews and workshop are discussed in Sections 4 to 7 of this report.

3.3 Limitations of the study

This study is not without its limitations. It is based on a perceptual understanding of boundary spanners which is susceptible to method bias. It is therefore important to be careful about making generalisations. This study also focused on boundary spanners in specific types of networks, all of which relate to informal water governance with a natural resource focus. The results may therefore not hold for boundary spanners in other types of networks such as those working in the water services sector. Further research involving samples from these sectors is needed to validate the results.

4 BOUNDARY SPANNERS AND COHESION IN THE UMNGENI CATCHMENT

4.1 Who are the boundary spanners in the uMngeni catchment?

Eleven boundary spanners were initially identified in the uMngeni catchment. A further six, comprising black individuals and those at higher levels in the organisational hierarchy, were identified after prompting the initial boundary spanners for additional names.

Of the 17 boundary spanners, six were women and 11 were men. Participants ranged in age from 30 to 60, with three individuals falling into the 30-39 age category, seven in the 40-49 category, six in the 50-59 category, and one in the 60+ category. More than half the participants were White, six were Black and two were Indian. Almost all the participants had either grown up in the catchment or had been living and working in the area for more than 10 years.

The participants included a diverse group from provincial and local government, research institutions, parastatals, and non-governmental organisations. Interestingly, no boundary spanners were identified from the business or commercial agriculture sectors. Perhaps more surprisingly, no boundary spanners were identified from the Department of Water and Sanitation (DWS). Given that DWS is mandated to manage water resources in South Africa, it was anticipated that some individuals in DWS would span numerous boundaries to achieve this mandate. However, it is important to note that while specific individuals in DWS were not identified as boundary spanners within the sample, this does not mean that there are no boundary spanners within this department.

The participants expressed similar attitudes to conservation versus development. Most sought a balance between the need to conserve natural resources on the one hand and a need to use them on the other.

4.2 Cohesion in the uMngeni water governance network

Many of the boundary spanners played a role in both the formal and informal governance networks of the uMngeni catchment. Almost all of them were members of the UEIP and regularly attended meetings. At least five of the participants also played (or had played) a formal role in the CMFs or UEIP, either as a chair or as a member of a working group. Through their participation in the UEIP and the CMFs, these boundary spanners had regular interaction with one another. This regular face-to-face interaction contributed to the number and strength of social ties, which in turn affected the level of cohesion of the network

During the interviews, the boundary spanners were asked to comment on the level of cohesion within the UEIP and the CMFs. In this instance, cohesion was defined as working towards a common goal. This definition was based on Stanley (2003) who describes social cohesion as

the willingness of members of a society to cooperate with each other in order to survive and prosper.

The participants expressed mixed views on whether the UEIP and CMFs were working towards a common vision. Some participants felt that they were, but that there was still some way to go, while others felt that some members may subscribe to an overarching vision but are still pursuing their own agendas:

I think the UEIP is probably the closest to that. The attendees, there's a terms of reference or an MOA with specific goals. We've got a strategy, et cetera, which guides that. So it's a lot more formalised and coordinated.

I don't necessarily see a fully cohesive and collective vision in the UEIP. I think people are in it for their own agendas, including us... I think the CMFs exchange information and don't really do that much more.

Some participants highlighted the diverse array of actors involved in these structures, and suggested that this may enhance or reduce cohesion, depending on the views of the actors:

Depends on what cohesion you're talking about. Because in mindset terms they're a disparate crowd of different organisations all wanting different things, expecting different things sometimes and some of them are mutually incompatible... So cohesion is a difficult thing. Ultimately, if you're looking at the overarching thing, which is the water resource, making it as sustainable as possible, yes, I think that is seen as a fairly binding requirement, but different people will see that as differently.

One participant commented that many of those involved were like-minded environmentalists and felt that it was this like-mindedness that contributed to cohesion in these structures. She queried whether this would still be the case if individuals from other sectors were actively included:

I think they involve the relevant parties, so for now they are [cohesive]. But I'm not sure if that's because they're comprised of all the relevant parties that are all already environmentalists and are working in the field. So they already understand the common ground.... we come together to protect the environment. Not really having for example industry on board, like the major polluters and saying what are the issues and non-compliances and how do we address this going forward? So I think it's cohesive because we're all working together to obtain compliance.

The catchment forums... you have a wide range of stakeholders generally and you do create some form of common objective and we tend to try and define that occasionally, but we're not always tending to work in the same direction

Some participants recognized pockets of cohesion in both the UEIP and CMF. They suggested that ties between some members were much stronger than between members and non-members. They linked this to the frequency of interaction (for a variety of purposes), the size of the group and the sense of belonging felt by some individuals. These comments presuppose the presence of sub-groups:

Look, I think you cannot really generalise and say the entire CMF is equally cohesive or the whole of UEIP is equally cohesive. There's obviously going to be layers. So you're gonna have if you wanted to call it a tighter knit circle of people who are now interacting much more frequently and regularly, more for business, logistical, operational purposes, and so there's good cohesiveness there. But obviously it's going to dwindle as it goes out and so you're not gonna have direct comms with each individual member.

Some of the group is. There's certain players there I feel that are well connected and stay connected and talk regularly. But it's quite a large group and some of the players are more outside players, they're more name than any involvement. One could delve into why that is and there could be many reasons. They don't see a place for themselves there or people that have been allocated to be involved aren't committed or ...

The challenge of “us and them” attitudes often associated with sub-groups was voiced by one participant during the interviews. This individual suggested that two CMFs in the uMngeni catchment contained cohesive sub-groups who shared common interests, and felt that their interests tended to dominate proceedings at the expense of other interests. This made it difficult for outsiders to participate meaningfully:

Different CMFs operate differently... If I can mention one in Maritzburg, there is a little bit of cohesiveness, but you'll find that that cohesiveness is dominated by a certain group of people, or a certain group of ... I don't want to put a race in it ... A certain group of culture, or what? I don't know how to put it. And again, it's dominated by a certain group of people with certain interest, with common interest. And then they dominate on that level. And I always see it as trying to pursue or push for what their interest is. And then if you go up to the one in Mooi River, it is dominated by farmers and their interest is mainly in water, water supply, because they're farming. So they dominate it. And when you bring issues of land degradation, alien plants, all other issues, litter ... You'll find that it's like you're wasting their time in the meeting. They're not interested in those issues. They're interested in one particular issue, and I think it's because of the common interest that they're having.

4.3 The inclusion of other actors

During the interviews, participants were asked whether there were additional actors that they felt should be included in water governance in the uMngeni catchment. One participant

indicated that the nature of the CMFs does not allow all actors who should be involved to participate, particularly those at grass roots level. She suggested that one way of addressing this challenge may be the formation and inclusion of sub-committees in the CMFs:

That's a difficult one, because the nature of the committee doesn't allow to include everyone that's supposed to be there unless we can have sub committees. Especially if we want to get to the grass roots. For me, it would be ideal if we would have sub committees from a community level. For example, you'll find that there are a group of women that are doing gardening. Some are doing arts and crafts and all those things. And all those people, they should come together and share their challenges and issues.

In a way, she has proposed the creation of additional sub-groups with the necessary interaction between them as advocated by Bodin and Crona (2009). They argue that the presence of sub-groups is important for the development and diversity of knowledge. However, the presence sub-groups also reduce structural cohesion. As such, there is a need to balance the presence of sub-groups with the overall structural cohesion of the network (Bodin and Crona, 2009).

A similar idea was expressed by another participant who proposed the formation of Catchment Management Committees (CMC). He suggested that each tributary should have a CMC and that these should form part of the CMF. He felt that this structure would contribute to cohesion in the CMF:

At a national level, [my organisation] was advocating for CMC, Catchment Management Committees, which is part of the CMF, because I was envisaging the CMF to be cohesive... If you can say let's build a cohesive CMF, I will start from widespread facilitating ... All these tributaries, they have their own structures to ensure that there is nothing wrong in our river system.

Several other respondents also highlighted the need to engage with local communities, both at a grassroots level and with the traditional leadership. The traditional leadership was seen as particularly important because of the dual governance structure operating in KwaZulu-Natal and the uMngeni catchment. The lack of involvement of community members to date was attributed to numerous factors including language barriers, level of education, and status in the community.

Because what I've seen in some of the meetings, especially the Durban one that I attended ... When it started, there were people from the community that were there, but because the meeting is conducted in English, they were intimidated... They can't express themselves properly. So they just sit there and do not contribute in the meetings. And eventually they eliminate themselves. And what I've noticed [is that] all the black individuals that sit on those CMF, it's either they've got a professional background or

they are vocal and literate and able to express themselves in English. Otherwise, they're not there.

It was also suggested that representation at the CMF is skewed in favour of government officials and the rich who have sufficient resources and can afford the time to participate in these processes.

One reason catchment management agencies and public participation processes don't work well is people that need to earn good money can't afford the time to go and sit in these endless public participation processes. So you then end up with the rich guys or the government guys dominating the dialogue.

Many of these challenges drive the formation of sub-groups thereby decreasing structural cohesion. The formation of sub-committees which interact via the CMF may help to overcome some of these challenges.

Interestingly, many of the community-based NGOs expressed an interest in working with various members of the UEIP including WWF, University of KwaZulu-Natal, the Institute of Natural Resources, the Department of Water and Sanitation and Umgeni Water. Promisingly, these outcomes suggest willingness by various actors to collaborate with one another.

Many participants also highlighted the need to engage private sector, particularly industry and commercial agriculture and forestry. It was acknowledged that these groups are generally well-organised and harbour significant data that could be useful in addressing complex challenges such as drought. However, some participants felt that their lack of involvement was due to time constraints and the limited benefit they may obtain from participating.

One respondent queried whether the UEIP and the CMFs are in fact the right forums for engagement with these actors. This raises questions about the identity and objectives of these structures and if these should or could be aligned to consider the needs of other actors.

It could well be though that you find the UEIP is not gonna be all things to all people. And so in its strategy and in its identity, if it almost decides that say the private sector and agriculture and all of those, if that's not its main target audience so to speak or main, then it might just be that UEIP is not quite what we want to try and draw them into, for good reasons, and therefore let's try and get them into a network or into in another way. So it might not be UEIP that we push, it might be something else. And it's also, it could well be that we just need to try and work with those groupings individually, not necessarily try and bring them all into one space.

It was generally acknowledged that the inclusion of private sector in water governance structures will require a different approach. Again, the formation of sub-committees, or the use of irrigation boards as a sub-group, may be one way of addressing this challenge.

I wish there was a greater involvement with private sector stakeholders...Having said that, we're gonna have to change the way we operate to get those guys in the room because they can't come and spend two days in a meeting. You've got to go out to them, engage them in their sectors and with their interests.

Engagement with some government entities, particularly the Department of Mineral Resources, the Department of Environmental Affairs and some municipalities, was also flagged as problematic by some participants. However, this was related to general engagement on environmental issues rather than their inclusion in the CMFs and UEIP. These challenges were attributed to a lack of capacity within these organisations, and their perceived role in environmental management.

While DMR have a mandate and function in respect of environmental management, there is a perception that they are not delivering on this mandate because they do not feel that it is a priority. Similarly, Chapter 7 of the Constitution sets out the “objects of local government” which include the provision of services to communities in a sustainable manner and promoting a safe and healthy environment, while Schedules 4 and 5 give legislative competence to local government for various issues which may impact the environment. Many municipalities are struggling to carry out their environmental functions although their inability to do so was attributed to the lack of strong environmental units within these organisations.

However, the perceptions of the participants may be influenced by the strength of ties within their social networks. Several participants highlighted strong ties and trustful relationships with individuals from the environmental unit within the municipalities:

A lot of the municipalities unfortunately don't have very strong environmental management units. So the ones where they do have an environmental management unit we tend to have a good relationship with

In contrast, their relationships with DMR lack trust:

I'll give you an example where the trust is not as strong, is between let's say ourselves and DMR. We don't have a good relationship and knowing that they will do their job.

In the interests of collaborative governance, significant effort will be required to build trustful relationships with individuals in DMR.

5 THE PERSONAL ATTRIBUTES AND SKILLS OF BOUNDARY SPANNERS IN THE UMNGENI CATCHMENT

The contribution of personal traits to boundary spanning behaviour is contested in the literature. However, there are many examples of particular qualities and aspects of personality that are thought to contribute to the boundary spanning role.

This section outlines the key personal attributes and skills of boundary spanners in the uMngeni catchment that emerged through this study. A total of 10 personal attributes and skills were identified including:

- Positive personal attributes
- Self-confidence
- Understanding and empathy
- Passion for the common good
- Experience and trans-disciplinary knowledge
- Willingness to share and learn
- Effective communication
- Risk-taking, rule-breaking and innovating
- Ability to see or create opportunities; and
- Systems thinking.

Each of these attributes and skills is discussed in more detail below.

5.1 Positive personal attributes

Boundary spanners often display a range of positive personal attributes or traits. These include respect, honesty, openness, tolerance, approachability, reliability, sensitivity and many others (Williams, 2002). Some of these attributes were specifically highlighted by boundary spanners in the uMngeni catchment, most notably honesty and transparency. Some participants suggested that an honest environment enables better actor engagement and participation:

...sometimes we have our clashes. But even in those clashes I will try to be fair and frank to you. So honesty is the best policy.

So transparency is really key in my opinion

So you have to be very, very upfront, truthful, honest...

The only disadvantage with that is that by working with all kinds of people and being transparent and open and honest, people understand where you sit, that you will not do or undertake or get involved in things that are illegal or corrupt or against society's interests

Honesty is closely linked with trust; a precondition necessary for most boundary spanning activities (see Section 6.2.1). Williams (2002) argues that trust underpins effective relationships at both an individual and an organisational level. It entails reciprocal risk-taking, with one party entrusting another with information that if misused could bring harm to the informant. This process of 'opening-up' relies on the other party being honest, and if they pass this test, then the relationship moves to a more enduring state of deep trust (Williams, 2002).

Appreciation, friendliness and professionalism were also identified by participants in the uMngeni catchment. One respondent noted that these attributes help to build relationships and encourage reciprocity:

And also just sometimes you need to show appreciation. I feel like sometimes that's lacking quite a lot. And sometimes, even in other organisations you need to show the person that they are useful to you and that you appreciate that help. Because then they're more likely to help you going forward. I've done this before where, and it can't always be just business as usual and very formal and because it's work we need to just keep it as work. Sometimes you need to just be friendly and you need to talk to people as people.

And just your mannerisms and professionalism, the way you carry yourself.

5.2 Self-confidence

Williams (2010) identifies self-confidence as an important attribute of a boundary spanner. Self-confidence may enable an individual to be more decisive and gives him or her courage to take calculated risks.

Self-confidence also emerged as an important enabling attribute of boundary spanners in the uMngeni catchment. Some participants in the uMngeni catchment viewed confidence as a belief in themselves and an ability to overcome fear, particularly a fear of embarrassment. They felt that confidence allows them to engage, learn and be influential, and linked confidence to age and experience:

And I think being, the word I was gonna use, the term I think is not scared. You know what I mean? Having the confidence. I mean, confidence I think plays a significant role as a condition... One just has to be confident that you can engage and learn and be influential.

So I have to be very confident in myself and in my lack of understanding and be able to ask questions and not be embarrassed by that

5.3 Understanding and empathy

Boundary spanners are characterised by their unique ability to engage with people and build sustainable relationships (Williams, 2002). Relationship-building is partly based on an understanding of the motivations, mind-sets and behaviours of others (Williams 2002, Williams, 2010).

Williams (2002) suggests that a state of understanding can proceed to a higher and more rewarding level, a condition known as empathy. Empathy is defined as the ability to feel as the other person feels and is considered an important tool in the boundary spanning toolbox (Lawson et al., 2019). Fligstein (1997) considers boundary spanners to be socially skilled actors, whose skills revolve around empathy. Similarly, Trevillion (1991) views boundary spanners as ‘cultural brokers’ who help one partner to see the world through the eyes of another.

The ability to see the perspectives of others and to empathize, was observed in boundary spanners in the uMngeni catchment:

... when you actually do meet people and you understand where they are and what their issues are and you work around those issues.

Someone once said to me, I can't remember how she put it. She said you've got an unbelievable ability to put yourself in other people's shoes. You demonstrate so much empathy, but also that ability to see a matter from a whole lot of different perspectives.

But I want to believe that I... go out there on the ground, in the trenches, and meet people in the trenches as opposed to in your air-conditioned office.

So it just shows you that you've got to get out and understand another party's reality.

Empathy enables boundary spanners not only to internalise the state of others but also to respond appropriately. Empathy is also considered to be an important ingredient for trust. Van Meerkerk and Edelenbos (2017) suggest that boundary spanners show empathy and interest in the motives, interests, and perspectives of other actors in the network and, in this way, develop trustworthy relationships with these actors

The participants in the uMngeni catchment who identified empathy and understanding as important qualities, were mostly women. This finding is consistent with studies that suggest that women are more empathetic than men (Mestre et al., 2009).

5.4 Passion for the common good

The links between boundary spanning behaviour and working for the common good is not a common theme in the boundary spanning literature. The one exception is Fligstein (1997), who

views boundary spanners as institutional entrepreneurs who use empathy to convince allies that their project will be mutually beneficial and introduce themselves as acting on behalf of the common good.

However, the idea of the greater good and wanting to make a difference was a common theme across the boundary spanners in the uMngeni catchment. The greater good was identified by most participants as a healthy social-ecological system including both the natural environment and the people who live in it.

But, I mean, we are saying it's for a common good within our sphere of work, which is the environment, that includes the whole world basically if you think about the environment, and we should be able to assist neighbouring [areas], we should be able to assist whoever comes to us for help.

I've got that mission [for] in a healthy, sustainable environment

...the need to go out there, make a difference..

I'm always willing to make a difference. Wherever I go, I want to leave a mark.

The internal passion of many boundary spanners in the uMngeni catchment also stood out during the interviews. Some participants identified 'passion' as an important personal characteristic necessary for undertaking their work:

So you all finally connect because nobody is paying us, but it's an internal passion to make a difference.

It takes effort, passion, you have to believe in it otherwise you can't do it

5.5 Experience and trans-disciplinary knowledge

Williams (2002) suggests that the ability of boundary spanners to understand inter-dependencies between different actors is strongly influenced by inter-organisational experience and transdisciplinary knowledge. Accumulated inter-organisational "on-the-job" experience enables a better understanding of different viewpoints, constraints, cultures and working practices and helps in making connections (Williams, 2002). Similarly, employment in different types of organisations and sectors also plays a role (Williams, 2002).

Inter-organisational or inter-departmental experience emerged as an important contributing factor to boundary spanning behaviour in the uMngeni catchment. The majority of boundary spanners in the uMngeni catchment have worked in numerous roles and/or in several different organisations. Some participants suggested that their varied backgrounds have not only enabled

them to see and understand different perspectives but has also provided them with the knowledge, skills and experience to deal with different people and adapt to different conditions:

... and maybe it's because I've worked with so many different countries, different organisations, different people, myself in different roles...

So I think this experience I've had has allowed me to accumulate knowledge, skills, experience to adapt myself to the conditions

I would say [that my background] it has helped me, because I've engaged with different people in different levels in different professions. So I've managed to deal with different people

My background enlightened me as to what is it that is there outside in the world, and what is it that other people are actually doing.

Their skills and understanding may in turn enable them to bring together different actors and disciplines. It is also likely that through these diverse experiences, they have been able to develop and maintain extensive social networks.

The literature suggests that boundary spanners should also be sufficiently educated or experienced in a specific discipline to warrant respect. Trans-disciplinary knowledge in particular can be a source of advantage to a boundary spanner and heightens their legitimacy in the eyes of different actors (Williams, 2010). Safford et al. (2017) note that effective boundary spanners are also generalists and jacks-of-all-trades – scientist, manager, mediator, diplomat, etc. and are often peripheral members of several and sometimes competing groups. Boundary spanners also recognize the limits of knowledge homogeneity (learning only within and not across groups) (Roux et al., 2006).

The findings in the uMngeni catchment are consistent with this literature. Many of the participants in the uMngeni catchment regard themselves as having broad backgrounds or being “generalists”:

Yes, I think so. I'm a bit of a generalist... So I've sort of got pretty wide experience in water.

You have to be a bit of a generalist. You cannot be a specialist. Well ... it's slightly contradictory to be a specialist and a boundary spanner. So a precondition is you've got to be a bit of a generalist.

... but I think it was perfect for me because I'm naturally that generalist. I'm not a specialist. So I like the diversity of viewpoints and ideas because I don't like to specialise in something very specific.

5.6 Willingness to share and learn

There is a substantial body of literature on boundary spanners as knowledge brokers. In this role, they connect different individuals and increase the flow of information (Long et al., 2013; Van Meerkerk and Edelenbos, 2017). Cunningham et al. (2016) suggest that using boundary spanners and social networks to disseminate information allows for messages to be tailored to actor needs and proves advantageous as the information is more likely to be trusted. Furthermore, through this information exchange and their interests for the feelings and social constructions of other actors, boundary spanners help to build trustful relationships and contribute to the performance of the network (Van Meerkerk and Edelenbos, 2017). However, Long et al. (2013) caution that in some instances, bottlenecks in information flows may form at the broker who risks being overloaded and stressed by others' reliance on them.

Information exchange is underpinned by a willingness to share information. Virtually all boundary spanners in the uMngeni catchment viewed information sharing as one of their key roles:

So, yes, we do share as much information as we can...

I wish we could make more information available more regularly...

That's a value of mine, is that I really think it's important to share, and knowledge is very powerful and without the knowledge you can't really enable anything

I quite enjoy that role and I do like to be a conduit and sharer of information.

I think the first task was to create an enabling environment for information transfer. Let me say not transfer, but information sharing. I think sharing is a much appropriate term than transfer. Because you share information, you don't just transfer from one source to another.

... so we can then take that information and share it with the communities

Information sharing was seen as a key enabler of knowledge and action. One respondent remarked ... *without the knowledge you can't really do anything.*

Information sharing was also viewed as important in creating opportunities for solving problems and for spanning disciplinary boundaries. It also seems to play a role in relationship building and reciprocity:

I think that if we do not share ideas and knowledge with each other and we do not share the opportunities for learning, the opportunities for solving problems, then we're all just caught up working in our little silos

...also my business is to share information and to share ideas, not to be too ... Don't come too close, because I think that's if you're generous with ideas and information, other people will do the same for you.

Newig et al. (2010) highlight that information dissemination and deliberation are key components of learning. Learning emerged as a key function of boundary spanners in the uMngeni catchment. Many of the boundary spanners in the uMngeni catchment identified themselves as curious individuals with an insatiable appetite for learning. This learning relates to both their own learning and the learning of others. They felt that their learning was important for understanding different disciplines and the functioning of different social groups, as well as for staying relevant:

I'm that kind of person who wants to learn as much as I can and gain as much knowledge as I can.

