The Production and Coalescence of Knowledge: A Study of Coastal Governance Processes in the eThekwini Municipality

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DECLARATION

I, Tazkiyyah Mohamed Amra, declare that

1. The research reported in this thesis, except where otherwise indicated, is my original research.

2. This thesis has not been submitted for any degree or examination at any other university.

3. This thesis does not contain other persons' data, pictures, graphs or other information, unless specifically acknowledged as being sourced from other persons.

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The research for the project was carried out in KwaZulu Natal from March 2013 to November 2013, under the supervision of Professor Dianne Scott. It is being submitted for the degree, Masters of Development Studies, College of Humanities, School of Built Environment and Development Studies, University of KwaZulu Natal, Durban.

19 March 2016

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Student's signature   Date

ABSTRACT

In the face of climate change, increased uncertainty in coastal and environmental events and intricate socio-economic demands, it is proposed that a wider, more inclusive range of knowledge is required for coastal governance and decision-making. Internationally, there has been a deliberative turn in policy-making, calling for greater collaboration, coordination, and social learning[1]. However, there is little appraisal of these new modes of governance in South Africa and the realm of coastal governance[2]. The study, therefore, addresses this research gap by exploring two different approaches to knowledge production and coalescence for coastal governance and policy-making in the eThekwini Municipality. In South Africa, the ICM Act (2008) establishes mandatory Provincial Coastal Committees and discretionary Municipal Coastal Committees. These state-led institutions are studied alongside an experimental 'competency group'.

The broader project in which the research is positioned, the Knowledge Negotiation for Coastal Governance Project, takes as its point of departure a distinct method of conducting transdisciplinary environmental research, the 'competency group'. It is a joint undertaking by the CSIR (Natural Resources and the Environment) and the UKZN School of Built Environment and Development Studies[3]. The study is qualitative in nature and is based in the interpretive paradigm. The data collection was carried out through in-depth interviews and participant observation.

The study finds that while there has been some progress in recognizing the need for, and potential benefit of, alternative modes of coastal governance and, to a lesser extent, knowledge production in the eThekwini Municipality, there are still critical challenges. These constraints are, inter alia; a lack of local government capacity and resources, a lack of political will amongst state actors and a technocratic management culture that does not inherently support these collaborative or transdisciplinary processes. The study concludes that there is scope for introducing a transdisciplinary knowledge exchange forum in the municipality at two levels: a high-level strategic or visionary forum and a lower level technical forum.

[1, 2] Bäckstrand et al. 2010; Gunningham 2009

[3] Funded by the DST-NRF Global Change Grand Challenge (GCGC) and the Global Change, Society and Sustainability Research Programme Knowledge Challenge D: Innovation for sustainability.

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ACRONYMS AND ABBREVIATIONS

BLSMS	Boat Launch Site Monitoring System
CBO	Community-based Organisations
CMPP	Coastal Management Policy Programme
CSIR	Council for Scientific and Industrial Research
CWG	Coastal Working Group
ICM	Integrated Coastal Management
ICZM	Integrated Coastal Zone Management
KZN	KwaZulu Natal
MCC	Municipal Coastal Committee
MEC	Member of the Executive Council
NEMA	National Environmental Management Act
NGO	Non-governmental Organisations
PCC	Provincial Coastal Committee
UKZN	University of KwaZulu Natal
UNCED	United Nations Conference on Environment and Development
US	United States
WSSD	World Summit on Sustainable Development

CHAPTER 1: INTRODUCTION

1.1. Introduction

Our coasts are complex socio-ecological systems. Climate change, increased uncertainty relating to the functioning of ecological processes and pressing social challenges have changed the way the coastal and marine environment is understood and managed. Coastal Governance is identified as one of the 'wicked problems' faced in contemporary society. Wicked problems, as described by Jentoft & Chuenpagdee (2009), are difficult to define, difficult to separate from other problems and need to be solved and re-solved iteratively. It is proposed that the solutions to these problems are neither wrong nor right and rely on the "collective judgment of stakeholders[4] involved in a process that is experiential, interactive and deliberative" (Jentoft & Chuenpagdee 2009, p.553). Since the late 20th century practitioners and academics alike have promoted alternate modes of management and governance to better manage, protect and plan for our coastal futures (Bremer & Glavovic 2013; Clarke et al. 2013; Jentoft 2007). The move from conventional, technocratic systems of 'government' to systems of 'governance' has sparked much attention in recent years. New modes of governance, defined broadly as "increased interdependency and the need for joint action" (Teisman et al. 2013, p.1), are the order of the day, particularly in western, industrialised countries. This means that policy and decision-making need to be based on more deliberatively produced knowledge to enhance democracy. This study seeks to explore how knowledge is produced and mobilised[5] for coastal governance in the eThekwini Municipality, focusing on the institutions that are mandated to support this kind of democratic engagement.

