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Multi-Actor Flood Governance in Cape Town's Informal Settlements Unpacking the Barriers to Collaborative Governance

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Abstract:

Complex social and environmental problems, such as those associated with disaster and climate change, cannot be managed by individual organisations or hierarchical forms of organisation, but require integrated, inclusive multi-actor forms of goverance. Although multi-actor platforms are theoretically a more flexible, participatory and inclusive method of disaster governance, this papers highlights how cooperation between multiple actors with diverse interests and capacities is difficult to achieve in practice.

This study draws on qualitative data collected in Cape Town as part of a broader research project to understand how floods are managed in the city's high flood-risk informal settlements. We present a conceptual framework, called the 'barriers to nodal governance framework' which helps describe and analyse the actors (called 'nodes) governing flood risk in Cape Town's informal settlements. This paper argues that a deeper understanding of the different mentalities, resources, technologies, and institutional structures of multiple actors governing flood risk is one way to explore the barriers to collaborative disaster governance which might arise. Our research on flood risk governance in Cape Town's informal settlements suggests that unclear roles and responsibilities, a lack of monitoring mechanisms, unclear definitions of flooding, and a lack of human resources are significant barriers to collaborative flood governance in Cape Town. Addressing these barriers, through multi-actor platforms, is seen as one approach to creating a more inclusive environment for local disaster risk reduction and resilience in the context of flooding in Cape Town's informal settlements.

Keywords:

Disaster governance, Barriers, Collaborative governance, Flood risk, Municipal decision-making.

1. Introduction

Urban disaster risk management (DRM) needs the cooperation of multiple actors working towards a common goal to ensure that complex risks are addressed holistically. This requires not only a range of approaches to reduce risk, but also a recognition that multiple actors with various skills-sets, tools, and understanding of the problem should be involved in decision- making. In practice, however, these collaborative, decentralised governance approaches, which involve actors often outside of formal networks, are harder to design, implement, and maintain. Institutional and individual mandates, rationales, perceptions, and vested interests often contribute to these cultural differences and diverse framings of the issues (Renn, 2008). Drawing on insights from governance discourse, we argue that complex socio-environmental problems, such as those associated with natural disasters and climate change, cannot be managed by individual organisations or hierarchical forms of organisation, but require instead integrated and inclusive multi-actor forms of governance (Walker et al., 2010, Holley et al., 2011). We recognise that although multi-actor platforms are theoretically a more flexible, participatory and inclusive method of disaster governance, cooperation between multiple actors with diverse interests and capacities is difficult to achieve in practice.

South Africa's national and municipal DRM legislation reflects current governance thinking, with its call for a proactive management approach that is decentralised and integrated across and within government departments, as well as inclusive of external actors and civil society (DRMC, 2012a, van Niekerk, 2006, van Niekerk, 2011, South Africa, 2002, Holloway, 2003). Despite this progressive legislation, there is a mismatch between what is outlined and what happens in practice. DRM at local government level is highly criticised because civil society is merely consulted with, rather than allowed to actively participate in developing and implementing DRM plans (van Niekerk, 2011). This lack of inclusive DRM at the local level is attributed to the lack of necessary institutional structures, within national and local South African government, to encourage proper decentralisation and integration across and within government departments and scales (IFRC, 2012, van Niekerk, 2011, Holloway, 2003).

This research formed part of the broader Flooding in Cape Town under Climate Risk (FliCCR) project (2010-2013) funded by the International Development Research Centre (IDRC) and the Department for

International Development (DFID) under the Climate Change Adaptation in Africa (CCAA) programme. The FliCCR project aimed to identify actors involved in inland flood management and sea-level rise, and to explore the potential for collaborative mechanisms of flood and sea-level rise management, at both municipal and local community levels. This paper draws on FliCCR's inland flooding data and the Joy Waddell's ongoing PhD research. Key actors working for the City of Cape Town (CCT), the Flooding and Storms Emergency Planning Task Team (referred to as 'the Flood Task Team'), non-governmental organisations (NGOs), local politicians (known as 'ward councillors'), and residents living in one high risk informal settlement were interviewed on their experiences of flood risk in informal settlements, how they managed flood risk, and their experiences engaging with other actors. To analyse the data, we have applied a conceptual framework, called the 'barriers to nodal governance framework', to the case study of flood management in Cape Town, South Africa. This framework allows us to identify the different mentalities, resources, technologies, and institutional structures of the multiple actors involved. We highlight how this approach enables us to identify key barriers to collaboration between these actors, and helps us suggest ways to create a more inclusive environment for local DRM in the context of flooding in Cape Town's informal settlements.