...but also being prepared to spend the time to learn.

But at the same time I like to learn and listen and to ask questions and reflection of my learning going back to those people and maybe also make them start thinking

You've got to remain also relevant and keep learning and you don't always learn new things if you're just in your own little bubble. It's absolutely vital.

5.7 Effective communication

Effective communication is necessary for almost all boundary spanning activities. Williams (2010) highlights that communication is particularly influential in that it helps to produce a shared interpretation of goals and agreement on roles and norms. Similarly, Engel (1994) notes that *communication underpins and permeates the entire construct of capability for collaboration*. The value of communication skills can therefore not be overestimated (Williams, 2002).

Communication was identified as a key skill by some participants in the uMngeni catchment:

And another thing, simple communication skills or information, it has brought down potential of good working relations that could flourish. And then you find that it becomes a stumbling block, how you communicate and what do you communicate.

Communication is viewed as a two-way process which entails both receiving and giving information (Williams, 2002). Information is received through active and conscious listening. Listening helps boundary spanners to understand the motives, roles and responsibilities of different actors, which in turn enables them to select an appropriate method of communication and to tailor information to different actor needs. This was explained by some participants who spoke of the ability to translate and simplify information or convert it into an understandable format for other actors:

Communication is the first thing. I think for me it's knowing the people personally, interacting with them on a regular basis. And then even just knowing their favourite way of communicating, whether that's in person, whether that's over the phone or whether they prefer emails or how do you deal with this person? Because then you're gonna get the best form of communication from them. And I've noticed that. Some people I will just not email. I will never email them because they will never respond to an email. And I will call them and we have that relationship where they don't mind me calling them, I think because they prefer that.

We're translating, simplifying those things for our community.

These observations are consistent with literature which highlights the critical role that boundary spanners play in translating ecological information for society (Safford et al., 2017; Michaels, 2009; Cunningham et al., 2016). Although there is a clear need for this "translation" function, there is also growing recognition of the importance of co-produced knowledge (Kocher et al., 2012; Roux et al., 2006). This requires participation of actors from both sides of the boundary as well as professionals who serve a mediating role (Guston, 2001).

Debrulle et al. (2014) suggest that a boundary spanner's ability to acquire, assimilate, and translate information is strongly related to the depth of their experience. The relationship between experience and their ability to tailor information was also identified by some participants in the uMngeni catchment:

I'm also in the fortunate position that I have the background and the experience to be able to translate the data into information and sometimes even be able to provide different ways of showing, displaying that information in a hopefully understandable form to quite a wide variety of groups.

[My background] really made things easier for me, in terms of being able to communicate effectively with other people, and to know who's where, and who is giving what, and how, stuff like that

5.8 Risk-taking, rule-breaking and innovating

Roberts and King (1996) view boundary spanners as public entrepreneurs who have a unique set of skills which include *being comfortable with difference* and a risk-taking ability. Similarly, Williams (2010) suggest that the entrepreneurial element of a boundary spanner's role demands the rejection of conventional approaches. A presumption towards risk-taking, innovation and experimentation is a much-needed attribute in addressing complex problems (Williams, 2002)

A few boundary spanners in the uMngeni catchment highlighted their curious nature and ability to tolerate risk. These individuals expressed an almost experiential approach to their work:

People are not very innovative necessarily, because they always want to know well, has it been done before, whereas [our organisation] says let's try it and see what happens

And we wanted to see, will this thing work? And so we took a risk basically

These experiential approaches contribute to innovation. Fostering innovation was considered a key focus of some organisations in which these boundary spanners are based. It was suggested that the willingness of some individuals to try new things or find new ways of doing things is key to finding solutions to complex challenges:

So there other people who are passionate and who are prepared to take risk, who are prepared to work in very complex situations. ...but everything that one has to then do to transform it into a green economy, stuff that has never been done before or are new stuff and you've got to find ways of doing it. Government cannot do it alone. The private sector on its own is also problematic. We have to find ways of innovating

That's exactly what we're trying now to do, to foster the innovations...

Some boundary spanners in the uMngeni catchment also highlighted their rejection of conventional approaches to tasks or activities. For example, one participant highlighted that when facilitating a meeting he purposively does not create a comfortable space:

I definitely create a space, but I don't necessarily create a comfortable space in the same way as a Rod Bulman would create a facilitated comfortable space in which to operate. I suppose I'm too challenging in that

Another participant noted that in meetings she tends to have a very different viewpoint to others:

Well, historically, maybe even now, it's by being different to the people that I'm working with... I have a different viewpoint and then saw things from a different way and pushed the boundaries for people to do.

While a third participant indicated that she does not simply follow instructions but instead undertakes activities that she feels are important:

And if I was a very, like I just wanted to toe the line, make sure I'm 100% keeping my boss happy, couple of things I wouldn't have gone to. But, you know. So you do what you feel is important...

These non-conventional approaches may force others from their comfort zones, challenge their beliefs and create an environment for learning and innovation. Non-conventional approaches may also be used to create opportunities. One respondent suggested that he was selected for a program because he “spoke a different language” to those around him. In other words, he adopted a non-conventional approach in order to stand out from the crowd, and in so doing created a personal opportunity:

I think they picked me also because I speak different language. Most of young people would come to any organisation and want to volunteer and want to work. I came to every organisation, I said I want to partner with you in this and that.

5.9 Ability to see or create opportunities

Dorado (2005) defines opportunities *as the likelihood that an organisational field will permit actors to identify and introduce a novel institutional combination and facilitate the mobilization of the resources required to make it enduring*. Based on thinking from both the entrepreneurship and social movement research themes, she suggests that opportunities arise when individuals imagine them and persuade others to welcome them (Dorado, 2005).

Aldrich's (1999) research indicates that the ability of an actor to identify and realize opportunities is closely linked to the strength of their social relations. In short, he highlights that actors positioned as brokers have access to more information and more resources and are therefore better placed to identify and realize novel combinations.

However, the idea of opportunity identification or recognition is misleading as it implies that opportunities are out there waiting to be found (Phillips and Tracey, 2003). Instead, opportunities are enacted, based on the entrepreneur's perception, interpretation, and understanding of context (Dutta and Crossan, 2005). In some instances, however, disruptions

or crises may open up opportunities (Folke et al. 2005; Gelcich et al., 2010). These opportunities may be exploited by individuals who are alert enough to recognize them (Garud et al., 2007).

Boundary spanners in the uMngeni catchment appear to have a unique ability to identify opportunities for themselves and others. Their ability to see opportunities was expressed as follows:

Because there were so many other opportunities which could divert me

I really believe even if there's a little sparkle somewhere, an opportunity, you need to try at least.

And I tend to, I work, I like a more flexible approach and so I often like to, if an opportunity comes along, to grab it.

And the more you network, the more you are able to see business opportunity.

Other participants clearly articulated their aptitude to leverage or create opportunities. These opportunities were often created through networking or lateral thinking:

And then you think to yourself, yes, what have I got planned? Let me create an opportunity.

...our policy environment and our understanding of how to undertake development and management of the environment demands that we do our work in a way where we facilitate unlocking opportunities and lead by example and lead by doing.

You need to think out of the box and leverage or create additional funding opportunities

5.10 Systems thinking

Numerous references express the desirability of having 'analytical ability', 'being able to think laterally', 'taking a holistic view', understanding the big picture' and of 'strategic thinking' (Williams, 2002). Roberts and King (1996) regard boundary spanners as policy entrepreneurs who adopt 'whole systems thinking' while Goldsmith and Eggers (2004) identify 'big picture thinking' as a defining characteristic of boundary spanners. Edelenbos and Van Meerkerk (2015) suggest that a systemic and holistic approach which addresses relationships and linkages among multiple and often conflicting water resource users is a very important aspect of water governance.

Systems thinking appears to be an important attribute of many boundary spanners in the uMngeni catchment. These individuals have a deep appreciation for the system and can also think conceptually. Several participants highlighted their ability to adopt a system's view:

So you have this holistic picture and not just your picture

But I want to make sure that they've looked at the bigger picture...

... and trying to draw the bigger picture from what we do.

...what are the bigger picture issues..

Some participants felt that being open-minded and listening to others as well as taking time to learn, may enhance their understanding of the system:

So we're open-minded to everything and we're all ears for everybody's view so that we might understand the system that we're in and its actors and how we might change behaviour in the system

If we're not transparent, then because it's such a complicated, complex system, then how are we supposed to deal with that overall system?

So being prepared to spend time to understand the game and the system then allows you to play in the system and span boundaries between

5.11 Profiling boundary spanners in the uMngeni catchment

In reality, individuals seldom exhibit all of the above traits. Some traits may also be more dominant than others. Based on the interview information, the specific personal traits displayed by each participant were identified. These personal traits were checked with participants at the workshop. However, individuals may display additional traits that were not discussed during the interviews. Nonetheless it provides an interesting overview of those characteristics that may enable their behaviour, and raises the question of how far it is possible to develop and train people to become boundary spanners (Williams, 2010).

A summary of these personal traits per participant is summarised in Table 2. The summary only includes individuals who participated at the workshop, as it was not possible to check the identified personal traits with the non-workshop participants. This summary suggests that a willingness to learn and share, as well as holistic or systems thinking, are the most widespread attributes in the uMngeni catchment. These are followed by trans-disciplinary knowledge, and understanding and empathy.

Table 2. Summary of personal attributes and skills of boundary spanners in the uMngeni catchment

Personal attribute/skill	Participant number									Total
	1	2	3	4	5	8	9	11	17	
Understanding and empathy										4
Effective communication										3
Positive personal attributes										3
Trans-disciplinary knowledge										5
Willingness to learn and share										7
Self-confidence										2
Rejection of conventional approaches										2
Risk-taking, rule-breaking & innovating										3
Passion for the common good										3
Ability to see or create opportunities										3
Systems thinking										6

In addition to the diversity of traits, different traits may be employed at varying times, depending on the situation. Williams (2010) identifies three types of boundary spanners, namely reticulist, entrepreneur and interpreter. A broad description of each of these types of boundary spanners is provided in Section 2.5 and their associated roles and competencies are summarised in Figure 4. This classification was applied to participants in the uMngeni catchment.

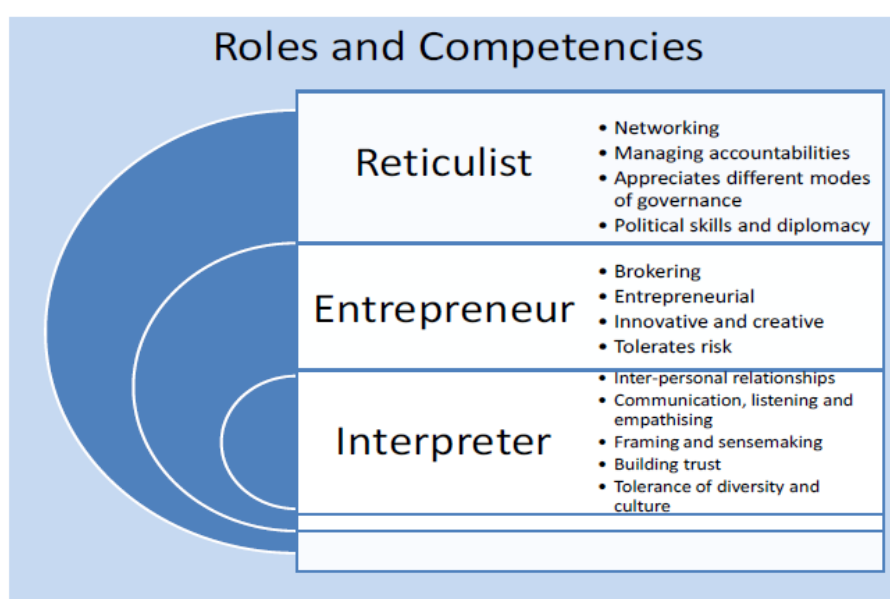


Figure 4. Roles and competencies for boundary spanners (extracted from Williams, 2010)

At the workshop, participants were asked to classify themselves as either a reticulist, an entrepreneur or an interpreter, as per Williams' (2010) classification. These results are shown in Table 3. Boundary spanners may exhibit one role as dominant, while performing one or both of the other two roles depending on the circumstances.

Table 3. Participants' classification of themselves as entrepreneurs, reticulists or interpreters.

Participant number	Dominant role	Motivation
1	Entrepreneur	<i>Entrepreneur mainly with elements of reticulist</i>
3	Entrepreneur	<i>Dominant would be entrepreneur but may cut across the other two spheres as well</i>
4	Interpreter	<i>Interpreter – relationships trump power. I don't see myself as risk-taking but I also see the "governance" space of the reticulist</i>
5	Interpreter	<i>Interpreter with some need to have roles as a reticulist</i>
8	Interpreter	<i>Interpreter with a bit of reticulist</i>
9	Interpreter	<i>At the core, I am an Interpreter, but I have a couple of the reticulist characteristics as well. Entrepreneur, no so much.</i>
11	Interpreter	<i>Interpreter mainly with a bit of reticulist occasionally</i>
17	Interpreter	<i>Interpreter coupled with a bit of entrepreneur and reticulist</i>

*Note that participant 2 left the workshop early so did not respond to this question

Most participants identified themselves in a dominant role but acknowledged that they also performed other roles at times. The majority considered themselves interpreters, with many highlighting that they perform the reticulist role at times.

Individuals who identified themselves as interpreters also seemed to display many of the traits that Williams (2010) suggests are necessary for the interpreter role, particularly understanding and empathy, and effective communication. Similarly, those who identified with the entrepreneurial role, displayed a willingness for risk-taking, rule-breaking and innovating.

The results of this study therefore appear to align well with Williams' (2010) classification.

6 CONTEXTUAL CONDITIONS THAT ENABLE OR HINDER BOUNDARY SPANNING ACTIVITIES IN THE UMNGENI CATCHMENT

Although boundary spanning behaviour is likely to be influenced by the interplay between personal characteristics and context, research on the facilitating conditions or antecedents of boundary spanning behaviour is limited (Van Meerkkerk and Edelenbos, 2017).

This section provides an overview of the contextual conditions thought to enable or hinder boundary spanning behaviour in the uMngeni catchment. Table 4 shows the 12 key themes and 27 sub-themes that emerged through the IPA process. Appendix 3 details the full clustering of emerging themes drawn from each interview. Each of these emergent key themes and their sub-themes is discussed in the sections that follow.

Table 4. Summary of the contextual conditions that affect boundary spanning activities in the uMngeni catchment

Key theme	Sub-themes	Scale
Self-imposed and social limitations	- Perceptions of one's self and your comfort zone - Socially constructed boundaries	Individual
Trust and time in the community	- Trust and social interaction - Time in the community/sector	Individual/Organisational/Group
Organisational influences	- Type and size of organisation - Credibility of organisation - Professional obligations - Time availability and management	Organisational
Team effectiveness and legitimacy	- The influence of others - Legitimacy	Group
Platforms and level of authority	- Platforms - Level of authority	Group
Network characteristics	- Integration across the network - Size of the network/sector	Group
Resources	- Financial resources - Skills and human resources	Societal/Organisational
Legal and policy arena	- National legislation - Internal policies and contractual obligations	Societal/Organisational
Socio-political dimensions	- Emotional connection - Understanding and prioritisation of the environment - Changing administrations and loss of people from the network - Politics	Societal
Corruption	Corruption	Societal/Organisational
Leadership	- Leadership at a group level - Leadership at an organisational level - Leadership from government	Societal/Group/Organisational
Complexity of the system	Complexity of the system	System

6.1 Self-imposed and social limitations

6.1.1 Perceptions of one's self and your comfort zone

Some participants felt that their perceptions of themselves hindered their boundary spanning activities. These perceptions affect self-belief and are usually not concerned with their skills, but rather with their judgement of whether they could accomplish a task with their skills. Self-belief links strongly to self-confidence – a personal attribute that several boundary spanners displayed. This deep set of beliefs affects behaviour and actions and is therefore foundational to all boundary spanning activities. Although this limiting condition was highlighted by one respondent, it is likely to influence (to a greater or lesser extent) boundary spanning behaviours in all participants.

But the biggest one by far is my own ideas about myself. My self-imposed limitations. That is what constrains me, my unwritten self-imposed limitations.

Our psychological state influences our behaviour in both positive and negative ways. A comfort zone is defined as a psychological state in which an individual feels at ease and in control of their environment and therefore experiences low levels of stress and anxiety. This mental state was cited by one respondent as a limiting condition for boundary spanning activities.

I think the first distinction is, I would call it comfort zone. You know when you're so comfortable in your comfort zone, it's an effort to go out and make a difference. It's easy to be stuck in a comfort zone and simply create a shell around you and just not go out. So there is that mental restriction that do I really have to do it? It's easy to just sit around in my corner and just not do it.

6.1.2 Socially constructed boundaries

While we often impose our own limitations, there are also shared ideas in the minds of society, the great unstated assumptions (Meadows, 1999). These social constructs, are created through social beliefs, practices and traditions, also influence our behaviour. In the South African context, race is considered a classic example of social constructionism. One participant felt that socially constructed boundaries often limit his boundary spanning activities.

I think the obvious one is socially constructed boundaries. That's what, to me what limits me. Because there's a form of social censure to operate in. So the more people construct boundaries of any kind, the more difficult it is to move easily and span those.

6.2 Trust and time in the community

6.2.1 Trust and social interaction

All respondents had an appreciation of the importance of trust and recognized it as an enabling condition for boundary spanning activities. Trust was viewed as foundational for healthy and

sustainable relationships, which underpin almost all other activities. The links between relationships and trust was emphasised by a number of respondents:

So [trust] I think is an important element of anything, any relationship that you generate, whether it be a work relationship or other whatever. It has to be based on some degree of trust. If not, you're always second guessing.

Trust is really a prerequisite for a good and a healthy relationship. If that doesn't exist it wouldn't be a meaningful relationship...

Trust is critical in any relationship. It's a process but we actively, we want to believe that we actively work towards building trust, and that's not easy

Some participants identified trust as an emergent property which arises out of a combination of personal attributes and actions:

Building trust, of course one should try and build trust, but trust comes from shared action and practice, it can't be built.

...building trust is the most difficult part and I don't think it's something that you set out to do. You know it's important, but I don't think there is a way of actually saying you're going to build trust. It kind of just happens.

A number of personal attributes were considered foundational for trust. These include honesty, transparency, credibility, empathy, and understanding. Several actions, particularly social interaction, were also identified for building trust.

Participants noted that trust occurs at different scales. One participant spoke of “*building trust in yourself*” as well as “*trust in others*”. For example, one respondent told of “*wanting to create a trust bond between your community and your NGOs and CBOs, and government*”, while another referred to trust in different sectors particularly the lack of trust with industry.

Trust amongst employees and colleagues was acknowledged as being important. In one case this trust was linked to payment: “*when you pay them, already they trust you.... [but when] you don't pay them, you can see that that trust diminishes quite quickly*”. Trusting relationships between departments was also discussed: “*I know we have developed trust with our departments, [some] departments and we have a good relationship with them*”, as was trust at a higher societal level:

Because the trust that we have built since '94 is now, it's damaged, it's finished. It's finished because you can see, you can hear, you see all these Zondo commission people. So we have to rebuild that trust.

6.2.2 Time in the community/sector

Time in the community and/or sector was identified by some participants as a critical enabling condition. Length of time was linked to the extent of your network – the longer the time spent in the community or sector, the more time you have to build your network, and the more people you are likely to know:

And then, time. I mean, if one has been working in an area for long enough, you get to know all the right people.

Length of time in the game allows you to network, span the boundaries, because you're just, just through time you build those. So I think time is critical. Time in the game is critical.

An analysis of the contextual information gathered through the interviews, indicates that almost all participants have lived and/or worked in the community for more than 10 years. In some instances, participants have spent their entire lives in the community. One participant commented that this has significant benefits:

The fact that I was born and bred here it makes it easier, because I know everybody by name. Everybody knows me by name. So it makes things much easy. People know where I'm from, what I have done. As a result they have a belief in myself.

6.3 Organisational influences

6.3.1 Type and size of organisation

Several participants highlighted that the type and size of an organisation influences their boundary spanning activities. This condition is closely linked with resources and legal requirements (See Section 6.8). However, it also influences the overall purpose and functioning of the organisation. For example, government entities impose a duty on civil servants to serve the needs of the people. This in turn requires that individuals work across boundaries to achieve this task. One participant suggests that this is an enabling condition:

So I, by working in government, have a responsibility to make sure our society can improve its management of [natural resources]. I have that duty. So that forces me. If I was working in private sector I might be just interested in my company's bottom line. But as a government employee, the conditions of my employment compel me to work in a way where I cross boundaries of work, cross boundaries of thoughts and ideas and all of that.

Environmental NGOs are non-profit entities that work directly for the preservation of the environment. By their nature, they exist for the common good which often requires collaborative action. These organisations therefore tend to be more accepting of their staff

engaging in boundary spanning activities. Being a member of this type of organisation appears to be a significant enabling condition:

So just the nature of being an NGO. We don't exist for ourselves. Perhaps that's maybe more number one before the other point I mentioned. But it really is the heart of who we are, that we're a public benefit organisation. We exist for the greater good and therefore you have to be out there and be networking and be in collaborations and partnerships as much as possible and to have influence. You can't have influence if you are very singular. And if you don't work collaboratively, you're not gonna have much influence. So it's just really fundamental.

Another advantage of NGOs is that they are flexible and have the ability to innovate. This flexibility was highlighted as being an important enabling condition:

Yes, [our organisation], compared to [others], it's a tiny organisation. And yet because of its flexibility, and it's like a bee going around pollinating. I think it can be worth its weight.

However, one drawback to working in an NGO is the need to generate funds in order to survive. This may limit the ability of staff to engage in boundary spanning activities:

Well, I maybe a bit limited in that regard, because I do have to earn a living and also pay my staff which means that I can't do as much of that stuff as I would like to do. I would like to attend more of the CMFs and the UEIPs and stuff like that.

6.3.2 Credibility of an organisation

The credibility of an organisation reflects the extent to which an organisation is perceived as trustworthy. Organisational credibility influences a boundary spanner's relationship with external actors. If an organisation is considered credible, it has a positive influence on boundary spanning activities:

I think [my organisation] had a fairly good name out there compared to a lot of other organisations, that there was that level of trust in inverted commas that was there. I think we're seen as a professional body, that we're getting some things done. Not by everyone, but I'm generalising here a bit. And I think carrying that name, that professionalism, made it a lot easier.