New modes of governance postulate that there is a shift in the way the role of the state is viewed and takes on a 'deliberative turn' in policy-making. It is proposed that there is a move away from the top-down, hierarchical command-and-control regulation approach to a decentralised, democratic and consensual approach that calls for collaboration, coordination, deliberation and (social) learning across levels and functions (Bäckstrand et al. 2010; Gunningham 2009). Accordingly, new modes of governance spread the influence of non-state actors into administrative, regulatory, mediatory and managerial functions that would previously be undertaken solely by the

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[4] Persons with an interest or concern in the coastal environment
[5] Brought into use in order to achieve broader aims and principles

state. The literature shows that new modes of environmental governance have manifested themselves in various forms including stakeholder dialogues, citizen juries, network governance, public-private partnerships and voluntary standards (Bäckstrand et al. 2010; Clarke et al. 2013; Lane et al. 2010).

It is proposed that new modes of governance increase the inclusivity, responsiveness, legitimacy and effectiveness of environmental governance because it is inherently more inclusive of local knowledges, circumstances and capacities (Gunningham 2009). It "[opens] up politics and [makes] environmental decision-making more inclusive, transparent, accountable and reflexive while at the same time effective and performance-oriented" (Bäckstrand et al. 2010, p.3). Proponents of new modes of governance make an a priori assumption that collective decision-making and participation of non-state actors in a deliberative process produces more holistic and integrated bodies of knowledge and, therefore, increases both the legitimacy and effectiveness of policy outcomes (Bäckstrand et al. 2010). In practice, however, there is little appraisal of these new modes of environmental governance and their effectiveness; with limited understanding of the institutional arrangements best suited to manage and govern different environmental challenges and concerns (Bäckstrand et al. 2010; Gunningham 2009).

In dealing with increasingly complex environmental challenges, governments must concede to their incapacity to effectively deal with these challenges independently. It is widely accepted that effective decision-making and management of the natural environment is contingent upon the interaction of various stakeholders and the actions that result from these interactions (Bremer & Glavovic 2013; Clarke et al. 2013; Teisman et al. 2013). For these interactions to take place, governance and management systems must include appropriate opportunities for the various actors, including policy makers, researchers, the private sector and civil society, to interact and negotiate solutions. Numerous ideas on how these interactions should take place have been put forward in academia. The predominating theories for understanding these deliberative processes include boundary organizations and boundary work (Guston 2001), collaborative governance (Kallis et al. 2009), collaborative policy-making (Innes & Booher 2000), interactive governance (Kooiman & Bavinck 2008), network governance (Huppé et al. 2012; Papadopoulos & Warin 2007) and dialogic methods (Bremer 2013).

At the heart of all these theories is the objective of mobilising practical, high-quality knowledge across the knowledge-governance or science-policy interface (Bremer & Glavovic 2013; Clarke et al. 2013).

The increased complexity of coastal socio-ecological challenges in both developed and developing nations has seen a greater recognition of the need to draw on diverse knowledge types in the decision-making process (Bremer 2013; Bremer & Glavovic 2013; Clarke et al. 2013; Mcfadden 2010). Conventional management systems, in the face of climate change and other environmental challenges, have fallen short in including the diverse actors and knowledges at play in the coastal environment. With the evolution of theories of governance and increasing critique of conventional management systems, there is much scope for practical improvement of existing decision-making processes. Clarke et al. (2013) argue that the predominant failure of national governments to address climate change and other coastal challenges should not come as a surprise. They assert that "a co-requisite for progress in coastal management is the development of institutions and processes that enable different knowledges to have a bearing on governance processes" and that the effective generation, exchange and uptake of knowledge for coastal governance necessitates both receptive governance processes and accessible knowledge systems (Clarke et al. 2013, p.1).

Integrated coastal management (ICM), the now dominant coastal management paradigm, sees collaboration between different knowledge-holders and stakeholders to be essential (Shipman & Stojanovic 2007). While numerous definitions of ICM exist, it may generally be defined as:

> *A broad and dynamic process that . . . requires the active and sustained involvement of the interested public and many stakeholders with interests in how coastal resources are allocated and conflicts are mediated. The ICM process provides a means by which concerns at local, regional and national levels are discussed and future directions are negotiated* (GESAMP 1996).