2. Disaster governance: multiple actors governing risk

Governance, defined as the intentional shaping or management of the flow of events within a social system (Wood and Shearing, 2007, Ansell and Gash, 2007, Burris et al., 2005), considers the plurality of actors and how they can collaboratively manage events. This draws attention to how social goods and services are managed and shared, and how decisions are made at all scales (Rosenau and Czempiel, 1992, Burris et al., 2005, van Asselt and Renn, 2011). Disaster governance recognises the decentralisation of DRM activities, arguing that DRM is no longer limited to state-oriented hierarchies, but also belongs to the networks and actors outside of the state sphere who have become increasingly involved in the attainment of public goals (Pierre, 2005, Somerville and Haines, 2008, Tierney, 2012).

Tierney (2012) argues that this shift from state-centred management to multi-actor governance reflects broader societal changes such as the rise of contracting and outsourcing, new forms of collaboration (i.e. public-private partnerships and joint ventures), and the replacement of hierarchical, bureaucratic systems of control with more decentralised networked forms of organisation. Kapucu (2011) highlights how disasters have become increasingly global, both in scope and consequence, requiring more advanced mitigation and response operations, as well as better international collaboration of diverse response and relief-related operations. Disaster risks have become too complex and diverse for traditionally centralised,

hierarchical, silo-based, and technocratic management approaches (Burris et al., 2008, Holley et al., 2011). Collaborative governance literature calls for more decentralised, holistic, and integrated approaches which consider the interests of a plurality of actors acting across various scales, and working together on common platforms to engage in decision-making (Holley et al., 2011, Ansell and Gash, 2007). DRM continues to be recognised as a cross-cutting, multi-faceted, and complex process requiring collective efforts from multiple actors, including national policy- and decision-makers, government and private sectors, civil society representatives, academic institutions, and the media (UNISDR, 2007). Multi-actor platforms are seen as a more flexible and participatory governance method, whereby different actors perceiving the same management problems, are brought together voluntarily or statutorily, to collectively agree on strategies for solving problems (Steins and Edwards, 1999, Djalante, 2012). We argue that implementing multi-actor platforms is one way to strengthen local DRM, because they can help nurture diversity through partnerships, bring different sources and forms of knowledge together, build broader and deeper social and ecological memory, increase capacities for information sharing, and empower a broader range of actors to self-organise and re-organise.