In contrast, the poor credibility of an organisation may hinder boundary spanning activities for individuals representing those organisations. Sadly, recent surveys indicate that South Africans do not place much trust in government. These low levels of trust, and the declining credibility of government, was highlighted by one participant:

So ten years ago, 15 years ago, if we called a meeting to say, hey, let's look at how we tackle this issue of climate change, we'd get all types of people ready to come to the table because there was a sense that we can make a difference. Now we have gone backwards in terms of our credibility as government. People are not very confident that anything can happen that is positive from government

The impact of government's low credibility on water resource governance was discussed by another participant:

I do find sometimes if, I quite often end up as the only government official at CMFs or at forums. It's one government so ... you're trying to stand up for the government in a sense and say certain things are occurring. People are trying. They don't always have all the resources and the senior support that they would like to be able to do their job but there are individuals that are very committed and very dedicated.

6.3.3 Professional obligations

Most participants expressed similar perceptions that their boundary spanning activities fell outside their core roles. As a result, they constantly juggle organisational duties and responsibilities with boundary spanning activities that may be peripheral to their job descriptions. In this context, many participants suggested that their job descriptions limit their boundary spanning activities:

Yes, and job descriptions legally. The idea is that [you have been] appointed to do this specific function, you should be doing that function and nothing beyond that function

Also, I've got a job to do. And although there's overlap then with the external world in places like the CMF and UEIP and so on and so forth, my primary function is not to go full disclosure on our problems or help the university students or provide data, et cetera.

The limitation of job descriptions was particularly problematic in government organisations. Participants who were part of NGOs or self-employed either had more flexibility or their job descriptions were more closely aligned to boundary spanning activities. These conditions are likely to be linked to the overall mandate of the organisation.

Yes, it is my core function. Well, it's a core activity that informs a key purpose of my job. I don't do it because I enjoy it, I do it because it's my job to do it.

Well, the fact that we have these organisational goals and outcomes which then filter right down to our team's indicators, as I mentioned, is a huge enabler. Because it shows that that is priority and it reflects then on your performance and you've got to then in

your performance reviews give examples of how you've tried to build partnerships and work with other organisations. So it's a great enabler.

...But one of the facilitating things ... which is important is that I'm self-employed. There's stuff that I've done..., I would have been fired if I was working for anybody else. You know, it's a bit crazy, quite honestly. But you think it's a good idea, and then you do it, and there you are. So, I would have had to have an extremely indulgent and supportive organisation to have done that if I wasn't self-employed.

A benevolent workspace is therefore seen as a critical enabling condition for boundary spanning activities:

...having a benevolent workspace to follow up on immediate needs. If I'd had a very rigid log frame to work to, I could never have attended a UEIP meeting here or done this there or whatever. So I had a salary when I needed it and I could go to these meetings. We need more of that, I suppose. You could just put job description limits (as a limiting condition).

6.3.4 Time availability and management

Professional obligations and time management are closely linked. Many participants felt that because their primary income is not derived from boundary spanning activities, they have limited time available to commit to these:

... Well, I maybe a bit limited in that regard, because I do have to earn a living and also pay my staff which means that I can't do as much of that stuff as I would like to do. If I were retired, I would have more time and I could do more of that. So time is a limitation....

Time constraints are the key problem there. Too much to do, not enough time to do it in. Not any real time to go and do those other things that one sees as being valuable, such as networking and so forth.

Time is also considered to be a limiting factor for individuals whose boundary spanning activities are closely aligned to their work. However, this challenge relates more to time management and the prioritisation of boundary spanning tasks:

it's just a juggling of time, time management. It is about that, because you can also stretch yourself too thin and then you're not really being that effective in any of those things. So it is about making the right calls and which goes with being a project manager is in a way each of our different activities or networks that we're involved in, you'd see it as a little project so to speak

Another participant suggested that time is not a limiting factor as you will always do those things that you really want to do. Instead, he suggests that constraints are imposed by the expectations of ones' bosses rather than by time:

So it's socially acceptable to say there wasn't time to do it, but if you really wanna do something in your life you will never be short of time. Time is an excuse for a lack of commitment. So I use it guardedly. I suppose if I had gone hook, line and sinker for doing that, my bosses would have fired me sooner. So in that sense my time was constrained, but more by the expectations of my bosses

6.4 Team effectiveness and legitimacy

6.4.1 The influence of others

Several participants highlighted the influence of others as both an enabling and a hindering condition. One respondent noted that others in the network provide encouragement and inspiration which motivated him to continue his work:

I think the other thing is that, another condition is that there are also very many people out there like me who would like to make improvements in the natural resource sector. So there are lots of journey, there are also fellow travellers who one will find and they would then encourage and inspire you around the journey. So you all finally connect because nobody is paying us, but it's an internal passion to make a difference.

The same condition can however be a drawback, as others may be openly critical, questioning or suspicious of a boundary spanner's activities. This was identified by several participants as an important limiting condition:

I also even think that for some [people], they're quite suspicious of what I'm doing. They think, it's a bit like, why? What ties? It's weird. They feel uncomfortable.

So it was a major restrictive factor, the attitude of [some people]. Not all of them, but the attitude of [some people] was not so conducive towards this goal of balancing the ecology and the infrastructural needs of the municipality.

Individuals in the network can also aid or hinder boundary spanning activities through their actions. For example, one respondent suggested that some individuals withheld information thereby prevents certain tasks from being conducted, while another indicated that she couldn't undertake her tasks without assistance from her colleagues. A third respondent noted that some individuals restricted his activities while others facilitated them.

Some people are not team players, so they're constantly ... and if they hold information, you can't work with anyone else and you don't really go as far as you could. And I've come across people like that personally. And that is a major problem.

I couldn't engage researchers in Mpophomeni to the extent that I have if [my colleague] wouldn't have been prepared to spend time with us and share and critically reflect.

Certain people within the municipality don't like me doing it either. Yet, also within the municipality, others have facilitated that.

The essence of the impact of others on boundary spanning activities was captured by another respondent who indicated that his motto was “you're as good as the people you work with”.

6.4.2 Legitimacy

A few participants highlighted legitimacy in the eyes of different partners as foundational for boundary spanning activities. Legitimacy is often associated with having technical knowledge and expertise. However, one participant suggested that it also depends on the character of the individual and highlighted a link between legitimacy and integrity.

I think a precondition is a sort of a general level of respect for your competence and integrity by others.

As a result of their knowledge, expertise and character, individuals are accepted and supported by the network. This was highlighted as an important enabling condition:

I'm not sure if it's because of the personal character or what, but I've been lucky enough that I've been accepted within the network as a person. So that when I deliver stuff or when I work on something, I get accepted and supported. So there has been that enabling condition that the network has provided.

6.5 Platforms and level of authority

6.5.1 Platforms

Some participants made use of platforms to enhance their boundary spanning activities. These platforms include forums and/or conferences as well as access to information. Platforms enable boundary spanners to develop their social networks, transfer information and indirectly, to build trust. For example, one participant indicated that he could access data, interpret it and disseminate it, at the Catchment Management Forum. This was seen as an important enabling condition for his boundary spanning activities.

Well, yes, especially of course the access to information that pretty much nobody else has easy access to. And the understanding of what that might mean because of my background. And then the involvement in those organisations, well, the groups, the networks, et cetera, that you're looking at that provide a forum to raise and sometimes discuss those. And of course obviously hopefully influence some future activity to the betterment of the resource.

6.5.2 Level of authority

Level of authority was identified as a key enabling condition. This condition allows boundary spanners to access opportunities that others often cannot. One respondent noted that the interplay between his structural position and formal authority allowed him to undertake his boundary spanning activities.

Well, the fact of, one, probably my position and sort of the authority I carried with that and, two, the organisation that I was with.

Level of authority may also be linked to position in the network – a network condition identified as important for governance outcomes (Bodin and Crona, 2009). King (2000) showed that the combined effect of level of authority and network position contributes to actual influence in decision-making processes.

6.6 Network characteristics

6.6.1 Integration across the network

The lack of integration across the network may hinder boundary spanning activities. This includes lack of integration across different departments, organisations, formal and informal structures (including traditional leadership) as well as across racial lines.

One participant highlighted the challenge of “silos” within his organisation. He indicated that many departments work in isolation with little interaction between them. He suggested that interaction across these spheres was vital, particularly in the context of water governance which requires an understanding of a variety of issues:

And to me [my unit] is the one component that actually does that broader cross-sector interaction. [Some of the other units] work within quite refined silos. Whereas [our unit], we need to actually have quite a wide range of interaction across all of those spheres. So to go to a catchment forum you need to know something about [a whole variety of issues]. You cant be in one sector.

Similarly, the lack of integration across the public-private sectors was highlighted as a challenge to boundary spanning activities:

And I think a big problem is South Africa... is that you know we talk about silos and things like that. Now I think I'm not somebody who's tied up in a silo, but there is a split between government/private sector to some extent...

One respondent explained that the dual-governance system, comprising local authorities on the one hand and traditional leadership on the other, is also problematic. The lack of integration and collaboration between the two creates challenges to working, training and including communities in various initiatives:

What also could make us more productive would be the harmonious relationship between the two types of governance that we have in KZN. If we could have that harmony between your traditional leadership and your government. Because you know when you go to a certain community. If the king is not ... If the traditional leadership does not work in harmony with the local government, you find a lot of challenges that prevents us from accessing their communities, training those communities, involving them in certain programmes or projects, so it really hinders us. The relationship between the leaders themselves really creates a problem for us.

Perhaps one of the most significant challenges to boundary spanning activities is the lack of integration across racial lines. Deputy President Thabo Mbeki, at the Opening of the Debate in the National Assembly, on “Reconciliation and Nation Building, National Assembly in Cape Town in 1998, said “*A major component part of the issue of reconciliation and nation building is defined by and derives from the material conditions in our society which have divided our country into two nations, the one black and the other white. We therefore make bold to say that South Africa is a country of two nations*”.

Meiring et al. (2018) highlight significant variations in contextual conditions across different race groups particularly in terms of access to financial resources, economic opportunity and quality education. These conditions have significant implications for water governance in general, and boundary spanning in particular. Two respondents discussed challenges associated with the lack of integration between the black and white networks:

...but it's also a political black-white thing. I think their networks which are to some extent political on the black side, which we're excluded from, and one can quite well network, but if you think about it, not many black people, not that many significant players in my network. Some, but not that many. And there are not that many that I would ... I've got a few friends, but not comparable. So, I think that's a problem here in South Africa, which wouldn't be such a problem in some other parts of the world. You've still got these separate worlds which are not that integrated.

I mean, it was Thabo Mbeki that came with the concept we are a nation of two societies. And it is built into the way our society is created. I think it will take quite a while to

bridge that gap. The forces of separation are still very strong so that from a spatial point of view, I'm talking spatial planning, we still have white residences, black residences. So we haven't bridged that gap at that level. And even when the suburb has all the races together, but the networks are still strong, even though your neighbour is white and the other neighbour is Indian, the network is still not there. People still maintain their old networks. I think it comes back to the comfort zone. I responded that to the question of comfort zone. You always do what the comfort is to do. And I think it will cause you and I to experience that sense of discomfort enough that we go out of our way and bridge the gap. It's a process. It will get there one day, but I don't have an answer as to what it will take for us to get ... You can't force it. It has to follow the ecological natural route. It will get there, but I think we must just give it a bit of time

6.6.2 Size of the network/sector

The size of the sector was also considered to be a condition that enhanced boundary spanning activities:

But the water sector in South Africa isn't that big, so when we go to a conference, for example, you see an awful lot of people that you know from all different parts of the sector on the different aspects of it, so that I suppose is a thing that facilitates the boundary-spanning is that it's not such a large sector.

6.7 Resources

6.7.1 Financial resources

Financial resources are needed for a variety of boundary spanning activities, including jump-starting collaborations, developing social networks and facilitating information flows. The ability to access or leverage resources is therefore critical. Access to resources varied significantly across participants. However, it appeared to be influenced by the type of organisation, associated funding models and level of authority.

Responses from participants suggested that mature NGOs had sufficient resources to undertake boundary spanning activities, while starting or growing NGOs struggled for resources because of their funding models. This was evident in responses from several participants.

Well, it's just a question of how much time I want to spend ... I mean, because I'm self-employed, I would say yes [I have sufficient resources], but maybe it's a bit detrimental to my own business.

Oh, yes, absolutely. If at the end of the day my primary motivation for spanning boundaries is to boost the profile of the [organisation], boost my own profile which boosts the profile of the [organisation], generate business, that's my core function and I have all the resources I need to do it.

There's no non-profit organisation, that will tell you we have sufficient resources to do what we want to do. They will never, ever, ever, ever have enough. Here in [my organisation], no we don't, because we're still living with one funder at the moment.

The lack of resources not only limited the ability of participants to engage in boundary spanning activities but may also have discouraged them from doing so. In addition, it may negatively affect the legitimacy of boundary spanners:

In all my years in working as a non-governmental organisation, I think I just started receiving funding in the past few years. The financial constraints have been so very bad. Very, very bad. It in a way discourages us as leaders to work efficiently and effectively. It again reduces our dignity with the people that we lead, because somehow people feel that as a leader one needs to have a certain type of a lifestyle. It also discourages them as community members as well when they see you as a leader not being empowered in a way.

Participants from government organisations generally felt they had insufficient resources to carry out their mandates effectively:

And so funding will never be enough. And I say this because the problem is just too big and we only tackle areas of the problem, certain areas of the problem, but it goes beyond us, it goes beyond our scope of what we can do.

So we haven't necessarily been given the resources to be able to be completely effective.

You know it's never enough. Especially with all these budget cuts and all this drama that is happening.

The ability to access sufficient resources for boundary spanning activities also appeared to be linked to the level of authority. Most participants who indicated they had sufficient resources, also had greater formal authority. In one case, two individuals from the same organisation provided conflicting perspectives on whether they had sufficient resources to undertake their activities. The one with a greater formal authority suggested that he had sufficient resources while the one positioned lower in the hierarchy indicated that he did not.

6.7.2 Skills and human resources

While boundary spanners themselves contain a unique set of skills which enable them to participate in boundary spanning activities, they also rely on the support of others to conduct their activities. These supporting individuals also require a specified set of skills.

Access to human resources and skills was cited as a limiting condition amongst growing NGOs. One participant highlighted the need to adhere to various policy and contractual obligations, which in turn required specialised skills:

It does create a little bit of a problem if we do not have the relevant persons to assist, especially when we have to draft MOUs. You know, the department would give you a certain MOU, and you do not fully understand it. Thereby we need somebody with a legal background to assist. But for accounting, we have to battle that ourselves. I mean, I've got some unemployed graduates that have been assisting us. Some who I have permanently employed. They are doing accounting, so they have passed in terms of bookkeeping. They are ensuring that we are compliant to SARS.

Growing NGOs face other challenges with regards to human resources and skills. Given financial constraints, they frequently rely on volunteers rather than permanent staff to conduct their activities. These volunteers often have other commitments or pressing issues to attend to. As a result, these NGOs do not always have a constant pool of human resources to draw on. This was highlighted as a limiting condition:

I have young couple of people whom are volunteering too. Sometimes they disappear, go look for work. So I don't have constant human resource that would be there for full 12 months, say. See, the resources, just the resources can be a trouble to me.

6.8 Legal and policy arena

6.8.1 National legislation

National legislation appears to both enhance and hinder boundary spanning activities depending on the context. South Africa's Constitution provides the legal foundation for the existence of the country, sets out the rights and duties of its citizens, and prescribes the functions with which national, provincial and local spheres of government are tasked. The Constitution sets out goals that are shared across the world and is considered aspirational and enabling.

Similarly, the National Environmental Management Act, National Water Act and various other legislation creates an enabling environment and shared vision for the environment and society. This enabling legislation is considered important for boundary spanning activities.

[There are] things that are there to ensure we are not in this position, the Municipal Finance Management Act, the National Environmental Management Act, National Water Act, [and are] all very clear on what we should be striving to and how we should behave.

However, despite the intention of the legislation to promote integration and encourage cooperative governance, in some instances it also creates silos. This was identified as a hindrance to boundary spanning activities:

There's a very, very obvious legal constraint in that the Water Services Act and then the Water Act are not dealt with together. So it's very hard to ...

National legislation also provides clear guidance and processes for financial management. These processes may pose a challenge for some NGOs who do not have the requisite skills to carry out them. This was considered a hindrance to boundary spanning activities by some participants:

Well, as any organisation one needs to adhere to a number of rules that government has, tax compliance, auditing of the books, having a bookkeeper, legal representation when we are drafting our memorandum of understanding with different institutions. It does create a little bit of a problem if we do not have the relevant persons to actually assist...

Similarly, government expenditure is controlled by a very strict financial governance regime. This was considered a key enabling condition by one participant:

Legally we have a very strict financial governance regime as articulated in the [legislation]. It's quite strict that whatever you do must be budgeted for. That's the point of departure, it must be in the budget

National legislation also impacts specific boundary spanning activities. For example, one respondent explained that convening a gathering is controlled by law:

These legal requirements, they're always there. Of course, I mean to play a role of advocacy, we'll need to make sure that we are guarded by the principle of the country in terms of what is the act when you wanted to picket, what is the act in terms of convening a gathering. Those are our limitations...

6.8.2 Internal policies and contractual obligations

Internal policies impact various activities including attending events, commissioning work and implementing projects. Importantly, they may prevent boundary spanners from accessing windows of opportunity:

They do hinder, because you will find that you have budget at your disposal, but due to financial policies and all that, you can't do what you want to do, especially when it has to do with community facilitation, because of the policy as well... Everything that has to do with community facilitation is done by comms department in our head office. And if

it's something small, in a small-scale in the region, we have to do thousands and thousands of submissions. And by the time they say yes or no, that time is gone.

These policies can either be hugely restrictive or have little impact on boundary spanning activities, depending on the type, size and maturity of the organisation. Many of the NGOs indicated that internal policies did not hinder their boundary spanning activities at all, while some parastatals and government departments suggest that these are hugely restrictive.

Not at all, we designed those policies ourselves, and as a result we make them more favourable. They do not hinder us in any way

Joh, the internal policies, you have no idea. It's taken me a year, more than a year to get my project off the ground, and it's not even off the ground yet and we are over a year now because of all this administrative policies and issues

One participant indicated that while internal policies are currently not restrictive, additional policies are being added as the organisation matures. It is unclear whether these policies will become restrictive in the future:

[Our organisation] has also been maturing we obviously have, there have been more and more policies put in place for the staff's safety and that sort of thing. So there is a lot more to consider now. I don't think it's, I wouldn't put it down to inhibiting yet.

The increase in internal policies and procedures in government can be linked to a breakdown in trust. As a result, more frequent qualified audits are received, and administrators are nervous of deviating from due process. However, one participant highlighted that many of the processes are simply not suited to the type of work being undertaken. She indicates that the lack of understanding by administrators, coupled with fear, poses a significant challenge to her boundary spanning activities:

It's government. They think they understand what we do. I think that there's an issue with being a government department that also does scientific work. I think they don't, the administrative structures of government are not really flexible for science. And to top it all, the administrators do not understand the processes. They get these qualified audits and they freak out. I think last year they had a quite hard one so they're freaking out about everything, they're making rules about everything and they're tying us and themselves into knots.

Internal government policies have knock on effects on others in the network. A few respondents indicated that they have been unable to commence government-funded projects as the contracts have not yet been signed. This not only negatively effects their boundary spanning activities

but also breaks down trust with local communities who are often financially reliant on these projects:

Contractual obligations, because we have not managed to sign. Amongst other things they want a certain contract written in a certain format.... [and this] is taking too long. You find that a person who's supposed to sign is on leave...Is there any other person who can stand in while I'm on leave in a national department office? So it has been delayed by a year.

Contractual obligations also have other implications for boundary spanners. For example, one participant indicated that they are unable to share certain information because of restrictions in their contract:

Not internal. But we have contractual stuff that is constraining. So a very, very big real problem is we are contractually bound to not speak about the work we do with [some organisations].

6.9 Socio-political dimensions

6.9.1 Emotional connection

The links between emotion and behaviour have been investigated in the literature. Often emotion affects the way we behave although a reciprocal relationship has been identified. The lack of an emotional connection between society and the environment was raised as a concern. One participant suggested that if people connect deeply with the environment, this would facilitate his boundary spanning activities:

Now, remember once people work something or connect with something, it can be football, it can be even the environment, once they connect emotionally, they become one. So these people are not, to them they are not clearing the river as it stands, and they're standing alone, object somewhere. No, they like the sound, they like the flow, they connect with this river. Now, if somebody comes and dumps, and they understand the implications of that person dumping the nappies, so it becomes more deeper issue. If we have to get into that level than I think my work would be much easier.

6.9.2 Understanding and prioritisation of the environment

Many participants highlighted the lack of understanding by others as a challenging condition to their boundary spanning role. The lack of understanding was generally linked to local communities, and in some cases, to decision-makers. Some participants suggest that the complicated jargon within the environmental sector compounds the problem of understanding. This limitation was mostly raised by boundary spanners who work with these groups:

They don't understand. You see, they're still confused about the natural cycle, the ecosystem. People don't understand the routine in order for me to get water. Umgeni Water must channel this water there, then purify it and pipe it to a particular reservoir, from reservoir to your tap. The whole system is not understood.

However, some participants spoke of the lack of understanding amongst other actors and suggested that this was associated with poor access to research, data and information.

They don't have any understanding or access to the research that's been done as to what the priorities are and where the issues are, because it is not in any common place.

The lack of understanding impacts how the environment is prioritised in the decision-making process. One respondent highlighted that the attitude of decision-makers was a significant limiting condition:

Some [decision-makers] would not understand these ecological issues. They would say, why should we entertain these elite groupings when they're fighting over a frog? They like to use the image of a frog. That these conservatives are anti-development and they will go out of their way to fight for a frog. Why entertain that? Just put them aside, you know what I mean, and not give them a hearing, ignore them... So it was a major restrictive factor, the attitude of [decision-makers]. Not all of them, but the attitude of some [decision-makers] was not so conducive towards this goal of balancing the ecology and the infrastructural needs of the municipality.

Other respondents suggested that the attitude of decision-makers is unlikely to change, until the community prioritise, and take responsibility for, the environment:

And that to me, it's only when you've got that real groundswell of people saying we demand a clean, healthy environment, that's like our major priority, it's number one on our agenda, or one or two or three on the agenda, only then will those senior guys take it as, well, yes, if I don't do this, there's going to be ramifications.

6.9.3 Loss of people from the network

The disappearance of an actor from the network may cause the network to encounter difficulty in maintaining its function and in some cases may even collapse (Newig et al., 2010). One participant explained how the loss of an individual from the network has created significant challenges for boundary spanning behaviour in the uMngeni catchment:

For example. Someone like Rodney Bartholomew left from Msunduzi Municipality. It's a huge loss, the intellectual knowledge and the people he knew and the coordination that he had between various entities. You lose that. He's now in the middle of the Karoo, he

can't play a role here. And that's a big loss to how you interact and people used to know, okay, if we have an issue in certain light, well, you phone Rodney, you know he's going to respond and he'll get things done. Now you sort of think, well, okay, who do I contact, where, how? And it takes you a while to figure that out. And even the person that's taken over that post doesn't have the social network internally within the Msunduzi Municipality or have the respect that he had generated over 20 years of work there to be able to do certain things.