Central to ICM is the production and uptake of robust and usable knowledge that takes into account the divergent social, economic and environmental challenges encountered by coastal communities. While the theoretical underpinnings of ICM globally seem to

promote this kind of approach to the production, mobilisation and coalescence[6] of knowledge, practical experience, on average, suggests otherwise (Shipman & Stojanovic 2007). Despite widespread acceptance of the theoretical principles of ICM, on-going challenges in responding to coastal socio-ecological challenges prevail. Studies of the European and Australian experiences with ICM show diverse results. In Europe, the vast majority of coastal nations had implemented some level of Integrated Coastal Zone Management (ICZM) as early as 1999. However, as suggested by Shipman & Stojanovic (2007), these ICZM initiatives tend to be inconsistent and fragmented, insecure and devoid of a long-term outlook. They identify four major obstacles in the effective implementation of ICZM, namely; policy gaps, the complexity of responsibilities along the coast, informational obstacles and a democratic deficit and its resulting deficit in accountability (Shipman & Stojanovic 2007). Similarly, in Australia, impeded coastal management arises out of the complexity of the system and the resultant issues that arise; a diversity of coastal management responsibilities and accountabilities; differing approaches to coastal management; and conflicting values (Clarke et al. 2013).

In South Africa, the ICM Act[7] (Act No. 24 of 2008) institutionalises Integrated Coastal Management and creates discretionary *Municipal Coastal Committees* (MCC) and mandatory *Provincial Coastal Committees* (PCC) as stakeholder forums for negotiation and collaboration between stakeholders regarding decisions related to the coastal zone (Republic of South Africa 2009). The mandate of these committees is to bring together all those parties who have an interest in coastal issues and are likely to be affected in some way by decisions made with respect to the coastal zone. These forums are mandated to democratically include a range of representatives and hence enhance democratic decision-making. These committees, which form the knowledge-governance interface within the coastal environment, present some uncertainty vis-à-vis the effective mobilisation of knowledge for governance and management. Internationally, there has been a move towards interdisciplinary and transdisciplinary knowledge production to make the space of learning and innovation between researchers, policy-makers and civil society more robust (Kooiman & Bavinck 2008). While numerous studies have been conducted in the area of interdisciplinary and transdisciplinary

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[6] The processes or actions taken to bring together and consolidate the different knowledges
[7] Hereafter referred to as 'the Act'

knowledge production in Europe and North America over the past two decades, its existence in South Africa is still limited (Celliers et al. 2015).

This project therefore seeks to address an apparent research gap by exploring some of the core concepts, assumptions and approaches in relation to the production, mobilisation and coalescence of knowledge for coastal governance in the South African context. It studies two different types of knowledge-governance institutions, namely the MCCs (formerly the *Coastal Working Group*) and PCCs and a coastal 'competency group', the *Knowledge for Coastal Change Research Group*. The latter is a transdisciplinary forum of local knowledge-holders, which was established as a research experiment along the Durban 'Golden Mile' in March 2013. The goal of the *Knowledge for Coastal Change Research Group* was to co-produce knowledge by facilitating the engagement of knowledge-holders and has a different intent to that of the MCCs and PCCs, which are stakeholder forums (Celliers & Scott 2011).

This thesis postulates that the coastal knowledge-governance interface within the eThekwini Municipality is conventionally dominated by the natural and technical sciences and requires supplementary or modified processes for knowledge production, mobilisation and coalescence if it were to adhere more closely to the principles of sustainable and Integrated Coastal Management. These principles, according to the ICM Act and in line with the NEMA are: viewing the coast as a national asset; allowing the coast to play a central role in economic development; enhancing and preserving social equity and ecological integrity; holism of the coastal system; risk aversion and precaution; accountability and responsibility; integration and participation of the various users and stakeholders in the system; cooperative governance between government and other stakeholders and a 'duty of care' where all people avoid negative impacts to the coast (Celliers et al. 2009, p.7).

The broader study in which this research project is positioned takes as its point of departure a distinct method of conducting transdisciplinary research, namely the 'competency group' as elucidated by Lane et al. (2010). Competency groups are forums for collaborative thinking, which aim to bring together local knowledge-holders (not stakeholders) including multidisciplinary scientific experts to develop a shared

understanding of local environmental issues with the objective of generating 'new knowledge' without necessarily seeking an explicit solution (Landström et al. 2011). This research by Lane et al. (2010) takes as its forerunner the works of Gibbons (1994) and Nowotny et al. (2003), which expound the idea of Mode 2 knowledge production. Mode 2 knowledge production, or rather its co-production, refers to a space of interaction that blurs the lines between the boundaries of science, politics and society (Nowotny et al. 2003). To date, the model of the competency group has been tested in both the United Kingdom and Belgium in the fields of flood risk management and animal husbandry respectively (Lane et al. 2010; Stassart 2008). The competency group in this study is one of the first of its kind in South Africa and the first of its kind in the realm of coastal governance.