3. Study Area

Most of Cape Town's 378 densely populated informal settlements with its estimated 144,000 households (Housing Development Agency, 2013:36) are located on the Cape Flats. The Cape Flats is a large expanse of low-lying, sandy, waterlogged wetland and coastal land about 30 kilometres from Cape Town's central business district (CBD) that is prone to flooding (Figure 1). Floods on the Cape Flats result from heavy rainfall and severe storms during the wet winter months (May-October). Table 1 illustrates the high number of affected households and displaced people from floods and storms every year. The high numbers in 2008 and 2013 coincide with intense storms, which are predicted to increase with climate change (Ziervogel and Smit, 2009).
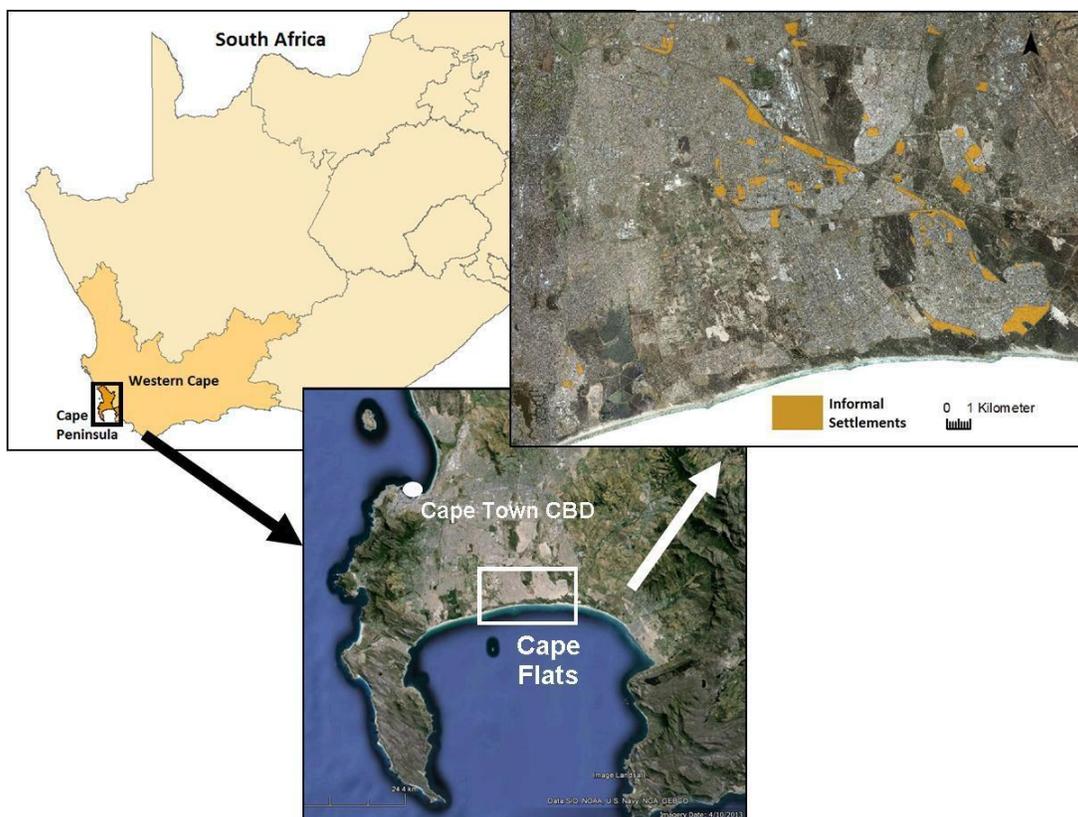
Figure 1: Location of informal settlements on the Cape Flats in Cape Town, South Africa (Source: Waddell, PhD Thesis, unpublished)

Table 1: Number of affected households and people displaced by seasonal flooding and major storm events in Cape Town (2001-2012):

Year	Affected Households	Displaced People
2001	11,000	44,000
2004	4,000	16,000
2007	8,000 – 8,600	32,000 – 34,000
2008	22,323	75,258
2009	11,507	29,011
2010	3,497	9,099
2011	2,636	6,500
2012	5,504	14,000
2013	39,505	158,880

(Source: Disaster Risk Management Centre's reports (DRMC, 2009, 2010, 2011, 2012b), and Hirsch (2013)).

To illustrate the impacts of flooding in informal settlements, and how decisions made by local government impact on the resilience of communities to floods, this paper draws on primary data collected from an informal settlement located on the Cape Flats, called Sweet Home (Figure 2). Over half of Sweet Home's 4,000 shacks (Sacks, 2012, DiMP, 2009) lack basic services such as water, sanitation, stormwater drainage, and electricity. As a 'high risk' informal settlement, Sweet Home is prioritised in the Flood Task Team's annual Winter Preparedness Strategy. Despite the Flood Task Team's proactive interventions - which include educational campaigns on how to 'waterproof' shacks by raising floor levels, building roofs at an angle, and digging trenches to divert water to formal stormwater drainage channels - every winter the Disaster Risk Management Centre (DRMC) have to provide relief to affected shacks in Sweet Home and relocate affected households to nearby shelters.
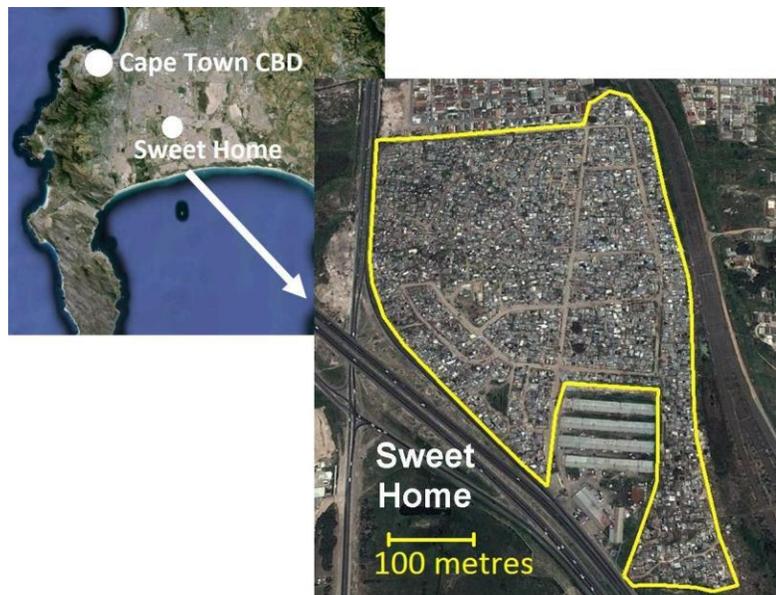
Figure 2: Location of Sweet Home informal settlement (boundary in yellow) in Cape Town (Source: Waddell, PhD Thesis, unpublished)