6.9.4 Politics

South Africa's administrative system usually undergoes significant re-modelling after an election. This includes changes to political leaders at all levels of government, and, with that, different levels of understanding. These changes require boundary spanners to build new relationships with incoming politicians. In some cases, the impacts of these changes may be similar to those of losing an individual from the network.

One participant highlighted the challenges of these administrative changes:

Once the administration changes you must know that there may be some changes too. I have worked with one councillor trying to get landowner consent to rehabilitate a wetland, and then election came and then they changed administration, and then I had to start again with the current one. So that took me back couple of months again. Eventually though, because I'm local, even the new one we did manage, so we have working relations. But it would be faster if the same one would continue. So the change of administration is trouble to me. And I think even to the network.

Political appointees may also have different perceived priorities, which in some cases may make it difficult for boundary spanners to carry out their boundary spanning activities. One participant highlighted this as a specific constraint:

When it comes to hindrances as to politics, is when they are fighting themselves, then we can't get any work done. We come to a councillor's office and the councillor is not there. You speak to somebody within in the councillor's office and you find that you have spoken to the wrong person who is not in the same camp as the other person, then it creates a number of challenges for us.

However, the impacts of politics on boundary spanning behaviour varied significantly between participants. One participant indicated that politics had little impact on their boundary spanning activities:

And at our level we're not really picking that up. The politics isn't a constraint.

6.10 Corruption

Corruption is a symptom and an outcome of institutional weakness which adversely affects the functioning of organisations and a country's economic performance (Ugur and Dasgupta, 2011). Boundary spanning activities are also adversely affected by corrupt behavior:

I think that the current rampant corruption in our society limit me and others like me from working on goals that each of us have in our workplace. So because of rampant corruption, resources are misdirected back to people's individual needs. Strategy and planning are corrupt and so the systemic corruption of the state and slowly our society has a major limiting factor in terms of the kind of work people do.

In a systematic review of more than 1000 studies, Ugur and Dasgupta (2011) found that corruption often causes a general misallocation of public funds as certain areas of spending are preferentially targeted because of their capacity to generate bribes rather than their potential to improve living standards. Tanzi and Davoodi (1997) report that corruption may lead to higher cost for a specified project as bribes are often paid as percentage of the total project cost so officials who receive payment for helping enterprises to win the bid have a vested interest in increasing the size of the project. This makes capital expenditure far less productive. In addition, corruption may result in bias against spending on operations and maintenance of physical projects, leading to the deterioration of infrastructure (Tanzi and Davoodi, 1997). Ultimately, the looting of public funds diverts resources away from service delivery and other productive investments (Acemoglu and Verdier, 1998).

This body of research supports the views of one participant:

I think at one point I used to think that the lack of resources, when I first worked, was the problem. That we don't have enough resources and that is why things are not being done. Now I realise that there's so much resources that are being stolen for people's own personal interests and that is why we are unable to do basic things.

Corruption has implications for the functioning of entire institutions, and the individuals within them. Kroucamp (2008) notes that leadership creates a culture that encompasses value systems and behavior which is critical for the performance of an organisation. Leaders also influence their followers through social learning and regular exchange, and hence unethical leadership behaviour cascades to followers at lower hierarchical levels (Asnakew and Mekonnen, 2019). These patterns of behavior have been observed in the uMngeni catchment and were identified as a hindrance to boundary spanning activities:

And then the other challenge that comes is that at the top people are corrupted and it has filtered down systemically to the lowest parts of an institution. You cannot then get whole

institutions to function without people seeing how am I going to privately benefit from this.

Effective leaders also provide the space for boundary spanners to operate. Unethical leadership can therefore be a huge stumbling block to boundary spanning behavior. In some cases boundary spanners are not only prevented from undertaking their activities, but may also be threatened or intimidated if they do so:

And so my principal's view currently is when you come across corruption, please think about your personal safety and your value to your family and all of that before you start thinking about the glorious forms of government and where government wants to go.

The literature on corruption notes that the lack of a coherent fiscal policy framework often provides the grounds for corruption. Similarly, overly rigid or inconsistent policies may also encourage corrupt practices in order to bypass or override these rules and policies (OECD, 2016). However, in the context of the uMngeni catchment, one participant suggests that, while we have aspirational legislation at a national level which sets out very clear goals and processes, these goals have been disestablished at a local level to make way for corrupt activities:

But I think that internal policies and norms that should be in place in a government institution have effectively been disestablished. So basic policies that compel me and other people to do what we should be doing and which give us the space have actually been inverted.

From a boundary spanning perspective, corruption also has a direct bearing on which actors are included and who can be engaged. Godinho et al. (2018) highlight that in order to enable corruption, members of the executive and management are often progressively intimidated and sidelined, particularly if they refused to sign off on irregular processes. Corruption undermines any potential for collaboration, a key outcome of boundary spanning activities. These challenges were identified in the uMngeni catchment:

...the state is captured and has been increasingly captured by private interests and the Constitution and laws no longer guide the people who have power and take decisions. So it's become a situation where people act in their self-interest at the highest level of most government organisations and you end up not being able to influence those people because they understand that you are working towards the opposite end. You're not exposing them, you're not a whistle-blower, but you're not joining them at the same time. You're trying to say how can we still get back to the business of taking care of people and taking care of our environment.

These statements are corroborated by Foley and Swilling's report on state capture and South Africa's Social Security Agency (SASSA) (2018). In this report, Foley and Swilling (2018)

argue that state capture has infiltrated all spheres of government and affected their fundamental social service functions. Their research demonstrates several aspects of the modus operandi for state capture including the removal of effective and well-intentioned government bureaucrats (who are not willing to fall in line), the manipulation of procurement processes, and the operation of shadow networks which are supported or connected to the political elite (Foley and Swilling, 2018). All these aspects appear to be playing out, to some extent, in the uMngeni catchment.

6.11 Leadership

6.11.1 Leadership at a group level

The environmental literature reports that leadership is one of the most important factors contributing to environmental governance (Evans et al., 2015). Leadership occurs at all levels or scales of human activity including group, organisational, and societal. A few participants raised issues of leadership at one of the Catchment Management Forums. They highlighted the considerable capacity for tension and finger-pointing at this forum and suggest that this negatively impacts participation, collaboration and the ability to address the problem:

So in the CMF I have told the chair that I will not bring [certain individuals] into that forum until he speaks to all the individuals and gets them to stop pointing fingers.

Especially with the CMFs it has been in the past to some extent, and it depends on the chair and how it's managed, it has been a bit of a government bashing exercise, especially at local municipal level. They're an easy target. They're not doing their job and they haven't fixed the potholes... And then, you know, no one likes to be criticised and especially if it's not really in their control. They just take abuse and then they go, okay, I'm not going back there again because people are not really wanting to work cooperatively, they're just there to vent their frustration at the nearest government official.

We also, by the way that these catchment management forums work, I think they virtually closed the door to industry. So industrial, agriculture or manufacturing, private sector people, the environment would be very difficult for them to participate in the catchment management forum... it's like the blame game and it would be difficult for them. And yet we cannot address the problem unless those that are part of this problem are in the same room and are working together.

These challenges were attributed to the way the meeting is managed. At a basic level, the chairperson is responsible for ensuring full participation at the meeting and the discussion of all relevant matters. However, these key individuals also provide trust, vision and meaning, and should help different actor groups to draw on the experience of various knowledge systems and experiences in order to develop a common understanding. This in turn enables

collaboration. Lack of leadership at the group level therefore poses significant challenges to boundary spanning activities.

6.11.2 Leadership at an organisational level

In most cases, boundary spanners do their jobs under the supervision of a principal. A facilitative leadership style enables more effective communication between organisations and is considered important for collaborative governance. It also impacts team climate and by extension, team performance (Pirola-Merlo et al., 2002).

Participants were divided between those that had a principal and those that were the principal. Where participants reported to a principal, most felt that opportunities to work and collaborate with others were encouraged, and that they received the necessary support. Interestingly, in many of these cases, the principal was not based in their office. This allowed them a level of freedom and flexibility to undertake their activities. This was usually based on trust.

They trust us, put it that way. They sometimes don't even know what we do... Technically they just let us do what we feel is right and in a way we do that. If they knew, maybe they would stop it... No [my principal does not sit in the office].

I think I'm fortunate maybe because I sit in [a different office], but I kind of get to write my own script and I do what needs to be done. And more often than not I do get the support I need to do more.

Yes, you've got to motivate, but we are still given the freedom to plan your week and do your things. It's not that we have to for every single thing ask permission. Unless it's gonna cost significant resources or I need to fly somewhere, then you always go through your procedures... We really do manage ourselves here because our line manager doesn't sit in the office. So you've kind of got the leash.

Some participants indicated that although they were not prevented from undertaking their activities they were also not supported:

Not actively [get support]. They just don't hinder me. But I do think that a lot of them think I'm mad maybe to a certain extent doing that, cause it's not acknowledged, so why should you do it?

A hierarchical governance structure is common in many organisations. Most individuals report to a line manager (principal) who then reports to an executive manager. The executive manager provides executive commitment to a project and is usually responsible for allocating the needed resources (e.g. human, technical, and financial). They also provide discretionary space for employees to become responsive and responsible people for undertaking their activities (Van

Meerkerk and Edelenbos, 2017). In this way, executive managers build trust and have a cascading effect on the network

Some participants highlighted lack of leadership at senior levels as a significant hindering condition:

From my perspective, like I say, I have support up to that level but you're not necessarily getting into the support of your upper senior, head of department, et cetera... Well, I think it's a hinderance in a sense of getting, let's say that buy in.

6.11.3 Leadership from government

Through the authority of government, political leaders make decisions that can have a great impact on the wellbeing of a nation and its citizens. Political leaders drive the vision, values and long-term goals for societies and economic growth. They are also entrusted with building relationships with stakeholders, and distributing power and resources.

The impact of political leadership appears to follow a gradient with a greater and more direct impact on those officials occupying senior or executive position. At these levels, facilitative leadership and executive support seem to play an increasingly important role, with executives providing political cover for their teams. Leadership from government can either be an enabling or hindering condition depending on the profile of the leadership:

Well, two forces. The one force was encouraging. And fortunately, we had a good [leader] who was sort of providing cover for me in terms of political leadership... So it depends on the profile of the leadership at that point in time, sadly.

One participant explained that leadership also sets the 'tone at the top', a term used to describe an organisation's general values and ethical climate. While the tone at the top is considered vital in the development of good corporate governance, it is also recognized as important for accounting firms and other entities (International Federation of Accountants, 2007). In May 2018, the Auditor General highlighted the lack of accountability as a key driver in the overall deterioration of the audit results of South Africa's municipalities for 2016-17. He stated that "leadership should set the tone for accountability – if audit outcomes are not as desired, energy should be directed to addressing the problem and not to coercing the auditors to change their conclusions" (Auditor General of South Africa, 2018).

In the uMngeni catchment, leadership from government was seen as problematic:

Maritzburg is in a bad place. They really are definitely completely bankrupt... It's bankrupt financially and I think in terms of leadership as well.

This view was consistent with recent developments at the Msunduzi municipality. In April 2019, the MEC of Cooperative Governance and Traditional Affairs (Cogta) placed the municipality under administration stating that the *municipality has failed to institute consequence management measures for managers responsible for unauthorised and irregular expenditure* and added that the *Msunduzi council had also failed to exercise financial oversight over management, resulting in the municipality being overdrawn* (Department of Cooperative Governance and Traditional Affairs, 2019).

Failing government leadership has several implications for boundary spanning behavior. The lack of action by government often breaks down trust as individuals perceive that government has not done what they said, which in turn undermines the legitimacy of these organisations. Poor leadership also breaks down trust within these entities. Without the lubricating effect of trust, transaction costs become much higher (Bodin and Prell, 2011; Pretty and Smith, 2004) and the ability of boundary spanners (and others) to navigate internal policies and resource allocation becomes more difficult. Government leadership also affects relationships and the participation of different actors. These factors combined have a direct impact on project implementation and collaboration.

One participant highlighted that government leadership restricts his ability to undertake environmental activities with local communities along the full length of the watercourse:

So I think the management, the leadership of this, especially the government, is a restriction sometimes to what we do. Cause sometimes, it has not happened personally to me, but sometimes, when you're not employing people here, the councillors will tell you, no, we are not working in this area. And people have targeted a 15 kilometre stream only to stop after 5 kilometres because they cannot go through. So that can restrict others.

6.12 Complexity of the system

Social-ecological systems are recognized as complex, adaptive systems (CAS) comprising multiple interacting components. These interactions may occur at the same time on different levels and give rise to various emergent system properties. CAS are characterised by non-linear behaviour and inherent uncertainty and also have the capacity to self-organise and adapt based on past experience (Biggs et al., 2015). One respondent highlighted that the complex and interdependent nature of CAS requires practitioners to span boundaries:

I think firstly we live in a complex and interdependent society and so that condition immediately forces somebody like me or any other practitioner to basically work in partnership with people towards a common goal. So I think the complexity of the problem

The concept of resilience refers to the ability of a socio-ecological system to withstand, respond to, and adapt to stresses and shocks. Another respondent noted that shocks may cause the

system to move towards an undesirable state. This discourages individuals who have been working hard to maintain a desired state. He considers this to be a limiting condition for his boundary spanning activities:

The ecosystem itself, it does, take the flood for example, it takes me back, you'll never believe. Cause you're working on this area, then there comes a flood, working on this area, you go, because you have to come back in six months, the alien plants are massive, more than now. So even the ecosystem itself can become a challenge to me, to say, but I'm trying to take care of you, please

7.1 Inter-dependencies and interactions between components

While some studies have examined the effect of one or two variables on boundary spanning behaviour, there is a need to look at the combination of variables across the system as a whole. Some contexts may operate synergistically or antagonistically, with amplifying or reducing effects on other contextual variables. A better understanding of these relationships and interdependencies may help to identify “levers” in the system which if triggered could enhance, or at least support, boundary spanning behaviour.

The interconnected nature of these contextual variables is demonstrated in Figure 4 and the relationships between variables is shown by arrows. For example, if an individual can shift out of his or her comfort zone and engage new actors, this may enhance integration across the network and build trust (see variables circled on Figure 4). Similarly, politics and political appointees may affect leadership which in turn may influence how other actors’ function and team effectiveness. Mechanisms which target leadership may therefore be effective in creating more collaborative and innovative teams.

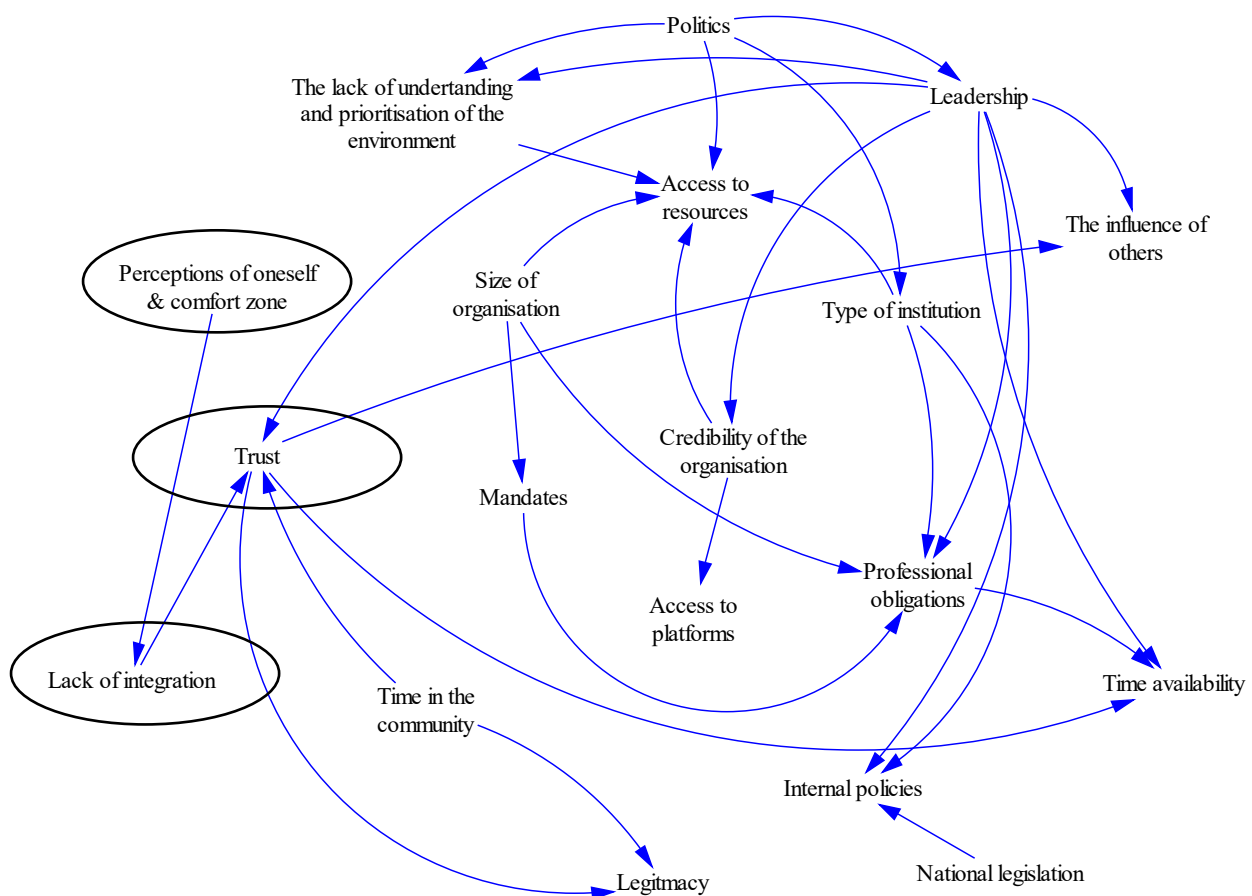


Figure 5. Linkages and inter-dependencies between contextual conditions in the uMngeni catchment

7.2 Boundary spanning and windows of opportunity

Although boundary spanners play an important role in galvanizing collaboration, it is the interactions between several different dependent or independent contexts that might be of importance. These contexts may combine in different ways to create windows of opportunity that boundary spanners can exploit.

Brundiers and Eakin (2018) define “windows of opportunity” as identified moments in time in which there is a heightened probability that efforts to alter a system state will be more likely to succeed. Windows of opportunity are important because they enable the transformation of a social-ecological system from an undesirable trajectory to a new one that may be founded on adaptive co-management (which is a component of adaptive governance) (Olsson, 2003). Folke et al. (2010) suggest that such transformations consist of three phases: a preparation phase, during which the system is prepared for change (through building trust, shared vision and development/strengthening of networks), a window of opportunity during which transition becomes possible, and a (turbulent) transition phase during which leadership, flexibility and the emergence of self-organising networks are important.

Boundary spanners play an important role in the transition to adaptive governance and increase the likelihood of change because they can 1) recognize opportunities, 2) tailor information in line with appropriate windows, 3) connect different individuals and organisations to foster innovation, and 4) identify and transform constraints and interests such as conflicts of interests, values and opinions.

Windows of opportunity for change often arise through awareness of an undesirable state or crisis related to resource management (e.g. conflict, resource shortages, rapid environmental changes, excessive litigation, intractable policies); or they may arise through changes in political regimes or the coincidence of local or international events. However, windows of opportunity for boundary spanning behaviour may arise through the simple coupling of different contexts.

Several participants in the uMngeni catchment identified interacting contexts that enhance their boundary spanning behaviours. One participant spoke of the interacting conditions of legitimacy, level of authority and trust:

Well, the fact of, one, probably my position and sort of the authority I carried with that and, two, the organisation that I was with. I think [my organisation] had a fairly good name out there compared to a lot of other organisations, that there was that level of trust in inverted commas that was there. I think we're seen as a professional body, that we're getting some things done. Not by everyone, but I'm talking something general, generalising here a bit. And I think carrying that name, that more of a professionalism and that, having that made it a lot easier.

Another participant explains that social innovation is the result of leadership, timing and the influence of others:

So it's not my individual skills that are useful here, it's timing, luck, and who I'm working with. You see, that's why the individualising term is so amazing, because if you think of people who have fostered social innovation, like Debra Roberts or Nelson Mandela, they did it cause the timing was right and they had the right group around them. So it's more a collective that made it possible.

While a third participant highlights that his boundary spanning activities are enabled through tailoring information and access platforms:

Well, yes, especially of course the access to information that pretty much nobody else has easy access to. And the understanding of what that might mean because of my background. And then the involvement in those organisations, well, the groups, the networks, et cetera, that you're looking at that provide a forum to raise and sometimes discuss those. And of course obviously hopefully influence some future activity to the betterment of the resource.

Similar findings have emerged in research on natural resource governance. In a case study in the Coral Triangle, it was suggested that institutional change depends on collaboration of several institutional entrepreneurs that can access different networks and are supported by different organisations. In addition, the interplay between institutional entrepreneurship and high-level political leadership plays a key role in institution building (Rosen and Olsson, 2013).

Another study on the governance of Chilean marine coastal resources identified that political turbulence and resource stock collapse provided a window of opportunity for transformation, which was supported by new enabling legislation. Navigating the transformation was supported by a pre-existing network of fishers that provided political leverage and the ability to network knowledge from the local level to decision-making processes at a national level (Gelcich et al., 2010).

In his multiple streams framework, Kingdon (1995) argues that windows of opportunity are most likely when three categories of independent (and interdependent) variables or streams (problems, solutions and politics) interact at critical times. He suggests that this coupling provides a window of opportunity for change in which *a problem is recognized, a solution is available, the political climate makes the time right for change, and the constraints do not prohibit actions* (Kingdon, 1995).

Olsson et al. (2006) investigated how Kingdon's (1995) three streams played out in the transformation of social-ecological systems (SES) in five different regional systems.

Through this comparison, they identified two additional factors that they considered critical for SES transformability: the emergence of shadow networks and the essential role of leadership. The emergence of informal or shadow networks seem to precede successful transformations towards adaptive governance and help to facilitate information flows, identify knowledge gaps, and create nodes of expertise for ecosystem management that can be used when needed. Similarly, leadership provides key functions for transformation towards adaptive governance through trust-building, sense making, managing conflict, linking key actors and building partnerships, developing shared visions and institutionalizing new approaches (Olsson et al., 2006). These functions overlap almost entirely with boundary spanning behaviour.

7.3 Creating windows of opportunity

If contexts play a key role in transformation towards adaptive governance, the next question is can we help create them, and in so doing increase the likelihood of windows of opportunity for boundary spanning behaviour, and transformation to adaptive governance? To investigate this question, I asked boundary spanners in the uMngeni catchment to 1) identify and rank the most important contexts for boundary spanning behaviour, 2) identify impediments to these contexts, and 3) suggest ways to overcome these.