The competency group methodology is studied here alongside pre-existing institutions for interdisciplinary coastal governance, namely the *Municipal Coastal Committee* of the eThekwini Municipality and the *Provincial Coastal Committee* of KwaZulu Natal. The MCCs and PCCs were established with the enactment of the ICM Act (Act no. 24 of 2008) and seek to promote ICM within and between each sphere and level of government, and between organs of state and other parties (Celliers et al. 2009). While the competency group aims specifically, to bring together coastal knowledge-holders in a transdisciplinary setting, the members of the MCCs and PCCs are largely stakeholders, who retain their respective stakeholder identities and represent a range of interests. The MCC and PCC bring together the different stakeholders into a single space, where the process of engagement is facilitated to bring together the multiple knowledges of participants to reach mutually agreed-upon solutions, i.e. a process of consensus formation.

The eThekwini Municipality coastal zone, the study area for this research, presents a nuanced institutional and ecological setting. The coastal space is intimately linked with the city; it is one of the primary income generators of the city through its port and tourism activities based on its beaches and is fundamental to the social identity of the city of Durban and its people. The management of the eThekwini coast is conducted through the city's Coastal Engineering Unit, which performs both hard and soft engineering services in consultation with the Environmental Planning and Climate

Protection Department (EPCPD) and in parallel with a strategic Coastal Policy Unit. The latter is responsible for developing high-level coastal strategies in line with long and short-term visions of the municipality. The different line departments working within the municipality implement these strategies. Previously, up to 2010, the municipality had a *Coastal Working Group* (CWG) consisting of municipal officials, NGO representatives, scientists and researchers as well as representatives of the private sector that functioned as a forum for discussion and deliberation of coastal issues. The CWG regularly met for 10 years while it was operational, approximately every three months. It was dissolved in 2010 with the intent of being replaced by the MCC. The MCC however, has yet to be appointed at the time of writing. Similarly, the KwaZulu Natal PCC had met for a number of years prior to 2010, when it stopped meeting and was only reconvened in June 2014[8].

The study, therefore, seeks to contribute to a limited body of knowledge on interactive coastal governance in South Africa, with a focus on the eThekwini Municipality. It explores how the processes of collaborative knowledge production and coalescence may fit into the broader coastal governance system. It endeavours to provide an understanding of the current coastal governance and institutional structures within the eThekwini Municipality and how knowledge may be better mobilised for effective coastal governance. The research, therefore, aims to compare two types of coastal forums to interrogate what these types of forums might provide as mechanisms for broadening the knowledge base of coastal policy making. Governance theories, as they pertain to complex environmental systems are drawn upon to reveal the institutional and interface mechanisms that support knowledge production, mobilisation and negotiation within coastal zone management.

The study is framed within the interpretive paradigm, where the controlling epistemological assumption is that the researcher and the researched co-produce knowledge, and knowledge is socially constructed (Baxter & Jack 2008). The research, qualitative in nature, primarily focuses on the views, understandings and knowledge of various actors within the city's coastal environment to discover their experiences of the knowledge-policy interface and the policy and institutional settings that govern the

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[8] The interviews and data collection for the study had been completed prior to this

coastal space. In-depth interviews were used to attain individual perspectives on the two processes as well as historical and present experiences in the coastal governance domain. In addition, participant observation within the competency group is used as a means of garnering an understanding of how the members of the knowledge production process perceive the process and its usefulness in the coastal governance environment. To a lesser extent, primary data in the form of policy documents from the MCC and PCC are drawn upon as data.

The study is part of a broader project titled Knowledge Negotiation for Coastal Governance within the DST-NRF Global Change Grand Challenge (GCGC) and the Global Change, Society and Sustainability Research Programme Knowledge Challenge D: Innovation for sustainability. It is a joint undertaking by the CSIR (Natural Resources and the Environment) and the University of KwaZulu-Natal's (UKZN) School of Built Environment and Development Studies.

1.2. Research Objectives and Research Questions

The objectives of this study are:

1. To understand how knowledge is produced, coalesced and mobilised in the coastal governance domain, looking specifically at two different forms of knowledge production and coalescence, namely; the formerly institutionalised *eThekwini Coastal Working Group* and *KZN Provincial Coastal Committee* and the experimental *Knowledge For Coastal Change Group*.