The nature of flooding on the Cape Flats is characterised by rising waters from saturated water tables, detention ponds filling up (in which informal settlements are often illegally located), and localised flooding from blocked stormwater systems (Benjamin, 2008, Drivdal, 2011a, Drivdal, 2011b). In Sweet Home, flooding results from three main issues:

1. water ponding in communal spaces and inside shacks which are built directly on muddy, low-lying ground;

2. rainwater seeping through cracks in the roofs and walls of badly constructed shacks; and

3. greywater overflowing from blocked stormwater drainage systems into nearby houses which are built below road-level.

Current flood management across Cape Town is coordinated by the DRMC and the Flood Task Team which the DRMC chairs. The Flood Task Team comprises of about 32 CCT municipal departments and selected external actors, who meet weekly during the winter season to design and implement their Winter Preparedness Strategy. The strategy involves "coordinating [flood] risk reduction, preparedness and proposed response and relief efforts… in accordance with the [CCT]'s Flood and Storms Plan" (DRMC, 2009). This Flood Task Team is an example of a multi- actor platform, which, in theory, brings multiple actors together to collectively manage flood risk, yet fails to be inclusive in practice (Ziervogel et al., In Press, Pharoah, 2006, Desportes, 2014).

4. Project Methodology

This study adopted a qualitative case study approach, following closely the activities of the Flood Task Team and the CCT departments represented on this Task Team. In-depth, semi- structured interviews were carried out with CCT officials, and two workshops were held with members of the Flood Task Team to validate data collected from interviews with individual departments. A total of 36 interviews were conducted with 35 CCT officials and nine ward councillors. Sweet Home informal settlement was selected to provide insight into the realities and experiences of residents living in a high-risk flood area, and to validate and ground data collected from interviews with CCT officials. In-depth, semi-structured interviews, focus groups, and participatory workshops were carried out with 32 informal settlement residents. Eleven interviews were also carried out with representatives from local NGOs who play an active role in educating residents on flood risk, and providing relief during flood events. All of the interviews were digitally recorded, transcribed, and then analysed using qualitative analysis software (NVIVO 10). A 'barriers to nodal governance' framework was developed in order to analyse the transcriptions and identify the salient themes in the data. The aims of the data analysis were to develop a deeper, richer understanding of the actors governing flood risk in Cape Town, and the potential barriers to collaborative governance. The following section discusses in further detail the conceptual framework used to analyse the data.

5. Barriers to Nodal Governance: A Conceptual Framework

The 'barriers to nodal governance' framework was developed to analyse the data collected and capture the complexity of flood governance in Cape Town. The framework draws on nodal governance theory which places emphasis on the actors (called 'nodes') governing events, rather than the networks formed between nodes. Nodal governance theory argues that these nodes are the sites where governance

takes place and where groups of actors collaborate to mobilise resources (Burris et al., 2008, Tefre, 2010, Braithwaite, 2004). Nodes differ in their ability to shape and govern events, as a result of their different mentalities, access to resources and technologies, and institutional structures (Burris et al., 2005). By analysing these four characteristics, one can better understand the nodes themselves and therefore how the nodes govern: what constrains or enables them to make decisions and implement interventions, and what influence they exert on the world and the social system they are governing.