Most participants identified trust, platforms and leadership as the most important contextual conditions for boundary spanning activities (Figure 6). These contextual variables were considered as pre-conditions for many other contextual factors and can therefore be considered as important levers for change. For example, trust affects legitimacy, time availability and the role of others. These factors in turn affect other variables and thus, building trust may have positive effects on the system as a whole and increase the likelihood of windows of opportunity.

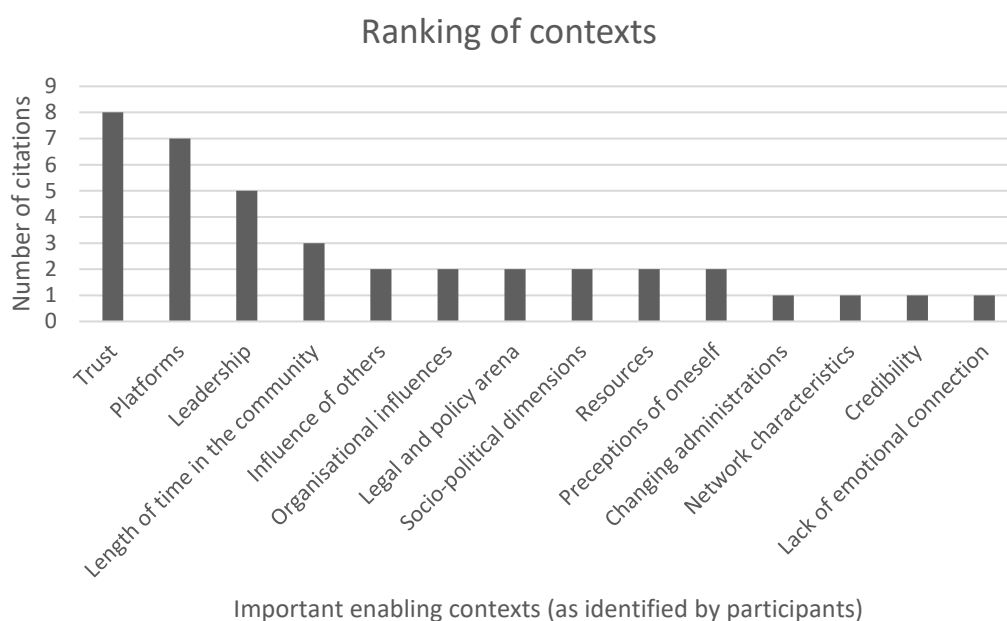


Figure 6. Ranking of contexts by boundary spanners in the uMngeni catchment

Trust creates a sense of community and makes social life predictable (Folke et al., 2005). It is also considered a key ingredient for successful collective action (Torsvik, 2000; Ostrom and Ahn, 2003). Trust allows an individual to take action that puts his or her fate in the hands of another party. It is based on an assessment of the level of risk of the alliance as well as the trustworthiness of the other person. As such, the risk of a negative outcome must be present for trust to operate (West et al., 2003). However, it also provides an opportunity for both parties to enhance their welfare (Ostrom and Ahn, 2003). Building trust and the growth of the social network are closely related to social cohesion. Social cohesion is understood as a characteristic of a group or society that affects the decision-making environment by influencing attitudes towards trust and trustworthiness.

During the interviews, some participants recognized trust as an emergent property that arises through other activities such as social interaction. In the uMngeni catchment, the UEIP and CMFs provide an important platform for social interaction and potentially enable the formation of trust. However, other actors need to be drawn in and leadership is needed to ensure that all perspectives are adequately considered, and any conflicts are effectively managed.

Leadership was also identified by the participants at the workshop as a critical enabling condition for boundary spanning activities. Winston and Patterson (2006) define leadership as an occasion where an agent, known as a leader, influences a group of people, known as followers, causing these individuals to work towards attaining the organization's mission and objectives.

In this study, leadership is used in reference to specific leadership styles, namely facilitative and servant leadership. Schwartz (1996) describes the role of a facilitative leader as having to assist the team as a whole in becoming more effective. He suggests three main guiding values essential for any facilitative leader: valid information, free and informed choice, and internal commitment. The facilitative leadership literature also emphasizes the role of leaders in encouraging relationship building among team members (Stone et al., 2004). Facilitative leadership is considered an essential component of collaborative governance. In contrast, servant leadership emphasizes personal integrity and concentrates on forming strong long-term relationships with employees (Liden et al., 2008). It focuses on empowerment, delegation, and encouragement of team members (Stone et al., 2004).

The identification of leadership as an important context for boundary spanning behaviour is consistent with the literature. Pirola-Merlo et al. (2002) highlighted the role of leaders in creating a context in which a team can operate effectively while Leach and Pelkey (2001), in their review of literature on watershed partnerships, identified leadership as the second most important factor (after funding) for success of these partnerships.

However, most participants noted that they have limited control over which leaders are elected or appointed. Instead, they suggest that there should be a concerted effort to influence leaders through awareness and knowledge building. This approach assumes that education plays a role in changing practice. While this appears true in some cases, in many other instances the relationship between knowledge and action is not robust and there is often a gap between cognition and action (Kollmuss and Agyeman, 2002). This is because behaviour is influenced by numerous other factors including beliefs, social pressures and norms, a person's belief in their own self-efficacy as well as physical or structural constraints. However, Stern et al. (2008) note that experiential education which targets people's beliefs, values and identity may produce sufficient changes in attitudes and commitment to stimulate action by individuals.

Improving knowledge and awareness of leaders in the uMngeni catchment may help in changing how they perceive and prioritise the environment, and perhaps make them more supportive of boundary spanning behaviour. Decision-makers are likely to hold the most power, so influencing leaders at this level may have significant benefits. This in turn will require improved vertical integration between researchers and planners and decision-makers in the catchment. However, more thought is needed around how we, not only influence leaders on environmental issues, but also on how we attract effective leaders to the water sector as well as develop them within it. Doing so, may enhance the likelihood of windows of opportunity.

The importance of platforms in creating windows of opportunities was also identified by workshop participants. While some studies refer to the importance of platforms for information exchange and learning, there is limited literature on their value for other boundary spanning activities and their contribution to windows of opportunity. Meijerink and Huitema, 2010, view boundary spanners as institutional entrepreneurs at a group level and found that they employ a unique set of strategies to catalyse change. One strategy is venue manipulation and venue-shopping, in which they use or create venues to insert new ideas into decision-making processes. These venues include forums which bring people together. In this sense, 'venues' equates to 'platforms' in the uMngeni study. Venue shopping has proved to be an effective strategy in realizing water policy transitions in several of the case studies assessed by Meijerink and Huitema (2010).

8 SUMMARY, CONCLUSIONS AND SUGGESTIONS FOR FURTHER STUDY

There is growing recognition that boundary spanners play a key role in building cohesion and commitment between actors. Boundary spanners enable more systemic, multi-sector and interdisciplinary approaches which are critical for collaborative and adaptive governance. Governance regimes of this type are important for matching the complexity of social-ecological systems and dealing with uncertainty (Folke et al., 2010). However, the role of cohesion in water governance, and the contextual conditions affecting boundary spanning behaviour has not been adequately investigated. This study applied a qualitative approach to explore these factors in the uMngeni catchment, South Africa. Based on the findings of this study, several conclusions can be drawn.

Firstly, although boundary spanners can play an important role in creating cohesion in the network by connecting different groups (Salas et al., 2015), their ability to do so is influenced by contextual conditions. In South Africa, cohesion in water governance networks has been difficult to achieve because of the historical past and current racial divide. This is evident in the presence of cohesive sub-groups in the uMngeni catchment, which may negatively affect structural cohesion. Given that structural characteristics make a difference in governing water resources, effort is required to change the configuration of the network. This will entail drawing in other actors, perhaps through the creation of additional sub-groups, which importantly must be connected to one another to increase cohesion across the network. The development of such a network may best be achieved through a bottom-up, rather than a top-down process. In this regard, boundary spanners on both sides of the racial boundary have a key role to play. This type of network may create a better balance between structural cohesion and the presence of sub-groups (important for knowledge generation), which in turn may improve governance outcomes.

Secondly, boundary spanners in the uMngeni catchment display specific personal characteristics. Study participants suggest that many of these personal attributes contribute favourably to their boundary spanning role. Not all boundary spanners display all characteristics. Instead these characteristics combine in different ways to enable specific boundary spanning activities. This finding adds to the literature on trait analysis in boundary spanners.

Thirdly, boundary spanning behaviour is affected by a diverse array of contexts. Self-imposed limitations may hinder boundary spanning activities while high levels of trust and social interaction are facilitating conditions. The type and size of an organisation can aid or hinder boundary spanning behaviour. In the context of the uMngeni catchment, NGOs were viewed as working for the public good and many seemed to encourage their staff to participate in boundary spanning activities. A major advantage of NGOs is that they are flexible and have the ability to innovate at grassroots level. However, NGOs also have several drawbacks.

Environmental NGOs often have insufficient influence to promote environmental sustainability, they are not always democratic institutions, sometimes lack transparency, and may suffer from funding constraints which hamper their ability to operate (Young and Dhanda, 2012). Access to resources was highlighted as a challenge by several NGOs in the uMngeni catchment.

In contrast, study participants situated in government organisations and parastatals suggested that their ability to perform boundary spanning activities was hampered by rigid job descriptions and the need to navigate numerous internal policies. However, South Africa's constitution is unusual because it places such a strong and explicit emphasis on cooperative government. Although this refers more to cooperation within government than outside government, there are very strong and direct imperatives for government officials to reach across boundaries, whether formally or informally. In addition, participants themselves cited a strong culture of informal relationships (not codified through MoUs) between individuals across the network. Given this framework which promotes collaboration, it is likely that the challenges highlighted with job descriptions and internal policies may instead relate to other factors, such as corruption. For example, many of the tools and internal policies aimed at reducing corruption and ensuring transparency and accountability, may inadvertently also hamper boundary spanning activities.

The importance of other actors in influencing, aiding or restricting boundary spanning behaviour also surfaced as an important condition. Arguably one of the most critical factors is leadership (including leadership from a principal, executive support and political leadership). Effective leaders build trust, create platforms and space for boundary spanners to operate, and develop processes and procedures which enable collaboration and innovation. Interestingly most boundary spanners were either a principal themselves, or their principal did not sit in their office. This provided them with the necessary space and flexibility to undertake their tasks. Issues of corruption were also thought to negatively affect leadership and resources, with consequent impacts on boundary spanning behaviour. While not explicitly highlighted in the interviews, it is likely that the historical structure of water governance in the catchment may also play a role.

Fourthly, the interaction between contexts may create windows of opportunities for boundary spanning behaviour. This in turn is important for collaboration and transformation to adaptive governance. Participants identified trust, leadership and platforms as potential levers in the system. These findings are consistent with the literature on water governance. In their review of factors affecting conflict resolution in watershed partnerships, Leach and Pelkey (2001) identified adequate funding, effective leadership, and interpersonal trust as the three most frequently cited keys to successful watershed partnerships. Similarly, Evans et al. (2015) conducted a review of environmental leadership research over the last decade and found leadership to be one of the key requirements for emergence and effective implementation of environmental governance. Folke et al. (2005) also identify leadership and trust as essential

components of adaptive governance. They suggest that key individuals with strong leadership may catalyze shifts in opinions, and creative teams and actor groups may emerge into a large connected community of practitioners who prepare a social-ecological system for change (Folke et al., 2005).

While the current study focused on individual boundary spanners in the uMngeni catchment, Meijerink and Huitema (2010) considered boundary spanners as policy entrepreneurs at a group level, and distilled lessons from sixteen case studies of water transitions around the globe. They found that policy entrepreneurs employ a unique set of strategies to catalyse change that include developing new ideas, building coalitions and selling ideas, recognizing windows of opportunities, orchestrating and managing networks, and recognizing or exploiting venues (Meijerink and Huitema, 2010). Interestingly these group level strategies align well with individual boundary spanning behaviours and contexts identified in the uMngeni study.

Finally, given the importance of trust, leadership and platforms, addressing impediments to these conditions may increase the likelihood of windows of opportunity and enable transformation to adaptive governance. The literature suggests that one way to build trust may be through multi-level platforms (Folke et al., 2005). Thus, in the uMngeni catchment, increased interaction through informal water governance structures, such as the UEIP and CMFs, may play a critical role in building trust amongst actors. These structures also offer important platforms for boundary spanning behaviour. However, the identification and use of additional platforms at all levels may further enhance boundary spanning behaviour and help in bridging the racial divides evident in South Africa. For example, customary water management structures may provide a useful platform for engaging communities at grass-roots levels (Malzbender et al., 2005). If these platforms are coupled with other contexts at the right time, they may also offer unique windows of opportunity for change.

In respect of leadership, participants in the uMngeni study acknowledged that boundary spanners have little control over which leaders are elected or appointed, however they do have the ability to influence these individuals. This may entail framing and communicating information in a way that influences attitudes towards environmental problems. While influencing leaders may make leaders more sympathetic to water resource issues, it is unlikely to address the underlying challenge of developing and appointing effective leaders who positively influence boundary spanning behaviour. Thus, there is a dire need to pro-actively find ways of attracting good leaders to the water sector particularly Black women professionals. In addition, the leadership and organisational literature suggest that great leaders are also often great teachers, who can transform others into great leaders (Cacioppe, 1998). This approach of 'leaders developing leaders' has been applied successfully in companies such as PepsiCo, General Electric, Allied Signal and Shell (Cacioppe, 1998). Such an approach may work well in the water sector, and once individuals who hold promise are identified, they should be nurtured and mentored by other effective leaders.

In summary, boundary spanning has proved a valuable concept for exploring and understanding water governance issues. Chaffin et al. (2014) suggest that adaptive governance offers a flexible approach that can deal with the complexity and unpredictability of SES. However, transitioning to a more adaptive system of governance will require functioning social networks that connect individuals and organisations across multiple levels and scales (Folke et al., 2005). In this context, the essential role of individuals who can build trust, vision and meaning, connect different actor groups, and enable the transfer of knowledge, must be recognized (Folke et al., 2005). Boundary spanners perform many of these tasks and therefore have a key role to play in adaptive governance.

The boundary spanning theoretical lens has also proved useful in understanding observed patterns, and surfacing otherwise concealed challenges, in the uMngeni catchment. For example, participants themselves identified the need to engage local communities. However, through this study, the issue of racial boundaries and their impact on participatory governance mechanisms has been uncovered. This in turn has brought some novel solutions to the fore. These include a need to purposively identify boundary spanners from all race groups who can help bridge the racial divide and enable participation by all actors in water management, as required by the National Water Act. The study has also highlighted important interacting contexts, and associated impediments, which, if addressed, may increase the likelihood of windows of opportunity for social-ecological change.

The uMngeni study has also revealed the need for further local-level research that addresses three major questions:

1. What are the levels of cohesion in other parts of the water governance network? Is there evidence of sub-groups in the network that may be hampering water governance? What might be the best network structure to enhance cohesion and promote more adaptive governance? This research should take race and demographics into account, and consider:
 - a. Other sectors (such as the water services sector);
 - b. Both informal structures (such as customary water governance structures) and formal structures (such as Water Users Associations);
 - c. Cohesion within and between organisations or departments involved in water resource management; and
 - d. Different levels (e.g. from grassroots to traditional leadership).
2. Within these different sectors, structures and departments, what boundary spanning behaviours or strategies are employed? Are there specific tools that aid boundary spanning behaviour such as catchment management plans which set out a common vision or goal?

3. What contexts aid or hinder this boundary spanning behaviour? Are there contexts that frequently combine to create windows of opportunity, and can these be influenced to increase the frequency of occurrence of these windows? How can boundary spanning be enhanced to promote more adaptive governance?

More broadly, the research agenda in the boundary spanning field would benefit from an improved understanding of the similarities and differences between the range of terms used to describe boundary spanners and their behaviour. Long et al. (2013) provided an initial review of the common brokerage terms, features and motivations. However, there is a need to update this with other, terms, such as convener, institutional entrepreneur and policy entrepreneur, to name a few.

Williams (2010) identifies three different boundary spanning roles namely interpreter, reticulist and entrepreneur. These roles are linked to different personalities or traits. Boundary spanners may exhibit one role as dominant, while performing one or both of the other two roles depending on the circumstances. Meijerink and Huitema (2010) also demonstrate the importance of groups in successfully challenging the status quo. Future research should consider whether groups that are successfully able to exploit windows of opportunity include individuals who are also able to perform each role (interpreter, reticulist and entrepreneur).

It would also be useful to explore whether boundary spanners could be actively recruited to water governance processes. Such an approach may help to address participation and racial challenges and build the social relations and networks needed for adaptive governance.

In some ways, the present study has generated more questions than answers. However, it is seen as an important first step in exploring a novel approach which could enable a transition to adaptive governance. In so doing, it may help to realise the core principles embodied in the National Water Act of *Some, for all, forever*.

9 REFERENCES

- Abrutyn, S. and J. Van Ness. 2015. The role of agency in sociocultural evolution: Institutional entrepreneurship as a force of structural and cultural change. *Thesis Eleven* 127(1): 52-77.
- Acemoglu, D. and T. Verdier. 1998. Property rights, corruption and the allocation of talent: a general equilibrium approach. *Economic Journal* 108(450): 1381-1403.
- Aldrich, H. 1999. *Organisations evolving*. Sage, Thousand Oaks, CA.
- Aldrich, H. and D. Herker, 1977. Boundary spanning roles and organisation structure. *Academic Management Review* 2: 217-230.
- Asnakew, Z. and Y. Mekonnen. 2019. Unethical Leadership and Followers' Deviance: The Mediating Role of Perception of Politics and Injustice. *The Journal of Values-Based Leadership* 12(1): Article 12.
- Auditor General of South Africa. 2018. Auditor-general laments lack of accountability as he releases declining local government audit results. Media Release 23 May 2018. Auditor General of South Africa, Pretoria.
- Barnes-Mauthe, M., S. A. Gray, S. Arita, J. Lynham, and P. Leung. 2015. What determines social capital in a social-ecological system? Insights from a network perspective. *Environmental Management* 55: 392-410.
- Beresford, P. and S. Trevellion. 1995. *Developing skills for community care*. Arena, Aldershot.
- Biggs, R., Schlüter, M. and M. Schoon (eds.) 2015. *Principles for Building Resilience: Sustaining Ecosystem Services in Social-Ecological Systems*. Cambridge University Press, Cambridge, UK.
- Bodin, Ö. and B.I. Crona. 2009. The role of social networks in natural resource governance: What relational patterns make a difference? *Global Environmental Change* 19: 366-374.
- Bodin, Ö. and C. Prell. 2011. *Social networks and natural resource management: uncovering the social fabric of environmental governance*. Cambridge University Press, Cambridge, UK.
- Bohensky, E. 2006. *A social-ecological systems perspective on water management in South Africa*. PhD thesis, University of Pretoria, Pretoria
- Bordogna, C.M. 2019. The effects of boundary spanning on the development of social capital between faculty members operating transnational higher education partnerships. *Studies in Higher Education* 44(2): 217-229.
- Borgatti, S.P. and P.C. Foster. 2003. The Network Paradigm in Organisational Research: A Review and Typology. *Journal of Management* 29(6): 991-1013.
- Brundiens, K. and H.C. Eakin. 2018. Leveraging Post-Disaster Windows of Opportunities for Change towards Sustainability: A Framework. *Sustainability* 10(5): 1390.
- Cacioppe, R. 1998. Leaders developing leaders: an effective way to enhance leadership development programs. *Leadership and Organisation Development Journal* 19(4): 194-198.

- Chaffin, B.C., Gosnell, H. and B. A. Cosens. 2014. A decade of adaptive governance scholarship: synthesis and future directions. *Ecology and Society* 19(3): 56.
- Challis, L., Fuller, S., Henwood, M., Klein, R., Plowden, W., Webb, A., Whittingham, P. and G. Wistow. 1988. *Joint Approaches to Social Policy*. Cambridge University Press, Cambridge, UK.
- Cloete, A. 2014. Social cohesion and social capital: Possible implications for the common good. *Verbum et Ecclesia* 35(3).
- Coleman, J.S. 1988. Social capital in the creation of human capital. *American Journal of Sociology* 94: 95-120.
- Coleman, K. and M.J. Stern. 2018. Boundary spanners as trust ambassadors in collaborative natural resource management. *Journal of Environmental Planning and Management* 61(2): 291-308.
- Collins, R. 1988. *Theoretical sociology*. San Diego, CA: Harcourt Brace Jovanovich.
- Cunningham, R., Cvitanovic, C., Measham, T., Jacobs, B., Dowd, A-M., and B. Harman. 2016. Engaging communities in climate adaptation: the potential of social networks. *Climate Policy* 16(7): 894-908.
- Debrulle J., Maes. J. and L. Sels. 2014. Start-up absorptive capacity: Does the owner's human and social capital matter? *International Small Business Journal* 32(7): 777-801.
- Dellapenna, J.W. and J. Gupta. 2013. *The evolution of water law through 4,000 years*. Villanova Public Law and Legal Theory, Working Paper No. 2013-3041.
- Department of Cooperative Governance and Traditional Affairs (KZN). 2019. Media briefing following the announcement of Section 139(1)b intervention at Msunduzi Local Municipality: Statement by Nomusa Dube-Ncube (KZN MEC for Cogta): 9 April, 2019, Pietermaritzburg.
- Dietz, T., Ostrom, E. and P. C. Stern. 2003. The struggle to govern the commons. *Science* 302: 1907-1912.
- Dorado, S. 2005. Institutional entrepreneurship, partaking, and convening. *Organisation Studies* 26(3): 385-414.
- Dudua, A., Favotto, A. and G. Kominis. 2018. Boundary-Spanning Leadership in Hybrid Networks: A Case Study of English Local Safeguarding Children Boards. **In:** Savignon, A.B., Gnan, L., Hinna, A. and F. Monteduro (eds.) *Hybridity in the Governance and Delivery of Public Services* (Studies in Public and Non-Profit Governance, Volume 7), Emerald Publishing, Bingley, UK.
- Dutta, D.K. and M.M. Crossan. 2005. The nature of entrepreneurial opportunities: understanding the Process using the 4I organisational learning framework'. *Entrepreneurship: Theory and Practice* 29: 425-49.
- Ebers, M. 1997. Explaining inter-organisational network formation. **In** Ebers, M. (ed.) *The Formation of Inter-Organisational Networks*. Oxford University Press, Oxford.
- Edelenbos, J. and Van Meerkerk, I. 2015. Connective capacity in water governance practices: The meaning of trust and boundary spanning for integrated performance. *Current Opinion in Environmental Sustainability* 12: 25-29.