2. To understand the role of these institutions and the broader coastal governance environment, and if, focusing specifically on the interface between knowledge and governance, the conventional forms of coastal governance institutions can gain from the experiences the experimental notion of the 'competency group' as a mechanism for producing knowledge for policy making.

In doing so, the following research questions are posed:

1. What is the role and function of the two different forums for coastal governance i.e. *eThekwini Coastal Working Group* and *KZN Provincial Coastal Commitee* and the *Knowlegde For Coastal Change Group*?

2. How is knowledge currently produced for policy-making in the eThekwini coastal governance environment?

3. What are the challenges for producing more 'usable' knowledge?

4. What are the challenges for ensuring uptake of this knowledge by managers?

5. What do members[9] propose as the features and composition of forums for interaction and negotiation for knowledge production and coalescence?

6. What do members envision as the scope and legal character of a competency group-like forum in the municipality's coastal environment?

7. How do members understand the role and possible relationship of the two different forms of knowledge production and coalescence in the context of the South African coastal governance landscape?

1.3. Overview of Structure

Chapter one of this dissertation provides an introduction to the subject at hand, provides motivation for the research and outlines the research objectives of the project. Chapter two delivers a conceptual framework based on existing literature. Chapter three provides a background to the research and the South African coastal governance environment. Chapter four outlines the methodology for the project including methods of data collection, sampling and analysis. Chapter five and six present the findings of the study as well as a discussion of these findings within the theoretical framework. Chapter seven provides a summary of the findings, the conclusion as well as scope for further research.

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[9] Members refers to current or previous participants of the *eThekwini Coastal Working Group, KZN Provincial Coastal Commitee* and/or the *Knowlegde For Coastal Change Group*

CHAPTER 2: CONCEPTUAL FRAMEWORK

2.1. Introduction

It is proposed in the literature that progress in coastal management necessitates the development of institutions and processes that allow different knowledges to have a bearing on the governance process (Bremer & Glavovic 2013; Clarke et al. 2013; McFadden 2007). The conceptual framework presented in this chapter takes this proposal as its starting point and will provide a basis for understanding the governance structures (institutions) and the knowledge-governance interface (processes) in the eThekwini municipality's coastal environment. The literature on deliberative governance and policy-making are explored to provide a framework for understanding the institutional arrangements supporting interactive [10] coastal management and governance in the municipality.

Section 2.2 reviews the evolution of global coastal management perspectives since the 1970s including the move towards ICM and deliberative governance and policy-making. Section 2.3 maps various theoretical models for deliberative policy-making including collaborative governance and policy-making, networked governance and adaptive governance. Section 2.4 highlights the core characteristics and structures necessary for these collaborative processes including; social capital, institutional brokering, organizational bridging and leadership, knowledge sharing, social learning and collaborative visioning. Section 2.5 concludes the chapter and provides a summary of the processes and institutions relevant to the collaborative governance process.

2.2.1. The Evolution of Coastal Management: A Global Perspective

The literature on coastal management has evolved significantly since the 1970s. The first traces of coastal zone management as an independent discipline can be seen in the US Stratton Commission report of 1969 (Bremer & Glavovic 2013). This report, a national endeavour of the United States (US), was seen as a forward-looking prospectus on coastal and marine management, emphasising the value of national coasts and

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[10] A system of governance in which the state interacts with other social actors, market actors and other governments to jointly govern and manage a system (Kooiman & Bavinck 2008)

encouraging investment in scientific research with an agenda to better protect US coasts (Goethe 1970).

This era of coastal management was marked by a "dominant technocratic management paradigm, and its science-based management" (Bremer & Glavovic 2013, p.40). Only in the 1980s, with a greater appreciation of three ideas, namely: global change (including climate change); the move towards interdisciplinary approaches; as well as move from using science as a means of 'technological progress' to using science as a means of ensuring sustainability; did coastal management evolve into integrated coastal management (Bremer & Glavovic 2013). In 1992, the UNCED (United Nations Conference on Environment and Development) Rio Earth Summit and Agenda 21, of which South Africa was a member, "established ICM as the central organizational concept for sustainable coastal management around the world" (Bremer & Glavovic 2013, p.41). While the Rio Summit suggested that all coastal nations would aim to implement an integrated coastal management programme by 2000, this was not binding, and the outcomes were diverse. In the late 1990s and the early 2000s, the discourse of adaptive and collaborative management that emerged proposed that scientists and management personnel should work together to produce coastal management solutions (Bremer & Glavovic 2013; Clarke et al. 2013; Sorensen 1997).