Although public participation and multi-actor collaboration are recognised in the literature as essential for strengthening resilience of at-risk communities (Twigg, 2007, Bahadur et al., 2010, Leonhardt, 2012), there are obstacles that inhibit society's ability to collaboratively manage risk (Tseng and Penning-Rowsell, 2012, Cowan and Arsenault, 2008). Cowan and Arsenault (2008:24) explain how collaboration might fail, for example, "because a stakeholder feels disenfranchised, conflict derails the process, and/or parties either disagree or change their minds about the project goals." Recognising that there are barriers constraining nodes from governing, we draw on Ekstrom et al.'s (2011) barriers to adaptation framework in order to identify key barriers which can impede or prevent governance processes from taking place. Barriers here are defined as "obstacles that delay, divert, or temporarily block the… [given] process, but which can be overcome with concerted effort, creative management, change of thinking, prioritization, and any related shifts in resources, land uses, or institutions" (Ekstrom et al., 2011:1) Barriers from a nodal governance perspective are defined as the following:

- **Mentalities:** the way nodes think about and define an issue, and the information and knowledge they value which shapes their perceptions;
- **Resources:** the physical, financial, social, and human capital nodes draw on in order to support their activities and decision-making;
- **Technologies:** the methods used by the nodes to exert influence over a course of events, including technical, engineered measures and non-technical, people-oriented measures; and
- **Institutions**: the laws and formal structure (or lack of) in place, which can impede and delay governance processes and enable or curtail the mobilisation of resources and technologies;

The barriers to nodal governance framework, which draws on both nodal governance theory and barriers to adaptation discourse, helps identify and describe each actor within a particular governance process, and the barriers preventing them from governing effectively. This framework unpacks each node's unique mentalities, which often dictates their actions, responsibilities and understanding of the nature of the problem. This framework also provides a way to look at the resources and technologies available to each node, and the institutional structures within which they act, helping one to better understand where the

overlaps or the gaps might be. By addressing these gaps and overlaps, we can suggest ways to combine strengths and address the gaps; mobilising resources (physical and financial, information- and communications-based) more efficiently to strengthen collaborative outcomes. This paper improves understanding of barriers in collaborative processes, arguing that this process enables decision-makers to begin addressing and overcoming the barriers; thereby strengthening the governance process itself.

6. Exploring the nodes governing flood risk in Cape Town

This paper presents the results from in-depth interviews carried out with eight nodes recognised as centrally involved in flood governance processes in Cape Town more broadly, and Sweet Home informal settlement specifically. These nodes were analysed under the barriers to nodal governance framework, each with different roles and responsibilities related to flood governance (Table 2). These nodes include six CCT departments represented on the Flood Task Team (DRMC, Environmental Health Department, Human Settlements Directorate, Roads and Stormwater Department, Solid Waste Management, and Water and Sanitation), one ward councillor, and a group of residents living in Sweet Home informal settlement. These nodes were actively engaged in the FliCCR project and its multi-actor workshops, as well as identified as central to flood management decision-making through interviews and discussions with multiple actors.

Table 2: Key roles of identified nodes

Node	Key roles
DRMC	Manages and responds to disaster risk across Cape Town. Coordinates the Flood Task Team before and during the winter flooding season.
Environmental Health Department	Central focus on preventing outbreak of diseases and monitoring underlying factors increasing the risk of communities to diseases. Health and hygiene education.
Human Settlements Directorate	General management and monitoring of informal settlements in terms of infrastructure upgrading and service delivery. Preparation and registration of flood victims, supply of emergency flood kits where needed, and coordinating annual risk assessments of informal settlements.
NGOs (e.g. Mustadafin and the Jungle Theatre)	Mustadafin is activated by CCT to provide relief during a disaster event. Jungle Theatre is activated by CCT to run annual fire and flood awareness interactive shows. These NGOs are also involved in specific community-based activities such as education and awareness-raising.