- Engel, C. 1994. A Functional Anatomy of Teamwork. **In** Leathard, A. (ed.) *Going Interprofessional*. Routledge, London.
- Evans, L.S., Hicks, C.C., Cohen, P.J., Case, P., Prideaux, M. and D.J. Mills. 2015. Understanding leadership in the environmental sciences. *Ecology and Society* 20(1): 50.
- Fairtlough, G. 1994. *Creative Compartments*. Adamantine Press, London.
- Fligstein, N. 1997. Social skill and institutional theory. *American Behavioral Scientist* 40(4): 397-405.
- Foley, R. and M. Swilling. 2018. *How can one word change the game: Case study of State Capture and the South African Social Security Agency*. Centre for Complex Systems in Transition, University of Stellenbosch, Stellenbosch.
- Folke, C., Carpenter, S.R., Walker, B., Scheffer, M., Chapin, T. and J. Rockström. 2010. Resilience thinking: Integrating resilience, adaptability and transformability. *Ecology and Society* 15(4): 20.
- Folke, C., Hahn, T., Olsson, P. and J. Norberg. 2005. Adaptive governance of social-ecological systems. *Annual Review of Environment and Resources* 30: 441-473.
- Forrest, R. and A. Kearns. 2001. Social cohesion, social capital and the neighbourhood. *Urban Studies* 38(12): 2125-2143.
- Forsyth, D.R. 2010. *Group Dynamics*. Wadsworth Cengage Learning, Belmont, California.
- Funke, N., Nortje, K., Findlater, K., Burns, M., Turton, A., Weaver, A. and H. Hattingh. 2007. Redressing Inequality: South Africa's New Water Policy. *Environment: Science and Policy for Sustainable Development* 49(3): 10-23.
- Galaz, V., Olsson, P., Hahn, T., Folke, C. and U. Svedin. 2008. The problem of fit between ecosystems and governance systems – insights and emerging challenges. **In** Young, O., King, L. A. and H. Schroeder (eds.) *Institutions and environmental change: principal findings, applications, and research frontiers*. MIT Press, Boston.
- Garud, R., Hardy, C. and S. Maguire. 2007. Institutional entrepreneurship as embedded agency: an introduction to the special issue. *Organisation Studies* 28(7): 957-69.
- Gelcich, S., Hughes, T.P., Olsson, P., Folke, C., Defeo, O., Fernández, M., Foale, S., Gunderson, L.H., Rodriguez-Sickert, C., Scheffer, M., Steneck, R.S. and J.C. Castilla. 2010. Navigating transformations in governance of Chilean marine coastal resources. *Proceedings of the National Academy of Science*, 107(39): 16794-16799.
- Gladwell, M. 2002. *The Tipping Point: How Little Things Can Make a Big Difference*. Back Bay Books, Boston.
- Godinho, C., Hermanus, L. and A. Eberhard. 2018. Reconceptualising State Capture – with a Case Study of South African Power Company Eskom. Paper prepared for the Conference on State Capture and its Aftermath: Building Responsiveness through State Reform. October 22-24, 2018. Public Affairs Research Institute, Johannesburg.
- Goldsmith, S. and W.D. Eggers. 2004. *Governing by Network: the new shape of the public sector*. Brookings Institute, Washington.
- Granovetter, M., 1973. The strength of weak ties. *American Journal of Sociology* 76: 1360-1380.

- Grygoruk, M. and S. Rannow. 2017. Mind the gap! Lessons from science-based stakeholder dialogue in climate-adapted management of wetlands. *Journal of Environmental Management* 186: 108-119.
- Guston, D.H. 2001. Boundary organisations in environmental policy and science: an introduction. *Science, Technology and Human Values* 26: 399-408.
- Hahn, T., Olsson, P., Folke, C. and K. Johansson. 2006. Trust-building, knowledge generation and organisational innovations: the role of a bridging organisation for adaptive co-management of a wetland landscape around Kristianstad, Sweden. *Human Ecology* 34: 573-592.
- Hunter, M.E. 2016. Outcomes of fire research: is science used? *International Journal of Wildland Fire* 25(5): 495.
- International Federation of Accountants. 2007. *Tone at the top and audit quality*. International Federation of Accountants, New York.
- Ison, R. 2010. Governance that works: better governance requires a more skilled use of systems thinking. **In:** Davis, M. and M. Lyons (eds.) *More than Luck: Ideas Australia Needs Now*. Centre for Policy Development, Sydney.
- Jessop, B. 1996. Interpretive Sociology and the Dialectic of Structure and Agency. *Theory, Culture and Society* 13(1): 119-128.
- Jewitt, G., Zunckel, K., Dini, J., Hughes, C., de Winnaar, G., Mander, M., Hay, D., Pringle, C., McCosh, J. and I. Bredin (eds.) 2015. *Investing in ecological infrastructure to enhance water security in the uMngeni River catchment*. Green Economy Research Report No. 1. Green Fund, Development Bank of Southern Africa, Midrand.
- Johnson, T.R. 2011. Fishermen, Scientists, and Boundary Spanners: Cooperative Research in the U.S. Illex Squid Fishery. *Society and Natural Resources* 24(3): 242-255.
- Jöns, H. and Freytag, T. 2016. Boundary spanning in social and cultural geography. *Social & Cultural Geography* 17(1): 1-22.
- Katz, D and R.L. Kahn. 1966. *The Social Psychology of Organisations*. Wiley, New York.
- Katz, N., Lazer, D., Arrow, H. and N. Contractor. 2004. Network theory and small groups. *Small Group Research* 35(3): 307-332.
- Kerzner, H. 1987. In Search of Excellence in Project Management. *Journal of Systems Management* 38(2): 30-39.
- King, A., 2000. *Managing Without Institutions: The Role of communication networks in governing resource access and control*. Department of Biological Sciences, University of Warwick, Coventry.
- Kingdon, J. W. 1995. *Agendas, alternatives, and public policies*. Harper Collins, New York.
- Klerkx, L., Aarts, N. and C. Leeuwis. 2010. Adaptive management in agricultural innovation systems: The interactions between innovation networks and their environment. *Agricultural Systems* 103: 390-400.
- Kocher, S.D., Toman, E., Trainor, S.F., Wright, V., Briggs, J.S., Goebel, P., MontBlanc, E., Peppin, D.L., Steelman, T.A., Thode, A., Waldrop, T.A. and A. Oxarart. 2012. How can we span the boundaries between wildland fire science and management in the United States? *Journal of Forestry* 262: 215-228.

- Kollmuss, A. and J. Agyeman. 2002. Mind the gap: why do people act environmentally and what are the barriers to pro-environmental behaviour? *Environmental Education Research* 8(3): 239-260.
- Kroucamp, H. 2008. South African Local Government performance: Satisfactory to be globally competitive? *Journal for New Generation Sciences* 6(1), 16-31.
- Lawrence, T.B., Mauws M.K., Dyck, B. and R.F. Kleysen. 2005. The Politics of Organisational Learning: Integrating Power into the 4I Framework. *Academy of Management Review* 20(1): 180-191.
- Lawson, C., Gill, R., Feekery, A. and M. Witsel. 2019. *Communication Skills for Business Professionals*. Cambridge University Press: Cambridge, UK.
- Leach W.D. and N.W. Pelkey. 2001. Making watershed partnerships work: a review of the empirical literature. *Journal of Water Resources Planning and Management* 127: 378-85.
- Leca, B., Battilana, J. and E. Boxenbaum. 2008. *Agency and institutions: A review of institutional entrepreneurship*. Working paper: Harvard Business School, Boston.
- Lee, S. and S. Sawang. 2016. Unpacking the impact of attachment to project teams on boundary-spanning behaviors. *International Journal of Project Management* 34(3): 444-451.
- Liden, R.C., Wayne, S.J., Zhao, H. and D. Henderson. 2008. Servant Leadership: Development of a multidimensional measure and multi-level assessment. *The Leadership Quarterly* 19(2): 161-177.
- Lin, N. 1999. Building a network theory of social capital. *Connections* 22(1): 28-51.
- Long, J.C., Cunningham, F.C. and J. Braithwaite. 2013. Bridges, brokers and boundary spanners in collaborative networks: a systematic review. *BMC Health Services Research* 13: 158.
- Maguire, S., Hardy, C. and T.B. Lawrence. 2004. Institutional entrepreneurship in emerging fields: HIV/AIDS treatment advocacy in Canada. *Academy of Management Journal* 47(5): 657-679.
- Malzbender, D., Goldin, J., Turton, A. and A. Earle. 2005. Traditional water governance and South Africa's "National Water Act" – Tension or cooperation? **In**: International workshop on Africa: *Water Laws – Plural Legislative Frameworks for Rural Water Management in Africa*. January 26-28, 2005. Johannesburg, South Africa.
- Meadows, D. 1999. *Places to intervene in a system*. The Sustainability Institute, Hartford.
- Meijerink, S. and D. Huitema. 2010. Policy entrepreneurs and change strategies: lessons from sixteen case studies of water transitions around the globe. *Ecology and Society* 15(2): 21.
- Meiring, T., Kannemeyer, C. and E. Potgieter. 2018. *The gap between rich and poor: South African society's biggest divide depends on where you think you fit in*. SALDRU Working Paper Number 220. SALDRU, UCT, Cape Town.

- Mestre, M.V., Samper, P., Frías, M.D. and A.M. Tur. 2009. Are women more empathetic than men? A longitudinal study in adolescence. *The Spanish Journal of Psychology* 12(1): 76-83.
- Methner, N. 2014. *Conceptualizing horizontal cooperation in regional social-ecological systems through actor networks and collect action: The case of the Berg River Catchment*. PhD Thesis. University of Cape Town, South Africa.
- Michaels, S. 2009. Matching knowledge brokering strategies to environmental policy problems and settings. *Environmental Science and Policy* 12: 994-1011.
- Newig, J., Günther, D. and C. Pahl-Wostl. 2010. Synapses in the network: learning in governance networks in the context of environmental management. *Ecology and Society* 15(4): 24.
- OECD. 2016. *Development Policy Tools Corruption in the Extractive Value Chain – Typology of Risks, Mitigation Measures and Incentives*. OECD Publishing: Paris.
- O’Leary, R. and L.B. Bingham. 2009. *The Collaborative Public Manager*. Georgetown University Press: Washington, D.C.
- Olsson, P. 2003. *Building capacity for resilience in social-ecological systems*. Doctoral Dissertation. Stockholm University, Stockholm.
- Olsson, P., Gunderson, L.H., Carpenter, S.R., Ryan, P., Lebel, L., Folke, C. and C. S. Holling. 2006. Shooting the rapids: navigating transitions to adaptive governance of social-ecological systems. *Ecology and Society* 11(1): 18.
- Ostrom, E. and T-K. Ahn (eds.) 2003. *Foundations of social capital*. Edward Elgar, Cheltenham.
- Pahl-Wostl, C., Hoff, H., Meybeck, M. and S. Sorooshian. 2002. The role of global change research for aquatic sciences. *Aquatic Sciences* 64: iv-vi.
- Pahl-Wostl, C., Lebel, L., Knieper, C. and E. Nikitina. 2012. From applying panaceas to mastering complexity: toward adaptive water governance in river basins. *Environmental Science & Policy* 23:24-34.
- Perrone, V., Zaheer, A. and B. McEvily. 2003. Free to be Trusted? Organisational Constraints in Boundary Spanners. *Organisation Science* 14 (4): 422-439.
- Phillips, N., Lawrence, T.B. and C. Hardy. 2000. Inter-organisational collaboration and the dynamics of institutional fields. *Journal of Management Studies* 37(1): 23-44.
- Phillips, N., Lawrence, T.B. and C. Hardy. 2004. Discourse and institutions. *Academy of Management Review* 29(4): 635-652.
- Phillips, N. and P. Tracey. 2007. Opportunity recognition, entrepreneurial capabilities and bricolage: connecting institutional theory and entrepreneurship in strategic organization. *Strategic Organization* 5(3): 313-320.
- Pirola-Merlo, A., Härtel, C., Mann, L. and G. Hirst. 2002. How leaders influence the impact of affective events on team climate and performance in R&D teams. *The Leadership Quarterly* 13(5): 561-581.

- Pollard, S., du Toit, D. and H. Biggs. 2011. *A guide to complexity theory and systems thinking for integrated water resources research and management*. WRC Report No. KV 277/11. Water Research Commission, Pretoria.
- Pretty J. 2003. Social capital and the collective management of resources. *Science* 302: 1912-14.
- Pretty, J. and D. Smith. 2004. Social Capital in biodiversity conservation and management. *Conservation Biology* 18(3): 631-638.
- Pringle, C., Bredin, I., McCosh, J., Dini, J., Zunckel, K., Jewitt, G., Hughes, C., de Winnaar, G. and M. Mander, 2015. *An Investment Plan for securing ecological infrastructure to enhance water security in the uMngeni River catchment*. Green Fund, Development Bank of Southern Africa, Midrand.
- Putnam, R.D. 1995. Bowling Alone: America's Declining Social Capital. *Journal of Democracy* 6(1): 65-78.
- Reason, J. 2000. Human error: Models and management. *The Western Journal of Medicine* 172: 393-396.
- Rittel, H. and Webber, M. 1973. Dilemmas in a general theory of planning. *Policy Sciences* 4:155-169.
- Roberts, N.C. and P.J. King. 1996. *Transforming public policy: Dynamics of policy entrepreneurship and innovation*. Jossey Bass, San Francisco.
- Roca, C.P. and D. Helbing. 2011. Emergence of social cohesion in a model society of greedy, mobile individuals. *Proceedings of the National Academy of Sciences of the United States* 108: 11370-11374.
- Rosen, F. and P. Olsson. 2013. Institutional entrepreneurs, global networks, and the emergence of international institutions for ecosystem-based management: The Coral Triangle Initiative. *Marine Policy* 38: 195-204.
- Roux, D.J., Rogers, K.H., Biggs, H.C., Ashton, P.J. and A. Sergeant. 2006. Bridging the science-management divide: moving from unidirectional knowledge transfer to knowledge interfacing and sharing. *Ecology and Society* 11(1): 4.
- Safford, H.D., Sawyer, S.C., Kocher, S.D., Hiers, J.K. and M. Cross. 2017. Linking knowledge to action: the role of boundary spanners in translating ecology. *Frontiers in Ecology* 15(10): 560-568.
- Salas, E., Estrada, A.X. and W.B. Vessy (eds.) 2015. *Team Cohesion: Advances in psychological theory, methods and practice*. Emerald Publishing, Bingley, UK.
- Schwartz, R. 1996. Becoming a facilitative leader. *R&D Innovator* 5(8).
- Scott, W.R. 2001. *Institutions and Organisations*. Sage: London.
- Seijger, C., Otter, H.S., Van Tatenhove, J. and G. Dewulf. 2016. Socially robust knowledge in coastal projects. *Environmental Science and Policy* 55: 393-407.
- Shaw, J., Danese, C. and L. Stocker. 2013. Spanning the boundary between climate science and coastal communities: Opportunities and challenges. *Ocean & Coastal Management* 86: 80-87.
- Smith, J.A., Flowers, P. and M. Larkin. 2009. *Interpretative Phenomenological Analysis*. Sage Publications, Thousand Oaks, California.

- Smith, J.L. 2008. A critical appreciation of the “bottom-up” approach to sustainable water management: embracing complexity rather than desirability. *Local Environment* 13(4): 353-366.
- Stanley, D. 2003. What do we know about social cohesion: the research perspective of the Federal Government's social cohesion research network. *The Canadian Journal of Sociology* 28(1): 5-17.
- Statistics South Africa. 2017. *The state of basic service delivery in South Africa: In-depth analysis of the Community Survey 2016 data*. Accessed at <http://www.statssa.gov.za/publications/Report%2003-01-22/Report%2003-01-222016.pdf>.
- Stone, G.A., Russell, R.F. and K. Patterson. 2004. Transformational versus servant leadership: a difference in leader focus. *Leadership and Organization Development Journal* 25 (4): 349-361.
- Tanzi, V. and H. Davoodi. 1997. *Corruption, public investment and growth*. IMF Working Paper no. 97/139. IMF, Washington DC.
- Trevillion, S. 1991. *Caring in the Community*. Longman: London.
- Tushman, M.L. 1977. Special boundary roles in the innovation process. *Administrative Science Quarterly* 22(4): 587-605.
- Ugur, M. and N. Dasgupta. 2011. *Evidence on the economic growth impacts of corruption in low-income countries and beyond: a systematic review*. EPPI-Centre, Social Science Research Unit, Institute of Education, University of London. London.
- Van Deventer, H., Smith-Adao, L., Job, N., Kotze, D., Genthe, B., Grundling, A., Grundling, P-L., Impson, D., Petersen, C., Robinson, J., Scherman, P., Snaddon, K., Tererai, F., and S. van Rensburg. 2018. *Assessment of the ecosystem threat status and ecosystem protection levels of Inland Aquatic Ecosystems for the National Biodiversity Assessment of 2018*. Draft 1. SANBI, Pretoria.
- Van Koppen, B., Giordano, M., Butterworth, J. and E. Everisto, 2007. Community-based water law and water resource management reform in developing countries: rationale, contents and key messages. **In** Van Koppen, B., Giordano, M. and J. Butterworth (eds.) *Community-Based Water Law and Water Resource Management Reform in Developing Countries*. CAB, Wallingford, UK.
- Van Meerkerk, I. and J. Edelenbos. 2017. Facilitating conditions for boundary-spanning behaviour in governance networks. *Public Management Review* 20(4): 503-524.
- Wasserman, S. and K. Faust. 1994. Cohesive Subgroups. **In** *Social Network Analysis: Methods and Applications*. Cambridge University Press, Cambridge, UK.
- West, D., Tjosvold, M.A. and K.G. Smith (eds.) 2003. *International Handbook of Organisational Teamwork and Cooperative Working*. Wiley, Chichester, UK.
- Williams, P. 2002. The Competent Boundary Spanner. *Public Administration* 80(1): 103-124.
- Williams, P. 2010. Special Agents: the Nature and Role of Boundary Spanners. Paper to the ESRC Research Seminar Series on *Collaborative Futures: New Insights from Intra and Inter-Sectoral Collaborations*. February 2010. University of Birmingham, Birmingham.

- Williams, P. 2013. We are all boundary spanners now? *International Journal of Public Sector Management* 26(1): 17-32.
- Winston B.E. and K. Patterson. 2006. An Integrative Definition of Leadership. *International Journal of Leadership Studies* 1(2): 6-66.
- WWF and Economic Development Partnership. 2018. *Breede River Actor & Relationship Mapping Workshop, 12 February 2018, Worcester*. Unpublished Report. WWF and Economic Development Partnership, Cape Town.
- Young, S.T. and K.K. Dhanda. 2012. Role of Governments and Nongovernmental Organizations. ***In*** *Sustainability: Essentials for Business*. Sage, Thousand Oaks, CA.

APPENDICES

Appendix 1. Name generator questionnaire

Name-generator questionnaire

I am a Principal Scientist at the Institute of Natural Resources and currently completing a PhD at Stellenbosch University. I am undertaking a study, funded by the Water Research Commission, which aims to explore the relationship between boundary spanning behaviour and different contexts, in the uMngeni catchment.

Boundary spanners are individuals who connect people and organisations. They also help to manage and resolve conflict, make information more accessible, and create environments in which collaborations can flourish. Boundary spanning behaviour is influenced by both personal characteristics and context, and the interplay between the two. This research will help us to better understand the contexts which enable these individuals to operate effectively. Understanding these contexts may help us to build better and more adaptive governance systems.

The first step in the research is to identify boundary spanners involved in integrated water resource management in the uMngeni catchment. In this survey, you will be asked to indicate if you are aware of actors in the network who display certain boundary spanning characteristics or skills. Other members of the uMngeni Ecological Infrastructure Partnership (UEIP), the Catchment Management Forums and the proto-Catchment Management Agency will be asked to do the same. The names provided will be used to identify boundary spanners in the uMngeni catchment. These individuals will then be invited to participate in a short interview to explore the contextual conditions that aid or hinder their activities.

Your assistance in identifying boundary spanners in the uMngeni catchment is much appreciated. This process should not take more than 10 minutes of your time. This study is informed by a strict ethical protocol and participation is entirely voluntary.

Can you name any individuals involved in integrated water resource management in the uMngeni catchment, who have the following characteristics or skills:

1. Connect different individuals and organisations involved in integrated water resource management in the uMngeni catchment;
2. Have a feeling for what is important and what matters for others involved in integrated water resource management in the uMngeni catchment;
3. Facilitate the transfer and exchange of information between people involved in integrated water resource management in the uMngeni catchment, and their home organisation;
4. Generate and integrate a diversity of viewpoints and ideas;
5. Build and maintain sustainable relationships with different organisations involved in integrated water resource management in the uMngeni catchment.

Please write the names and contact details of relevant individuals in the space/s provided over the page.

Name: _____
Organisation: _____
Email address: _____
Telephone number: _____

Name: _____
Organisation: _____
Email address: _____
Telephone number: _____

Name: _____
Organisation: _____
Email address: _____
Telephone number: _____

Name: _____
Organisation: _____
Email address: _____
Telephone number: _____

Name: _____
Organisation: _____
Email address: _____
Telephone number: _____

Appendix 2. Guiding interview questions

Boundary spanning in water governance networks

1. In preparation for the interview:

1. Print out copies of the project brief, interview questions and informed consent form;
2. Take along a dictaphone to record the interview, if the respondent agrees.

2. Introduction (start with the following when commencing the interview)

The Institute of Natural Resources (INR) is a non-profit, public benefit organisation which applies innovative science to catalyse change for a better planet. I am a Principal Scientist at the INR and am also completing a PhD at Stellenbosch University.

I am currently conducting an 18-month project funded by the Water Research Commission which sets out to explore the relationship between boundary spanning behaviour and different contexts, in the uMngeni catchment. Boundary spanners are individuals who connect people and organisations. They also help to manage and resolve conflict, make information more accessible, and create environments in which collaborations can flourish.

You have been approached as a possible participant as you were identified by several of your colleagues as someone who engages in boundary spanning activities. There are a number of other people in the uMngeni catchment who have also perform these activities. They will also be invited to participate in the study.

The outcomes of the interviews will feed into the project analysis. Ultimately we want to better understand the contexts which enable boundary spanners (like yourself) to operate effectively. Understanding these contexts may help us to build better and more adaptive governance systems.

We will keep you updated of how the project is progressing and will give you feedback at the end of the project.

For more information, you can email me at kpringle@inr.org.za

3. Informed consent form and project brief

Participants will be asked to fill out and sign the informed consent form. The consent form will be explained to them, emphasising the sections on the “protection of information, confidentiality and identity” and “participation and withdrawal”, so that they are aware what they are agreeing to when they sign it. Participants will then be asked if they are happy for the interview to be recorded.