In 2002, the World Summit on Sustainable Development (WSSD) in Johannesburg evaluated progress since the Rio Earth Summit, concluding the large-scale failure of coastal nations to implement ICM. Consequently, the summit revisited the ideas brought forward at Rio along with global developments in coastal management thinking. This resulted in a shift towards an 'ecosystems-based management' discourse: a system that espouses the interconnected nature of the environment, including human, animal and plant influences management (Bremer & Glavovic 2013; Chua et al. 2006). The WSSD, along with the participants at the *Paris Conference on Oceans, Coasts, and Islands* held in 2003, saw ICM as a valid means of re-negotiating the coastal management paradigm, calling for a more holistic approach, involving actors from various backgrounds, and in essence, presenting a 'governance' as opposed to 'management' approach to coastal management (Bremer & Glavovic 2013; Chua et al. 2006).

Bremer & Glavovic (2013) map the development of the science-policy interface in coastal governance into two broad traditions. The first, the science-based interface, continually seeks to better mobilise science for policy and to generate new "science" to solve complex problems. This is known as evidence-based policy-making. The second approach, the participatory interface, seeks to create dialogue between different knowledge disciplines and to integrate diverse (prior) knowledges to solve increasingly complex problems (Bremer & Glavovic 2013). Fundamentally, the former interprets uncertainty as a lack of science while the latter views uncertainty as "inevitable and aggravated by a lack of integration, necessitating interdisciplinary and participatory settings to more effectively bring together the knowledge that already exists" (Bremer & Glavovic 2013, p.42). This shift is interpreted as a shift from Mode 1 knowledge production to Mode 2 knowledge production. This is detailed in section 2.4.3.2 below.

'Knowledge controversies', denoting the crisis of credibility that arises when the public mistrusts science and hence policy, are a growing phenomenon in the global environmental management arena (Lane et al. 2010). In recognising this "crisis of credibility and legitimacy confronting the science-centric interface" (Bremer & Glavovic 2013, p.47) and its inherently political nature, scholars seeking to offer a model with increased credibility and legitimacy espouse an alternate interface as a 'governance setting'. Central to this discourse around ICM as governance is the acceptance that no one group of actors (specifically the state) can adequately deal with the complexity of the challenges experienced within the coastal environment and that salient knowledge is spread across diverse stakeholders and institutions. The task facing ICM is, therefore, to bring together disparate knowledge systems into a single institutional setting and to acknowledge different perspectives and reconcile inconsistent and conflicting perspectives (Bremer & Glavovic 2013). Based on prior research, Bremer & Glavovic (2013) identify the following four normative principles governing the engagement at the science-policy interface for coastal governance:

1) Deliberative – the interface should provide for effective dialogue between stakeholders and the different knowledges that exist within the coastal management environment

2) Participatory and accommodating – the interface must be inclusive of all stakeholders, their knowledges and their values

3) Integrated – the interface should reconcile different perspectives and encourage mutual understandings

4) Quality – both the process of knowledge mobilisation and the products delivered should uphold high standards.

2.2.2. The Deliberative Turn

From a broader perspective, environmental governance literature espouses a 'deliberative turn' in policy-making to make policy outcomes more legitimate and effective. Deliberative ideals have, since the 1990s, been influential through various modes of governance such as networks, public-private partnerships and multi-stakeholder dialogues (Bäckstrand et al. 2010). Crucial to deliberation "is the notion that members of the public should be included and engaged on equal terms in collective decision-making" (Bäckstrand et al. 2010, p.5). While various models of deliberative policy-making and governance have been promoted, there has been limited appraisal of their effectiveness (Papadopoulos & Warin 2007).

The most common models put forward relevant to coastal governance are collaborative governance and policy-making, adaptive governance and network governance. The following sections will discuss each of these concepts drawing out the relevance to coastal governance institutions within the eThekwini Municipality and KZN.

2.3.1. Collaborative Governance and Policy-Making

Collaborative governance, sometimes referred to as participatory management or interactive policy-making, is defined as:

> *a governing arrangement where one or more public agencies directly engage non-state stakeholders in a collective decision-making process that is formal, consensus-oriented, and deliberative and that aims to make or implement public policy or manage public programs or assets* (Ansell & Gash 2007, p.544).