Residents, chairpersons, and street committees from	Residents are affected by annual flooding and carry out community-based and household-based risk reduction activities where possible. The self-elected chairperson and street committees (for a definition of street committees, see Staniland (2008:37-38) take on

This next section applies the barriers to nodal governance framework to explore what some of these barriers are and how they impact on the resilience of communities and the governance of flood risk in Cape Town. Table 3 captures some of the critical barriers based on empirical evidence from Cape Town, whilst the next four subsections discuss in detail some of the key issues emerging from the empirical evidence.

Table 3: Summary of Barriers to Flood Governance in Cape Town

	Empirical Evidence from Cape Town
Mentalities	- Multiple, unclear definitions of the nature of flooding problems and actual needs (of residents) - Unclear/contested roles, mandates and responsibility within/between nodes - Residents lack understanding of why certain flood risk reduction measures chosen over others, or seen as misusing infrastructure designed to protect them - Unrealistic expectations and/or sense of entitlement (i.e. all levels of flood risk seen as CCT's responsibility, with residents not assuming any responsibility for localised flooding) - Perception from all nodes that their hands are tied and the issue is too complex, therefore floods cannot be solved
Resources	- Nodes lack capacity in terms of appropriate skills for engagement, conflict management, facilitation, and leadership skills - Residents lack the means to address flooding (skills, knowledge, resources) - CCT human resources: departments are under-staffed and under-resourced; CCT departments spread too thinly geographically and financially; reliance on contractors without proper monitoring mechanisms and accountability - Resources (i.e. relief and education materials) do not always reach those who requested/need them; lack of monitoring and accountability of these resources and allocation processes

Technologies	- Lack of transparency with regards to service delivery and maintenance (who, when, and how) - Lack of adequate advertising of important meetings and workshops, resulting in many residents missing out on important opportunities to be heard by and to learn from the CCT - Participation and engagement is a lengthy, time-consuming process and often needs are critical and sufficient time is not available; mismatch between officials/politicians' time in office, and a lack of commitment to follow through the whole process because it's too resource- and time-heavy - CCT departments try to bypass local leadership during planning and implementation phases, which results in conflict, delays, vandalism and stalemates

6.1. Mentalities: perceptions of flood management

The perceptions of actors on disasters influence how they respond to and manage disasters (Upham et al., 2009, Whitmarsh, 2008), resulting in actors handling flood protection and management issues very differently (Messner and Meyer, 2005). Adger et al. (2009) highlight how these differences in perceptions often create barriers because it makes it very difficult and often impossible for actors to agree on how to address particular issues. The Isandla Institute (2011) sees contestation in South Africa's service delivery as a result of differences in priorities within government structures and in different local communities. We found similarly in Cape Town that actors often did not agree on the solutions needed to address particular issues - a reflection on the different mandates, worldviews, and educational backgrounds of the various actors. Engineers from the Roads and Stormwater department, for example, defined flooding by the level of water (above knee-level) and duration (more than three days), whilst social and health workers from particular NGOs or the Environmental Health department defined flooding as any amount of water disrupting the livelihoods, activities, and health of individuals. These different definitions of flooding, for example, impact on the ability of departments to activate resources (relief, financial, human) to flooded areas. All the nodes highlighted the need to therefore define terms such as 'flooding' so that all actors have a clear understanding of when a situation is considered a 'flood event' and then be able to respond accordingly.

Another major issue highlighted by various nodes was that of unclear roles and responsibilities within the context of responding to and managing flood risk. In Cape Town's flood governance landscape, nodes identified themselves as playing one of four key roles:

- • Coordination;
- • monitoring and reporting;
- • operational; and
- • response and relief provision.

Nodes were frustrated by the mismatch in how actors saw each other's roles: Water and Sanitation, for example, saw themselves as playing an operational role, yet other nodes saw them as playing a coordinating role; thereby requesting Water and Sanitation to organise multi- actor responses or activities when in reality they lack the resources (financial and human) to do so. Environmental Health similarly saw themselves as playing a monitoring and reporting role (identifying risk and related issues and requesting responsible actors to respond), whilst residents expected them to play an operational role (delivering services and carrying out maintenance of infrastructure). Clearer definitions of roles and responsibilities are therefore needed to address this issue and ensure that there are no impossible and/or unmet expectations, nor any overlap or gaps in responses and/or activities.