4. Explanation of interview process

The interview will be a conversation with a set of guiding questions. There are no pre-defined answers. I would like to understand your thoughts and perspectives on different activities and contexts. Please feel free to ask questions of clarity at any time.

Questions for context	
Analysis by	
Interview with	
Designation	
Company/Institution	
Type of organisation	
Size of organisation	
Stakeholder group	
Age	
Years' experience	
Years in the community	
Attitude towards conservation vs development	

Guiding interview questions	
1	<i>Boundary spanning behaviour</i> Which boundary spanning activities do you participate in?
2	<i>Engagement with other stakeholders</i> - Which organisations/stakeholder groups do you work with? - Do you play a formal role in any of these organisations? - In what ways do you work together? - How well do you work together? - Do you think that the group is cohesive? - Are there other individuals or organisations that you would like to work with or include? - What might be facilitating or hindering their involvement?
3	<i>Boundary spanning behaviour and context</i> - What conditions do you think enable you to undertake these boundary spanning activities? - What conditions do you think restrict you in undertaking boundary spanning activities?
4	<i>Leadership and management</i> - Are opportunities to work and collaborate with others within and beyond your organisation encouraged (facilitative leadership)? - Does your principal provide you with space to execute the necessary activities? (executive support)
5	<i>Financial and resource constraints</i> Are you provided with sufficient resources to undertake boundary spanning activities?
6	<i>Institutional and legal requirements</i> Do internal policies or legal requirements impact your ability to engage in boundary spanning activities?
7	<i>Snowballing</i> Is there anyone else that you think we should be speaking to?

5. After the interview

The participants will be thanked for their time and informed that I will be in touch regarding the project.

Appendix 3. Full list of extracts from interviews in support of sub-themes and themes related to contextual conditions

5.1 Positive personal attributes

Respondents motivation
And also just sometimes you need to show appreciation. I feel like sometimes that's lacking quite a lot. And sometimes, even in other organisations you need to show the person that they are useful to you and that you appreciate that help. Because then they're more likely to help you going forward. I've done this before where, and it can't always be just business as usual and very formal and because it's work we need to just keep it as work. Sometimes you need to just be friendly and you need to talk to people as people.
And just your mannerisms and professionalism, the way you carry yourself.
...sometimes we have our clashes. But even in those clashes I will try to be fair and frank to you. So honesty is the best policy.
So transparency is really, is key in my opinion
So you have to be very, very upfront, truthful, honest...
The only disadvantage with that is that by working with all kinds of people and being transparent and open and honest, people understand where you sit, that you will not do or undertake or get involved in things that are illegal or corrupt or against society's interests
...I'm very ethical, my integrity is there.

5.2 Self-confidence

Respondents motivation
And I think being, the word I was gonna use, the term I think is not scared. You know what I mean? Having the confidence. I mean, confidence I think plays a significant role as a condition... One just has to be confident that you can engage and learn and be influential.
So I have to be very confident in myself and in my lack of understanding and be able to ask questions and not be embarrassed by that

5.3 Understanding and empathy

Respondents motivation
I find myself moving between both sides to help people to understand that there's never one side to this.
I think for me that kind of helps you to build trust, when you actually do meet people and you understand where they are and what their issues are and you work around those issues.
Someone once said to me, I can't remember how she put it. She said you've got an unbelievable ability to put yourself in other people's shoes. You demonstrate so much empathy, but also that ability to see a matter from a whole lot of different perspectives.
So it just shows you that you've got to get out and understand another party's reality.
But I want to believe that I made an extra mile where necessary, to go out, we would say go out there on the ground, in the trenches, and meet people in the trenches as opposed to in your air-conditioned office.
And I'm a people's person and I like to listen. You know, irrespective of a situation, no matter how hostile or ...

5.4 Passion for the common good

Respondents motivation
But, I mean, we are saying it's for a common good within our sphere of work, which is the environment, that includes the whole world basically if you think about the environment, and we should be able to assist neighbouring [areas], we should be able to assist whoever comes to us for help.
I've got that mission [for] in a healthy, sustainable environment.
So you all finally connect because nobody is paying us, but it's an internal passion to make a difference.
It takes effort, passion, you have to believe in it otherwise you can't do it
...the need to go out there, make a difference.
I'm always willing to make a difference. Wherever I go, I want to leave a mark.
I hope to have this, having worked for an NGO for so long* (comment from the workshop review process)

5.5 Experience and trans-disciplinary knowledge

Respondents motivation
Yes, I think so. I'm a bit of a generalist... So I've sort of got pretty wide experience in water.
You have to be a bit of a generalist. You cannot be absolutely, you cannot be a specialist. Well, let's put it this way, it's slightly contraindicatory to be a specialist and a boundary spanner. So precondition is you've got to be a bit of a generalist.
... but I think it was perfect for me because I'm naturally that generalist. I'm not a specialist. So I like the diversity of viewpoints and ideas because I don't like to specialise in something very specific
... and maybe it's because I've worked with so many different countries, different organisations, different people, myself in different roles...
So that's given me a fairly broad background.
So I think this experience I've had has allowed me to accumulate knowledge, skills, experience to adapt myself to the conditions
I would say [<i>that my background</i>] it has helped me, because I've engaged with different people in different levels in different professions. So I've managed to deal with different people
My background enlightened me as to what is it that is there outside in the world, and what is it that other people are actually doing.

5.6 Willingness to learn and share

Respondents motivation
also my business is to share information and to share ideas, not to be too ... Don't come too close, because I think that's if you're generous with ideas and information, other people will do the same for you.
...but also being prepared to spend the time to learn.
I'm that kind of person who wants to learn as much as I can and gain as much knowledge as I can.
So, yes, we do share as much information as we can...
I wish we could make more information available more regularly...
That's a value of mine, is that I really think it's important to share, and knowledge is very powerful and without the knowledge you can't really enable anything
But at the same time I like to learn and listen and to ask questions and reflection of my learning going back to those people and maybe also make them start thinking
I quite enjoy that role and I do like to be a conduit and sharer of information.
You've got to remain also relevant and keep learning and you don't always learn new things if you're just in your own little bubble. It's absolutely vital.
I think that if we do not share ideas and knowledge with each other and we do not share the opportunities for learning, the opportunities for solving problems, then we're all just caught up working in our little silos

I think the first task was to create an enabling environment for information transfer. Let me say not transfer, but information sharing. I think sharing is a much appropriate term than transfer. Because you share information, you don't just transfer from one source to another.
... so we can then take that information and share it with the communities

5.7 Effective communication

Respondents motivation
Communication is the first thing, I think. You have to get to know the people you're working with, regardless of what organisation they're dealing with. I think for me its knowing the people personally, interacting with them on a regular basis. And then even just knowing their favourite way of communicating, whether that's in person, whether that's over the phone or whether they prefer emails or how do you deal with this person? Because then you're gonna get the best form of communication from them. And I've noticed that. Some people I will just not email. I will never email because they will never respond to an email. And I will call them and we have that relationship where they don't mind me calling them, I think because they prefer that.
And another thing, simple communication skills or information, it has brought down potential of good working relations that could flourish. And then you find that it becomes a stumbling block, how you communicate and what do you communicate
I'm also in the fortunate position that I have the background and the experience to be able to translate the data into information and sometimes even be able to provide different ways of showing, displaying that information in a hopefully understandable form to quite a wide variety of groups.
We're translating, simplifying those things for our community.
[My background] really made things easier for me, in terms of being able to communicate effectively with other people, and to know who's where, and who is giving what, and how, stuff like that
I do feel that I have this skill and regard it as one of my strengths* (comment from workshop during review process)

5.8 Risk-taking, rule-breaking and innovating

Respondents motivation
People are not very innovative necessarily, because they always want to know well, has it been done before, whereas [our organisation] says let's try it and see what happens
And we wanted to see, will this thing work? And so we took a risk basically
And if I was a very, like I just wanted to toe the line, make sure I'm 100% keeping my boss happy, couple of things I wouldn't have gone to. But, you know. So you do what you feel is important...
So there other people who are passionate and who are prepared to take risk, who are prepared to work in very complex situations. ...but everything that one has to then do to transform it into a green economy, stuff that has never been done before or are new stuff and you've got to find ways of doing it. Government cannot do it alone. The private sector on its own is also problematic. We have to find ways of innovating
That's exactly what we're trying now to do, to foster the innovations...
I definitely create a space, but I don't necessarily create a comfortable space in the same way as a Rod Bulman would create a facilitated comfortable space in which to operate. I suppose I'm too challenging in that.
Well, historically, maybe even now, it's by being different to the people that I'm working with... I have a different viewpoint and then saw things from a different way and pushed the boundaries for people to do.
I think they picked me also because I speak different language. Most of young people would come to any organisation and want to volunteer and want to work. I came to every organisation, I said I want to partner with you in this and that.

5.9 Ability to see or create opportunities

Respondents motivation
And the more you network, the more you are able to see business opportunity.
Because there were so many other opportunities which could divert me.
I really believe even if there's a little sparkle somewhere, an opportunity, you need to try at least.
And I tend to, I work, I like a more flexible approach and so I often like to, if an opportunity comes along, to grab it.
And then you think to yourself, yes, what have I got planned? Let me create an opportunity.
...our policy environment and our understanding of how to undertake development and management of the environment demands that we do our work in a way where we facilitate unlocking opportunities and lead my example and lead by doing.
You need to think out of the box and leverage or create additional funding opportunities

5.10 Systems thinking

Respondents motivation
So being prepared to spend time to understand the game and the system then allows you to play in the system and span boundaries between
So you have this holistic picture and not just your picture.
But I want to make sure that they've looked at the bigger picture...
... and trying to draw the bigger picture from what we do.
If we're not transparent, then because it's such a complicated, complex system, then how are we supposed to deal with that overall system?
...what are the bigger picture issues..
So we're open-minded to everything and we're all ears for everybody's view so that we might understand the system that we're in and its actors and how we might change behaviour in the system

Appendix 4. Full list of extracts from interviews in support of sub-themes and themes related to contextual conditions.

6.1 Self-imposed and social limitations

6.1.1 *Perceptions of one's self and your comfort zone*

Respondents motivation
But the biggest one by far is my own ideas about myself. My self-imposed limitations. That is what constrains me, my unwritten self-imposed limitations
I think the first distinction is, I would call it comfort zone. You know when you're so comfortable in your comfort zone, it's an effort to go out and make a difference. It's easy to be stuck in a comfort zone and simply create a shell around you and just not go out. So there is that mental restriction that do I really have to do it? It's easy to just sit around in my corner and just not do it.

6.1.2 *Socially constructed boundaries*

Respondents motivation
I think the obvious one is socially constructed boundaries. That's what, to me what limits me. Because there's a form of social censure to operate in. So the more people construct boundaries of any kind, the more difficult it is to move easily and span those.

6.2 Trust and time in the community

6.2.1 *Trust and social interaction*

Respondents motivation
And building trust, there's a lot on that one. Building trust, of course one should try and build trust, but trust comes from shared action and practice, it can't be built. And I hope my relationship with people has been trustworthy. Although I know that sometimes people don't trust me because I challenge the words they use, but that's life.
I think the building trust part is the most difficult part and I don't think it's something that you set out to do. You know it's important, but I don't think there is a way of actually saying you're going to build trust. It kind of just happens.
Yes, it's all linked up. [Trust is] key to anything that you do. In this whole thing is to build trust of yourself, trust in others so that you can ... Otherwise you're not gonna work together towards anything.
So that I think is an important element of anything, any relationship that you generate, whether it be a work relationship or other whatever. It has to be based on some degree of trust. If not, you're always second guessing.
I suppose it comes, just is always part of it. Cause you can't do anything unless you have trust. So maybe you do, I always believe that with everyone the only way to get trust and respect is to walk the talk and that
Trust is critical in any relationship. It's a process but we actively, we want to believe that we actively work towards building trust, and that's not easy. Particularly given the nature of the relationships. It's defined by us and them. It's defined by class. It's defined by race. It's defined by a lot of demographic factors that keep us apart. There's a lot that keeps it apart and you need to put in bridges so that you are able to engender trust. Hence I say it's a process. I don't think you'll get to 100%, but at least make an effort to build bridges
It's a hard one because industry does not trust us, regardless. And in a way I understand why. Because although we are there to assist you in becoming compliant, we are also there to take enforcement measures. So it's almost like we're two faced and no one really wants to deal with someone you know is going to turn on you, cause you know that day will come. And it's very hard to gain that trust...When it comes to the public in general, just people on their own, and when it comes to other organisations, there is trust. So I think for different sectors it has different meanings. I know we have developed trust with our departments, [some] departments and we have

a good relationship with them... And that in a way is transparent and it builds on trust and I think there is a baseline of trust there, but it just depends on who you're working with.
But I'll be able to provide some information as long as I don't break the trust of the person I got it from...
Yes, I think, I mean that is also what [our organisation] is trying to do, to nurture relationships.
You're wanting to create a trust bond between your community and your NGOs and CBOs, et cetera, and government. So I only think once we are all working together that you're actually going to achieve something... To me it goes again on that social interaction. And social interaction and your networks can only be based on a degree of trust and understanding of the various players, that someone else is actually going to do their function and they're gonna be effective.
So people have developed the trust and I contributed to the trust by complementing their recommendations. Which means if I'm requested to do something, I do something fully and committedly.
So I think for me that kind of helps you to build trust, when you actually do meet people and you understand where they are and what their issues are and you work around those issues
...and I think that's where the combination of having empathy and understanding individuals, maybe the way they act out, maybe sometimes I can convey that to others so that there is a better understanding of why people act out the way they do. And I think that people understand each other better and where they are. And that always creates trust, cause you feel more comfortable
Yes, building trust is a big part of that. If people can't believe what we're telling them, if the science isn't rigorous, then I don't see that there can be trust anyway.
Trust is really a prerequisite for a good and a healthy relationship. If that doesn't exist it wouldn't be a meaningful relationship....So we have to find, if I'm meeting a stakeholder that hasn't worked with us, I have to be quite clear and upfront about what is our interest, what is our motive. And I think they often want, they wanna know what's behind all of this. Even when we had a project and funding that we could offer to, at that stage we just wanted volunteers from the irrigation board, they were still like, but why? And you have to unpack that and say, well, be explicit about what are we trying to achieve and this is it. So you have to be very, very upfront, truthful, honest, and sometimes address the elephant in the room and say our role is not to be a legal enforcer.
I think if people do not trust you, so if the various stakeholders that you work with, if they think that your, what you say to them is not actually what you mean and that you are capable of being, if you're capable of deceiving them and your objectives are not what you make known, so you function on manipulation and deceit, then a whole lot of people will not want to work with you. The issue, you have to be credible. People have to see that this particular person has very clear goals which are to do this and that is what they want to do.
You go to the landowner's farm, you ask them to cooperate with you, you do [initial work]. And next year you don't have funding. You don't come back. The work that you've done, it goes back to initial or it gets worse. And you keep on having the same and the same answer, and it sounds like an excuse. And eventually they lose trust.
Because the trust that we have built since '94 is now, it's damaged, it's finished. It's finished because you can see, you can hear, you see all these Zondo commission people. So we have to rebuild that trust. We had a trust, but we trusted that ... We had that trust, but that trust is vague, it's no longer strong as it was. So we need to rebuild that trust.
More than that, especially with the people that you pay, when you pay them, already they trust you. When it happens that you don't pay them, you can see that that trust diminishes quite quickly.

6.2.2 Time in the community/sector

Respondents motivation
And then, time. I mean, if one has been working in an area for long enough, you get to know all the right people.
Length of time in the game allows you to network, span the boundaries, because you're just, just through time you build those. So I think time is critical. Time in the game is critical.

6.3 Organisational influences

6.3.1 Type and size of organisation

Respondents motivation
Well, I maybe a bit limited in that regard, because I do have to earn a living and also pay my staff which means that I can't do as much of that stuff as I would like to do. I would like to attend more of the CMFs and the UEIPs and stuff like that.
So, I would have had to have an extremely indulgent and supportive organisation to have done that if I wasn't self-employed.
Yes, [our organisation], compared to [others], it's a tiny organisation. And yet because of its flexibility, and it's like a bee going around pollinating. I think it can be worth its weight.
So just the nature of being an NGO. We don't exist for ourselves. Perhaps that's maybe more number one before the other point I mentioned. But it really is the heart of who we are, that we're a public benefit organisation. We exist for the greater good and therefore you have to be out there and be networking and be in collaborations and partnerships as much as possible and to have influence. You can't have influence if you are very singular. And if you don't work collaboratively you're not gonna have much influence. So it's just really fundamental.
And I think that'd probably be quite different to, I'm guessing, to say maybe a more non-NGO or a government institution, maybe not private sector, where just ticking a box of I attended a meeting, this may be good enough. But for us it's not good enough. And [another organisation] in particular have also often questioned, even in our monthly reports or whatever, quarterly reports, you can quite easily get onto the activity reporting and how many things you attended and were part of and la-la-la, and [one colleague], he's very good at that, he always turns that into, but what was the outcome of that and why was that important? Or, so you attended this many meetings and had contact with this many people, but what was the outcome? And so you're trying to always make these things count
So I, by working in government, have a responsibility to make sure our society can improve its management of [natural resources]. I have that duty. So that forces me. If I was working in private sector I might be just interested in my company's bottom line. But as a government employee, the conditions of my employment compel me to work in a way where I cross boundaries of work, cross boundaries of thoughts and ideas and all of that.

6.3.2 Credibility of an organisation

Respondents motivation
I do find sometimes if, I quite often end up as the only government official at CMFs or at forums, whatever, and you end up having to ... You know, it's one government so you still, you're trying to put forward a, not protect parties, but you're trying to stand up for the government in a sense and say certain things are occurring, you know. People are trying. They don't always have all the resources and the, let's say the senior support that they would like to be able to do their job, but they certainly are, there are individuals that are very committed and very dedicated.
So ten years ago, 15 years ago, if we called a meeting to say, hey, let's look at how we tackle this issue of climate change, joh, we'd get all types of people ready to come to the table because there was a sense that we

can make a difference and all of that. Now we have gone backwards in terms of our credibility as government. People are not very confident that anything can happen that is positive from government
I think [my organisation] had a fairly good name out there compared to a lot of other organisations, that there was that level of trust in inverted commas that was there. I think we're seen as a professional body, that we're getting some things done. Not by everyone, but I'm talking something general, generalising here a bit. And I think carrying that name, that more of a professionalism and that, having that made it a lot easier.

6.3.3 Professional obligations

Respondents motivation
But one of the facilitating things ... I'll go back to that question which is important is that I'm self-employed. There's stuff that I've done..., I would have been fired if I was working for anybody else. You know, it's a bit crazy, quite honestly. But you think it's a good idea, and then you do it, and there you are. So, I would have had to have an extremely indulgent and supportive organisation to have done that if I wasn't self-employed.
Yes, it is my core function. Well, it's a core activity that informs a key purpose of my job. I don't do it because I ... I do enjoy it, but I don't do it because I enjoy it, I do it because it's my job to do it, if you understand.
Also the fact that it's not our mandate as local government to take decisions and actions on certain things in our field. So even if we could apply logic and the letter of the law, we are not the competent authority to take decisions in a matter. Things that are out of our control, we're quite limited, because it either goes to province or it goes to national. And sometimes on the ground there could a simple solution, but then again, letter of the law, technically you can't.
Yes, and job descriptions legally. The idea is that if the city manager has appointed you to do this specific function, you should be doing that function and nothing beyond that function. So if you take a person who's a multitasker and an allrounder and then you say this is your only function, it becomes a bit difficult cause you can involve yourself in many things. And if you think of the environment, it doesn't just work in a silo, it's a lot of different things that come together. So in a way that can also be a legalistic way of preventing the boundary spanning.
(Collaborating with others) In my current role, yes. It's actually one of my core responsibilities
Yes, having a benevolent workspace to follow up on immediate needs. If I'd had a very rigid log frame to work to, I could never have attended a UEIP meeting here or done this there or whatever. So I had a salary when I needed it and I could go to these meetings. We need more of that, I suppose. You could just put job description limits (as a limiting condition)
Because there is the call for to do the stuff that you're paid to do, your job. And then all of these other things, even though they are part of your job, they are very unseen until they are visible.
Oh yes. I think it's that freedom from my employer as well as the freedom that the groups that I'm active in, in the networks, that they're appreciative of that. So that's what enables me to do those things and carry on, I think.
Also, I've got a job to do. And although there's overlap then with the external world in places like the CMF and UEIP and so on and so forth, my primary function is not to go full disclosure on our problems or help the university students or provide data, et cetera.
Well, the fact that we have these organisational goals and outcomes which then filter right down to our team's indicators, as I mentioned, is a huge enabler. Because it shows that that is priority and it reflects then on your performance and you've got to then in your performance reviews give examples of how you've tried to build partnerships and work with other organisations. So it's a great enabler.
I suppose the biggest restriction was probably the fact that it wasn't really our mandate, a lot of that. So to spend money or time on something like that was, initially it was an issue.

6.3.4 Time availability and management

Respondents motivation
Well, I maybe a bit limited in that regard, because I do have to earn a living and also pay my staff which means that I can't do as much of that stuff as I would like to do. If I were retired, I would have more time and I could do more of that. So time is a limitation....
Ideally I would think about a quarter of my time should be spent doing this, but maybe only 10% is because I have too many responsibilities and quite an immature organisation to run.
So it's socially acceptable to say there wasn't time to do it, but if you really wanna do something in your life you will never be short of time. Time is an excuse for a lack of commitment. So I use it guardedly. I suppose if I had gone hook, line and sinker for doing that, my bosses would have fired me sooner. So in that sense my time was constrained, but more by the expectations of my bosses
Time constraints are the key problem there. Too much to do, not enough time to do it in. Not any real time to go and do those other things that one sees as being valuable, such as networking and so forth. That's gonna be a key constraint really. There's certainly a huge opportunity there for more of that, but then if we're not getting paid to do that and don't end up doing the other work that we're supposed to be doing, our performance management system says you don't get paid anything extra.
And then, actually from my point of view as well it's definitely, it's just a juggling of time, time management. It is about that, because you can also stretch yourself too thin and then you're not really being that effective in any of those things. So it is about making the right calls and which goes with being a project manager is in a way each of our different activities or networks that we're involved in, you'd see it as a little project so to speak
And just time, as I mentioned earlier. You're prioritising things.