Central to this definition is that the forum is initiated by state agencies, includes non-state actors, that participants are engaged in a decision-making rather than consultative capacity, its formal structure, decisions being based on consensus, and a focus on public

policy and management (Ansell & Gash 2007). Collaborative systems of governance rather than brokering agreement, seek to generate new values and ideas through a process of social learning (Clarke et al. 2013; Norgaard et al. 2009). Comparable to other 'new governance' models, collaborative environmental governance involves a number of basic characteristics, including; participatory dialogue and deliberation, devolved decision-making, flexibility rather than uniformity, inclusiveness, transparency, institutionalised consensus-building and shifts from hierarchy to heterarchy[11] (Gunningham 2009).

Collaboration is thought to be best achieved when a number of factors are in play: a deadlock in solving a particular problem(s), pre-existing social and capital networks, actors with the necessary expertise and resources to generate solutions, a political mandate, pressure and support as well as access to potential financial resources (Kallis et al. 2009). Ansell & Gash (2007) identify three core contingencies for effective collaborative governance: time, trust and interdependence. They find that successful collaborative governance efforts require:

1) Adequate time for consensus-building to take place. Consequently, collaborative governance is unsuitable in situations where decisions need to be made and implemented rapidly.

2) High levels of interdependence – stakeholders in the collaborative process either need to recognise themselves as interdependent before the process begins or to begin to appreciate their interdependence (and build new understandings of their relationships) through the process.

3) Stakeholders to trust each other as well as the process. Though it must be recognised that where high levels of interdependence and low levels of trust exist, it is still possible to manage collaborative efforts successfully and build higher levels of trust (Ansell & Gash 2007).

In addition to these three core contingencies, Clarke et al. (2013) augment the requirements for collaborative governance with the following two criteria:

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[11] A network or system of organization in which different individuals or groups are linked in multiple ways and function horizontally rather than in a top-down manner (as opposed to hierarchy) (Gunningham 2009).

4) Diverse and highly competent knowledge holders

5) Deliberative processes that encouraging mutual sharing and understanding

In attempting to understand the role of the state in collaborative environmental governance, Gunningham (2009), based on an Australian case study of three different environmental collaborative governance initiatives, identifies three distinct roles:

1) The state must provide definitional guidance for the process, including guidance on issues to be addressed, actors involved, spatial jurisdiction and relationship(s) with other institutions/structures.

2) The state should provide actors with incentives for participation or disincentives for non-participation.

3) The state should establish performance indicators or criteria against which the entire collaborative process, as well as individual actors, can be appraised.

Collaborative policy-making, which is not altogether different from collaborative governance, is proposed by political scientists as another form of policy-making (Innes & Booher 2003; Kallis et al. 2009). It is also referred to as collaborative dialogue or collaborative rationality and is based on the notion that complex, rapidly-changing systems can only be improved or adapted if they are well-networked, have "distributed intelligence among its nodes or agents" and feedback from the environment (Innes & Booher 2000, p.4). Apart from its first-order role of solving complex problems, collaborative policy-making is seen as "a way to establish new networks among the players in the system and to increase the distribution of knowledge among these players" (Innes & Booher 2000, p.5). Innes & Booher (2000) identify effective collaborative policy-making endeavours as those that engage in authentic rather than rhetorical or ritualistic dialogue. For authentic dialogue to take place stakeholders must display their interests truthfully, they must legitimately represent the interests of a particular group per sector and their speech must be accurate and comprehendible to all (Innes & Booher 2000). In addition, Innes and Booher (2000) list the following conditions for genuine collaborative policy–making to take place:

a) Participants should engage in joint fact-finding,

b) Conflicts and interests within the group and between members should be identified and shared at the beginning of the process,

c) The group must define its own rules, mission and tasks,

d) The discussion must be facilitated such that each member feels comfortable and safe contributing to the dialogue,

e) Trust between the members and others with whom they work e.g. Administrative staff.

f) There must be a diversity of agents, and

g) Agents should be interdependent (Innes & Booher 2000).

The stakeholders or agents involved in the dialogue need to be representative of diverse interest and knowledge groups and "must depend, to a significant degree, on other agents", each agent having something that other agents want or can learn from (Susskind 2010, p.367).