6.2. Technologies: communication, participation, and sharing information

Botha and van Niekerk's (2013) analysis of local risk governance in South Africa highlights how local government still follows a top-down approach with officials telling community members what to do rather than asking community members for their input on what should be done. CCT officials and politicians acknowledge the need to engage with communities when assessing flood risk in informal settlements, and designing and implementing solutions. They also argue that this engagement does not take place as it ought to because:

- • it is a lengthy, time-consuming process and often the needs are more urgent;
- • they lack the resources (financial, and human) to engage properly with relevant nodes; and
- • they lack the skills needed for facilitation, conflict management, and communication.

One node suggests that DRM plans and activities fail because "they are not decided upon with the community and are not owned by the community" (DRMC official, 2010). Taing et al. (2011) illustrates through their case study on drainage systems in Cape Town, how engineered solutions implemented in an informal settlement context often fail because these solutions are planned and implemented without input from local communities. In addition, Taing et al. (2011) identify how a lack of education for both officials and residents, on how these solutions function and should be maintained, also result in eventual technical problems.

Finally, nodes identified the need for better communication channels between CCT officials and residents, ward councillors and residents, with external nodes, and between departments. Residents are required to lodge complaints via their local ward councillor, with these complaints then diverted to the relevant CCT department. Many residents see this communication channel as problematic, with complaints of delays and lack of follow-up, and the inability to contact relevant departments directly. The lack of transparency of how calls are handled, and the long delays or indirect responses, results in residents mistrusting the system and trying instead to collect personal numbers of individual officials. This causes further frustrations on both sides. There is a need, therefore for education on how these communication channels operate, and for better monitoring and accountability of these communication channels (i.e. of calls received).

6.3 Resources: monitoring of scarce resources

Fatti and Patel (2013) describe how a lack of financial resources and information often resulted in South African municipal managers feeling disempowered when trying to address flood risk effectively. This same sense of 'hopelessness' is felt by nodes trying to govern flood risk in Cape Town, with nodes pointing towards the lack of financial and human resources, staff capacity and skills to manage conflicts and carry out participatory risk assessments. They also cite the lack of (suitable) land in situations where relocation is the only viable long-term solution for communities living in risk-prone areas. CCT nodes describe how their departments are under-staffed and under-resourced, resulting in nodes spreading themselves too thinly and/or not being able to address all the relevant issues. One DRMC official explained that as the disaster manager of one designated geographical area (out of four), he is responsible for carrying out DRM activities in 118 informal settlements. Environmental Health and DRMC officials both highlighted how the lack of human resources results in them having to take on portfolios and roles they are not equipped to handle.

Finally, a major challenge faced by nodes is that of resources not always reaching the nodes that requested them or need them. Relief provided by DRMC does not go to the people who requested or need it - an issue related to corruption and nepotism. Local leadership in informal settlements, for example, allegedly take the relief and distribute it only to those community members who support their leadership (and/or political party), or directly to family members (whether they are at risk or not). One resident describes how blankets meant for flooded residents were dropped off by DRMC officials to one of the residents claiming they were 'in charge', without checking with the street committee and other residents: "he took the blankets and stored them in his house… that is corruption! He takes the blankets, he gives it to people from [the one] section, directly from his house. Then people think it is not from DRMC" (Sweet Home resident, 2013). This issue highlights a lack of monitoring and accountability of these resources and relevant allocation processes.

6.4. Institutions: regulatory and institutional structures

Staniland (2008) illustrates how failed and often corrupt engagement between local government and communities in Cape Town has resulted in issues of patronage, demobilisation in civil society, and a sedation of activism. Staniland (2008:54-55) goes on to argue that these issues are a result not only of a failure of civil society, but a failure of policy: "The fact that current policy seeks to promote linkages between civil society and local government but at the same time has provided considerable scope for local interpretation, has not established an effective system of oversight, and has allowed the devolution of power to civil society to exist at the discretion of local politicians." This argument, as well as comments from nodes governing flood risk in Cape Town, points towards the need for better monitoring of personnel, resources, and various processes (i.e. communication, engagement, and participation processes), as well as the implementation of policies targeted at ensuring equitable participation of civil society and external actors in governance systems. There needs to be a transparency of these processes, and better monitoring and accountability structures put into place for CCT officials, ward councillors, contractors, local leadership and residents.