6.4 Team effectiveness and legitimacy

6.4.1 The influence of others

Respondents motivation
Sometimes it's just people. And I mean, people have their ways. Some people are friendly, open people that want to work with others and they're happy to work in teams. Some people are not team players, so they're constantly ... It's like they are the only ones and if they hold this information, you can't work with anyone else and you don't really go as far as you could. And I've come across people like that personally. And that is a major problem.
That is a hindrance because everybody is trying to work towards a collective and you know you need this information from them, but it's the first step in the process and if you don't get past that first step and you don't have the information you literally cannot do anything else after that. So that for me, I've come across that quite a lot and it's a problem.
So my motto would be you're as good as the people you work with.
We need to support each other, otherwise we're not gonna go anywhere and we can't even do what we would like to do. Like, I couldn't engage researchers in Mpophomeni to the extent that I have if [my colleague] wouldn't have been there to prepare to spend time with us and share and critically reflect, for example.
I also even think that for some [people], they're quite suspicious of what I'm doing. They think, it's a bit like, why? What ties? It's weird. They feel uncomfortable.
Oh, and I might also add that certain people within the municipality also don't like me doing it either. Yet, also within the municipality, yet others have actually facilitated that.
I think the other thing is that, another condition is that there are also very many people out there like me who would like to make improvements in the natural resource sector. So there are lots of journey, there are also fellow travellers who one will find and they would then encourage and inspire you around the journey. So you all finally connect because nobody is paying us, but it's an internal passion to make a difference.
There's issues unfortunately with data understanding, converting it into information, because people cherry pick stuff if they're not scientific in their approach and that can actually be more of a concern than not

So it was a major restrictive factor, the attitude of [some people]. Not all of them, but the attitude of [some people] was not so conducive towards this goal of balancing the ecology and the infrastructural needs of the municipality.

I think once you see the result of collaborative efforts you become inspired. That in spite of the efforts that you invest into relationship building and relationship management, those two are different, it's worth the effort.

It takes effort, passion, you have to believe in it otherwise you can't do it, because people will always point at you and say, why are you doing it? Why are you wasting your time? It's not worth it.

6.4.2 Legitimacy

Respondents motivation
I think a precondition is a sort of a general level of respect for your competence and integrity by others.
I'm not sure if it's because of the personal character or what, but I've been lucky enough that I've been accepted within the network as a person. So that when I deliver stuff or when I work on something, I get accepted and supported. So there has been that enabling condition that the network has provided.
I think it's that freedom from my employer as well as the freedom that the groups that I'm active in, in the networks, that they're appreciative of that

6.5 Platforms

6.5.1 Platforms

Respondents motivation
Well, yes, especially of course the access to information that pretty much nobody else has easy access to. And the understanding of what that might mean because of my background. And then the involvement in those organisations, well, the groups, the networks, et cetera, that you're looking at that provide a forum to raise and sometimes discuss those. And of course obviously hopefully influence some future activity to the betterment of the resource.
I'll take an example. I attended [a conference] three times. First one I was sponsored by ... Okay, I've been always sponsored [by them], which again is the typical example of support that we would need as young people growing up. First one I attended, cause I've never attended, before I was just looking and seeing what is [this conference about] and what's going on there. On the second one I presented. They like the presentation, clap their hands and all. Third one I came with two of my interns. So you can see that growth within that support, that enabling condition or platform and continuous, constant support to say, okay, we can see he's growing.

6.5.2 Position in the network

Respondents motivation
Well, the fact of, one, probably my position and sort of the authority I carried with that and, two, the organisation that I was with. I think [my organisation] had a fairly good name out there compared to a lot of other organisations, that there was that level of trust in inverted commas that was there. I think we're seen as a professional body, that we're getting some things done. Not by everyone, but I'm talking something general, generalising here a bit. And I think carrying that name, that more of a professionalism and that, having that made it a lot easier.

6.6 Network characteristics

6.6.1 *Integration across the network*

Respondents motivation
And I think a big problem is South Africa, and I don't know how much is going to come out of your research, is that you know we talk about silos and things like that. Now I think I'm not somebody who's tied up in a silo, but there is a split between government/private sector to some extent, although I did work in government for some time, but it's also a political black-white thing. I think their networks which are to some extent political on the black side, which we're excluded from, and one can quite well network, but if you think about it, not many black people, not that many significant players in my network. Some, but not that many. And there are not that many that I would ... I've got a few friends, but not comparable. So, I think that's a problem here in South Africa, which wouldn't be such a problem in some other parts of the world. We haven't ... You've still got these separate worlds which are not that integrated.
And to me [my unit] is the one component that actually does that broader cross-sector interaction. [Some of the other units] work within quite refined silos. Whereas [our unit], we need to actually have quite a wide range of interaction across all of those spheres. So to go to a catchment forum you need to know something about [a whole variety of issues]. You can't be in one sector.
The community involvement, I have this belief that once any community can take a decision that enough is enough or that we need to start this, then you'll see change. Sometimes it tends to be triggered by something. One instant, [was when] Bafana Bafana went to the World Cup in 2010. And you would find people carrying flags I think across the board. That thing at that time drawn everyone into one. But the support that was gathered around them was South African driven. The South Africa was this one big community at the time. We don't have that in the environment.
I mean, it was Thabo Mbeki that came with the concept we are a nation of two societies. And it is built into the way our society is created. I think it will take quite a while to bridge that gap. The forces of separation are still very strong so that a spatial point of view, I'm talking spatial planning, we still have white residences, black residences. So we haven't bridged that gap at that level. And even when the suburb has all the races together, but the networks are still strong, even though your neighbour is white and the other neighbour is Indian, the network is still not there. People still maintain their old networks. I think it comes back to the comfort zone. I responded that to the question of comfort zone. You always do what the comfort is to do. And I think it will cause you and I to experience that sense of discomfort enough that we go out of our way and bridge the gap. It's a process. It will get there one day, but I don't have an answer as to what it will take for us to get ... You can't force it. It has to follow the ecological natural route. It will get there, but I think we must just give it a bit of time. We need more and more of people like you and I to get to the point where we begin to bridge the gap.
What also could make us more productive would be the harmonious relationship between the two types of governance that we have in KZN. If we could have that harmony between your traditional leadership and your government. Because you know when you go to a certain community. If the king is not ... If the traditional leadership does not work in harmony with the local government, you find a lot of challenges that prevents us from accessing their communities, training those communities, involving them in certain programmes or projects, so it really hinders us. The relationship between the leaders themselves really creates a problem for us.

6.6.2 *Size of the network/sector*

Respondents motivation
But the water sector in South Africa isn't that big, so when we go to a conference, for example, you see an awful lot of people that you know from all different parts of the sector on the different aspects of it, so that I suppose is a thing that facilitates the boundary-spanning is that it's not such a large sector

6.7 Resources

6.7.1 Financial resources

Respondents motivation
Well, it's just a question of how much time I want to spend ... I mean, because I'm self-employed, I would say yes [I have sufficient resources], but maybe it's to a bit of a detrimental effect to my own business
Oh, yes, absolutely. If at the end of the day my primary motivation for spanning boundaries is to boost the profile of the [organisation], boost my own profile which boosts the profile of the [organisation], generate business, that's my core function and I have all the resources I need to do it.
And so funding will never be enough. And I say this because the problem is just too big and we only tackle areas of the problem, certain areas of the problem, but it goes beyond us, it goes beyond our scope of what we can do.
I think the funding models we work with require lots of low level people and there's very little money for middle to higher level involvement.
So we haven't necessarily been given the resources to be able to be completely effective.
For one, resources. If you can understand what I've mentioned, the scope of work that I do, but at some period, sometimes long period, I have to work without pay.
No, unfortunately not. Although I suppose things are gonna change now. Yes. To be fair, there were no financial resources, so I also understand that. But now we do have financial resources.
No. That's my personal money and time. When I drive to the CMFs, I don't claim for those kilometres cause there is no place to claim it from
No [we don't have sufficient resources]
Yes [I am generally provided with sufficient resources to undertake my boundary spanning activities]
I think in terms of where I work, yes, I have basic resources like a telephone, I mean, the ability to communication, the ability to travel, the ability to have meetings. I have all the basic things I need to do the work that I need to do. But the critical resources of support, changes of policy, implementing things that are required to fix basic problems is not there.
I suppose I was [provided with sufficient resources]. Because I could have got any of my staff and said this is now your job to do. And if I needed to go to meetings or fly to Pretoria or something there was never an issue on any of that. I can attend any meeting anywhere if I wanted to, other than international.
You have to, as I always say to my staff, think out of the box. And, see the way to play around with funding is to use, it's called terms and conditions of funding. And it's easy, you speak to your external funding source and you leverage funding on condition that there's an element of internal funding. So that's the trick to get internal funding. So 80% of the funding would come from external sources on condition that 20% comes from internal sources. It then makes your job easy in terms of internal funding sources.
It's an obvious one. You know it's never enough. Especially with all these budget cuts and all this drama that is happening.
I'll be lying to you. There's no non-profit organisation, there's no NGO that will tell you we have sufficient resources to do what we want to do. They will never, ever, ever, ever enough. Here in [my organisation], no we don't, because we're still living with one funder at the moment. And if that funder say, we don't have any relationship with you, then we're starting to consume our reserve resources to build trust, or to wait for a prospective new funder to come in.
I think you know the answer already. In all my years in working as a non-governmental organisation, I think I just started receiving funding in the past few years. The financial constraints have been so very bad. Very, very bad. It in a way discourages us as leaders to work efficiently and effectively. It again reduces our dignity with the people that we lead ourselves, because somehow people feel that as a leader one needs to have a certain type of a lifestyle. It also discourages them as community members as well when they see you as a leader not being empowered in a way.

6.7.2 Skills and human resources

Respondents motivation
I have young couple of people whom are volunteering too. Sometimes they disappear, go look for work. So I don't have constant human resource that would be there for full 12 months, say. See, the resources, just the resources can be a trouble to me.
It does create a little bit of a problem if we do not have the relevant persons to actually assist, especially when we have to draft MOUs. You know, the department would give you a certain MOU, and you do not fully understand it. Thereby we need somebody with a legal background to assist. But for accounting, we have to battle that ourselves. I mean, I've got some unemployed graduates that I've asked to actually assist, that have been assisting us. Some who I have permanently employed them. They are doing accounting, so they have passed in terms of bookkeeping. They are ensuring that we are compliant to SARS.

6.8 Legal and policy arena

6.8.1 National legislation

Respondents motivation
I think that the Constitution and the legislation that we have in our country around the natural resource space are aspirational. They set out goals that are really shared across the world. We know it. We have aspirations that are best practice in terms of where they should go. So at that level there is no problem.
[There are] things that are there to ensure we are not in this position, the Municipal Finance Management Act, the National Environmental Management Act, National Water Act, [and are] all very clear on what we should be striving to and how we should behave
There are implications, there are legal implications. Like I say, there are certain things that you need the authority from other organisations in order to do. Like I say, EDTEA and DEA are the competent authorities. They would ultimately within the law give us the permission we need. But if you are not the keeper of that piece of legislation then you are tied to other organisations until either things change or you get their approvals. Which is not to say that boundary spanning can't work across that. You can, it would just mean timeframes. It might mean delays. It might mean having to shift the way you think.
There's a very, very obvious legal constraint in that the Water Services Act and then the Water Act are not dealt with together. So it's very hard to ... And they often don't work together, as well as NEMA, NEMBA, is that there is perhaps, or maybe there is and I haven't come across it, there's sort of policy environment that helps to link these pieces together so that they're not dealt with in isolation. I don't know.
Legally we have a very strict financial governance regime as articulated in the [legislation]. It's quite strict that whatever you do must be budgeted for. That's the point of departure, it must be in the budget.
Well, as any organisation one needs to adhere to a number of rules that government has, tax compliance, auditing of the books, having a bookkeeper, legal representation when we are drafting our memorandum of understanding with different institutions. It does create a little bit of a problem if we do not have the relevant persons to actually assist, especially when we have to draft MOUs. You know, the department would give you a certain MOU, and you do not fully understand it. Thereby we need somebody with a legal background to assist.
These legal requirements, they're always there. Of course, I mean to play a role of advocacy, we'll need to make sure that we are guarded by the principle of the country in terms of what is the act when you wanted to picket, what is the act in terms of convening a gathering. Those are our limitations.

6.8.2 Internal policies and requirements

- Policies linked to size, type and maturity of organisation

Respondents motivation
No, because we're small organisations, we don't have things like internal policy* *Note that this statement was qualified at the workshop and highlighted that the organisation does have internal policies but that these are considered more flexible than government and easily adapted where necessary.
No, I can't think. There's no ... We have quite an open department, entity and environmental component when it comes to interacting with others or having policies.
[Our organisation] has also been maturing we obviously have, there have been more and more policies put in place for the staff's safety and that sort of thing. So there is a lot more to consider now. I don't think it's, I wouldn't put it down to inhibiting yet.
Not at all, we designed those policies ourselves, and as a result we make them more favourable. They do not hinder us in any way.

- Impacts of internal policies and contractual obligations

Respondents motivation
[DWS] have to get permission to go to every meeting that they do. And I see them taking photographs of the attendance list just to prove that they've been there and that's going up to [very senior] levels.
I mean, the motivations that we have to write just to go to a conference.
Joh, the internal policies, you have no idea. It's taken me a year, more than a year to get my project off the ground, and it's not even off the ground yet and we are over a year now because of all this administrative policies and issues. It's government. They think they understand what we do. I think that there's an issue with being a government department that also does scientific work. I think they don't, the administrative structures of government are not really flexible for science. And to top it all, the administrators do not understand the processes. They get these – what do you call them? – these qualified audits and they freak out. I think last year they had a quite hard one so they're freaking out about everything, they're making rules about everything and they're tying us and themselves into knots.
Not internal. But we have contractual stuff that is constraining. So a very, very big real problem is we are contractually bound to not speak about the work we do with [some organisations]
Contractual obligations, because we have not managed to sign. Amongst other things they want a certain contract written in a certain format... Amongst other things that is taking too long. You find that a person who's supposed to sign, director so and so is on leave....Is there any other person who can stand in while I'm on leave in a national department office? So it has been delayed by a year.
They do hinder, because you will find that you have budget at your disposal, but due to financial policies and all that, you can't do what you want to do, especially when it has to do with community facilitation, because of the policy as well... Everything that has to do with community facilitation is done by comms department in our head office. And if it's something small, in a small-scale in the region, we have to do thousands and thousands of submissions. And by the time they say yes or no, that time is gone.

6.9 Socio-political dimensions

6.9.1 Emotional connection

Respondents motivation
Now, remember once people work something or connect with something, it can be football, it can be even the environment, once they connect emotionally they become one. So these people are not, to them they are not clearing the river as it stands, and they're standing alone, object somewhere. No, they like the sound, they like

the flow, they connect with this river. Now, if somebody comes and dumps, and they understand the implications of that person dumping the nappies, so it becomes more deeper issue. If we have to get into that level than I think my work would be much easier.

6.9.2 Understanding and prioritisation of the environment

Respondents motivation
They don't have any understanding or access to the research that's been done as to what the priorities are and where the issues are, because that is not in any common place
I have noticed now that the environmental issues were not there and then for various reasons. For one, they don't even understand the wetlands environment.
There's issues unfortunately with data understanding, converting it into information, because people cherry pick stuff if they're not scientific in their approach and that can actually be more of a concern than not
Some [decision-makers] would not understand these ecological issues. They would say, why should we entertain these elite groupings when they're fighting over a frog? They like to use the image of a frog. That these conservatives are anti-development and they will go out of their way to fight for a frog. Why entertain that? Just put them aside, you know what I mean, and not give them a hearing, ignore them
They don't understand. You see, they're still confused about the natural cycle, the ecosystem. People don't understand the routine in order for me to get water. Umgeni Water must channel this water there, then purify it and pipe it to a particular reservoir, from reservoir to your tap. The whole system is not understood.
And when it comes to the environmental activities that we engage in, there have quite a number of sophisticated jargon or sophisticated terms that people do not really understand.
And that to me, it's only when you've got that real groundswell of people saying we demand a clean, healthy environment, that's like our major priority, it's number one on our agenda, or one or two or three on the agenda, only then will those senior guys take is as, well, yes, if I don't do this, there's going to be ramifications.
So I think the lack of that community responsibility is another challenge
And particularly when times were, we were battling financially as an organisation, [catchment management] wasn't seen as that important.
So it was a major restrictive factor, the attitude of [decision-makers]. Not all of them, but the attitude of some [decision-makers] was not so conducive towards this goal of balancing the ecology and the infrastructural needs of the municipality.

6.9.3 Loss of people from the network

Respondents motivation
Because I think you get a lot more done at a local interaction level in your informal mechanisms. But then that has that, as I said earlier, that issue with, it's based on an individual. Take that individual out and your network collapses.

6.9.4 Politics

Respondents motivation
Once the administration changes you must know that there may be some changes too. I have worked with one councillor trying to get landowner consent to rehabilitate a wetland, and then election came and then they changed administration, and then I had to start again with the current one. So that took me back couple of months again. Eventually though, because I'm local, even the new one we did manage, so we have working relations. But it would be faster if the same one would continue. So the change of administration is trouble to me. And I think even to the network.
So the graft issues aside, if it doesn't meet with current political viewpoints that you should spend money on repairing your sewers, building proper new sewers, replacing sewers, doing maintenance work, keeping your

workforce actually doing work and then supplying them with the right tools and equipment, et cetera, that is completely irrelevant as far as they're concerned. And that of course has a huge impact on everything.
Yes. And at our level we're not really picking that up. The politics isn't a constraint.
When it comes to hindrances as to politics, is when they are fighting themselves, then we can't get any work done. We come to a councillor's office and the councillor is not there. You speak to somebody within in the councillor's office and you find that you have spoken to the wrong person who is not in the same camp as the other person, then it creates a number of challenges for us.

6.10 Corruption

Respondents motivation
I think that the current rampant corruption in our society limit me and others like me from working on goals that each of us have in our workplace. So because of rampant corruption, resources are misdirected back to people's individual needs. Strategy and planning are corrupt and so the – how can I say it? – the systemic corruption of the state and slowly our society has a major limiting factor in terms of the kind of work people do.
I think at one point I used to think that the lack of resources, when I first worked, was the problem. That, hey, we don't have enough resources and that is why things are not being done. Now I realise that there's so much resources that are being stolen for people's own personal interests and that is why we are unable to do basic things
And then the other challenge that comes is that at the top people are corrupted and it has filtered down systemically to the lowest parts of an institution. You cannot then get whole institutions to function without people seeing, well, how am I going to privately benefit from this
And so my principal's view currently is when you come across corruption, please think about your personal safety and your value to your family and all of that before you start thinking about the glorious forms of government and where government wants to go
But I think that internal policies and norms that should be in place in a government institution have effectively been disestablished. So basic policies that compel me and other people to do what we should be doing and which give us the space have actually been inverted
...the state is captured and has been increasingly captured by private interests and the Constitution and laws no longer guide the people who have power and take decisions. So it's become a situation where people act in their self-interest at the highest level of most government organisations and you end up not being able to influence those people because they understand that you are working towards the opposite end. You're not exposing them, you're not a whistle-blower, but you're not joining them at the same time. You're trying to say how can we still get back to the business of taking care of people and taking care of our environment.

6.11 Leadership

6.11.1 *Leadership at a group level*

Respondents motivation
So in the CMF I have told the chair that I will not bring [certain individuals] into that forum until he speaks to all the individuals and gets them to stop pointing fingers.
Especially with the CMFs it has been in the past to some extent, and it depends on the chair and how it's managed, it has been a bit of a government bashing exercise, especially at local municipal level. They're an easy target. They're not doing their job and they haven't fixed the potholes and warra-warra. It becomes a bit of a ... And then, you know, no one likes to be criticised and especially if it's not really in their control. They just take abuse and then they go, okay, I'm not going back there again because people are not really wanting to work cooperatively, they're just there to vent their frustration at the nearest government official.

6.11.2 *Leadership at an organisational level*

- Executive support from principal

Respondents motivation
They trust us, put it that way. They sometimes don't even know what we do... Technically they just let us do what we feel is right and in a way we do that. If they knew, maybe they would stop it... No [my principal does not sit in the office].
No, I actually don't think that we've necessarily got senior support.
I think I'm fortunate maybe because I sit in [a different office], but I kind of get to write my own script and I do what needs to be done. And more often than not I do get the support I need to do more.
Not actively [get support]. They just don't hinder me. But I do think that a lot of them think I'm mad maybe to a certain extent doing that, cause it's not acknowledged, so why should you do it?
Well, the answer has to be yes [we have executive support] because up to a certain point it's taking the next step and actually evolving that and getting much more ambitious in terms of the work that could potentially be done in future due to the networking, et cetera. So, yes, we are supported.
Yes, you've got to motivate, but we are still given the freedom to plan your week and do your things. It's not that we have to for every single thing ask permission. Unless it's gonna cost significant resources or I need to fly somewhere, then you always go through your procedures... We really do manage ourselves here because our line manager doesn't sit in the office. So you've kind of got the leash. You do have the ability to manoeuvre yourself in a way that you think is gonna work and to be in the networks that you want to and then to a point and then if you need permission for something you would ask for it, when it's really needed.
But as I say, as long as I was doing my job for them, the space was there.
I do whatever I do. And I know he will not ask me 'why you did it?', because he trusts me. He trusts that whatever I do, there was a need for that and as long as it's in line with our policy, with our strategy. With our strategy, yes. And I have all the support that I need.

- Leadership at higher organisational levels

Respondents motivation
From my perspective, like I say, I have support up to that level but you're not necessarily getting into the support of your upper senior, head of department, et cetera... Well, I think it's a hinderance in a sense of getting, let's say that buy in.

6.11.3 *Leadership from government*

Respondents motivation
Maritzburg is in a bad place. They really are definitely completely bankrupt. I think that's just ... It's bankrupt financially and I think in terms of leadership as well.
So I think the management, the leadership of this, especially the government, is a restriction sometimes to what we do. Cause some, it has not happened personally to me, but some, when you're not employing people here, the councillors will tell you, no, we are not working in this area. And people have targeted a 15 kilometre stream only to stop after 5 kilometres because they cannot go through. So that can restrict others.
Well, two forces. The one force was encouraging. And fortunately we had a good [leader] who was sort of providing cover for me in terms of political leadership... So it's, I don't have one answer to that, it depends on the profile of the leadership at that point in time, sadly.
The leadership, the quality of the leadership, [sets] the tone at the top.
If the traditional leadership does not work in harmony with the local government, you find a lot of challenges that prevents us from accessing their communities, training those communities, involving them in certain

programmes or projects, so it really hinders us. The relationship between the leaders themselves really creates a problem for us.

6.12 Complexity of the system

Respondents motivation
I think firstly we live in a complex and interdependent society and so that condition immediately forces somebody like me or any other practitioner to basically work in partnership with people towards a common goal. So I think the complexity of the problem.
The ecosystem itself, it does, take the flood for example, it takes me back, you'll never believe. Cause you're working on this area, then there comes a flood, working on this area, you go, because you have to come back in six months, the alien plants are massive, more than now. So even the ecosystem itself can become a challenge to me, to say, but I'm trying to take care of you, please.