Another issue raised by the DRMC node is their placement within the CCT structure as a line function, and how this placement impacts on the node's ability to:

- make decisions and implement actions; and
- better integrate DRR plans across all sectors and departments.

In reflecting on broader national institutional structures, Van Niekerk (2011) explains how the National Disaster Management Centre is incorrectly placed within the hierarchy of government, as a line function. This has resulted in provincial and municipal structures replicating this. In order for DRMC, for example, to be able to influence other nodes within the CCT, and to integrate DRR across departments and activities, they need to be placed within a higher political and operational level (i.e. the City Manager's office).

Botha and van Niekerk (2013:7) highlight from their research in South Africa how "there does not seem to be any form of cooperation between the government departments with regard to disaster prevention." This issue of collaborative versus silo-based approaches was raised by all of the nodes. Some nodes see the Flood Task Team as a great example of how departments have managed to work together and cooperate, whilst other nodes still express concerns of silo-based approaches despite this multi-actor platform. One node expressed how there might be a certain level of collaboration between CCT departments (i.e. on the Flood Task Team), but with regards to CCT nodes working with external nodes such as NGOs and residents, there is very little cooperation: "there's a lot that's been done by various organisations, by various practitioners, universities and entities such like that. But I think we [are] not talking to each other… I think everyone's working in silos, and… we are overlapping… instead of getting together and finding what [are] the best practices" (South African Red Cross Society, 2013).

7. Addressing the barriers to collaborative governance in Cape Town

The empirical evidence from Cape Town has highlighted some of the key barriers to flood governance experienced and perceived by different actors. In understanding what these barriers are, we are able to propose some key next steps recommended for decision-makers and DRM practitioners to strengthen flood risk governance in Cape Town's informal settlements. One of the key issues emerging from the data is the need for decision-makers to implement better monitoring mechanisms, within local government and at the local political ('ward') level and community level. Better monitoring of resources, personnel, and activities is one way to ensure accountability of all actors, to avoid current issues such as corruption, nepotism, and the misuse and mismanagement of critical resources.

Education campaigns also need to be rolled out at the local municipal level to help inform CCT actors of their roles and responsibilities and build their capacity to address some of the root causes of flood risk. Skills development is needed at the municipal and local level, to ensure actors in key decision-making

positions are able to manage conflict in informal settlements, facilitate participatory DRM processes, and assess the needs of local communities. At the community level, current education campaigns can be improved to ensure that communities are not just educated about floods during the flood season, but throughout the year. Different CCT departments need to also collaborate better with local NGOs carrying out specific education drives, pooling their resources and activities to expand their reach in communities across Cape Town.

There needs to also be more deliberate, systematic approaches to fostering collaboration between different actors, through existing multi-actor platforms such as the Flood Task Team. Although the Flood Task Team is a step in the right direction in terms of collaborative disaster governance, residents and local politicians, such as ward councillors, need to also be invited to play a key role in informing and implementing decisions by the Flood Task Team. Another approach which can foster the active participation of residents in DRM processes is to scale existing municipal DRM plans to the ward and community level. These plans can be informed by residents who are best placed to know the risks they face in their communities, and the ward councillors who engage with communities on a daily basis.

8. Conclusions

Proposing collaborative governance as a way to improve flood risk response needs to recognise the conflicting worldviews and agendas of those involved. The barriers to nodal governance framework adopted in this research helps to map the different actors governing risk, and identify the unique mentalities, technologies, resources, and institutions of each actor involved. Better understanding of these actors highlights those areas which create barriers to collaborative disaster governance and, and points toward options to strengthen governance processes. This framework allows researchers and practitioners to collect data on disaster governance processes, allowing comparative analysis between cities or within cities on different types of risks. Collaborative governance is a process that requires engagement across various social and institutional boundaries. Inclusive partnerships and multi-actor platforms are recognised as one way to overcome traditional, silo-based approaches, as long as they are complemented by better monitoring and accountability of these processes and more deliberate, systematic approaches to fostering collaboration between multiple actors.

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