2.3.2. Network Governance

Network governance or networked governance is defined as "the interconnectedness of independent units of authority and power, whether individual, community, state, or corporate" (International Institute for Sustainable Development 2013). Network governance, which may be seen as a form of collaborative governance, seeks to move away from vertical decision-making and problem-solving structures to horizontal structures and is characterized by systems of communications, knowledge exchange and dialogue (Huppé et al. 2012; Papadopoulos & Warin 2007). It is proposed that by breaking down the 'silo effect' network governance makes channels of knowledge exchange and collaboration more robust, thereby enhancing the effectiveness of decision-making and implementation (Huppé et al. 2012). Network governance is thought to be particularly suitable in dealing with policy problems that are both complex and significant, an example of this being complex environmental policy problems (Huppé et al. 2012; Papadopoulos & Warin 2007). Governance networks, by bringing together various knowledge-holders "allow diverse actors to work collaboratively towards mutually beneficial outcomes" and solutions (Huppé & Creech 2012, p.1). However, this reflexive governance process is only effective when the right level of social capital is available (Papadopoulos & Warin 2007). Huppé & Creech (2012) identify three elements contributing to the efficacy of network governance:

institutional brokering, knowledge sharing and social learning, and collaborative visioning. These concepts will be explored further in section 2.4

Drawing on the works of Huppé et al. (2012), it is contended here that effective collaborative or interactive governance requires the development of both social capital and collective visions. Social capital is defined as the "fabric of trust, shared values and understanding that allows diverse participants to work together towards collective outcomes and common goals" (Huppé et al. 2012, p.1). Collective visioning refers to a process of social learning that leads to shared mental models, joint problem perceptions and relational skills (Huppé & Creech 2012). Social capital and constructive interactions, they argue, are reciprocal phenomenon in governance networks (Huppé & Creech 2012). Developing social capital requires constructive and repeated interactions between different actors, while constructive interactions are contingent on the quality of social capital found in the network (Huppé & Creech 2012, p.1). This section provides an understanding of the core characteristics of effective collaborative or interactive governance networks or groups.

2.4.1. Building Social capital

Various definitions and theories of social capital exist (Adler & Kwon 2009). Social capital, broadly, refers to the value embedded in social networks, derived from the cooperation between individuals and groups. For the purpose of this research the focus here is on the concept of collective social capital as opposed to individual social capital, which refers to the benefits individuals derive from the people and networks with whom they interact. In addition to the definition provided by Huppé & Creech (2012), social capital is defined by Fukuyama (2002, p27) as "shared norms or values that promote social cooperation, instantiated in actual social relationships" and by Cohen and Prusak (2001, p4) as "the stock of active connections among people: the trust, mutual understanding and shared values and behaviours that bind the members of human networks and communities and make cooperative action possible". For governance networks to function effectively, meaningful exchanges, through collective social capital need to take place between the various actors and their capacities. Social capital can be further understood as "being based on trust, mutuality and reciprocity" that arise when dense networks of relationships between actors are present (Huppé &

Creech 2012, p.8). Trust is defined as "the positive expectation that other actors will refrain from opportunistic behaviour, even when they have the opportunity to do so" while mutuality is defined as the "recognition of mutual interdependence and common interest between actors" (Huppé & Creech 2012, p.8). Mutuality is a "relationship whereby the behaviour of one actor occurs in the justified belief of another actor behaving in a certain" way (Huppé & Creech 2012, p.8). Mutuality and reciprocity can be further understood in terms of interdependence. Interdependence, also identified as one of the core contingencies for collaborative governance (refer to section 2.3.1 above) "creates a strong motive for collaboration, and is seen as the starting point for any networked governance process" (Huppé & Creech 2012, p.8). A high interdependence of actors in the network serves as a basis for trust building even when there is a history of low levels of trust in the network (Ansell & Gash 2007; Huppé & Creech 2012). Trust, reciprocity and mutuality are seen to be co-dependent, with an increase in any one leading to an increase in the others.

2.4.2. Institutional Brokering

Institutional brokering, a function of collaborative networks, facilitates the bringing together of disconnected or poorly connected network nodes or clusters to combine resources and expertise for problem solving (Huppé & Creech 2012). In complex systems, such as environmental complex adaptive systems, it is recognised that failures arise not only out of a lack of knowledge, but also out of inappropriate uptake of knowledge that is available (Huppé & Creech 2012).

Consequently, in dealing with complex problems individuals and groups must use and exchange knowledge across domains, integrating collective experiences and knowledge and engaging in a process of collective learning. These collective processes however, must recognize that while ideas come from various sources and through various conduits they require some level of 'knowledge brokerage' to move knowledge between groups and to integrate the different knowledges provided by the various groups (Huppé & Creech 2012). Burt (2004) identifies four steps in knowledge brokerage. Firstly, all actors and groups in the network must be made aware of the problems and interests of other actors and groups within the network. Secondly, best practices must

be acknowledged and transferred within the group. Thirdly, analogies must be used to draw relevance to seemingly unconnected ideas and knowledge that would be useful to others within the network. Fourthly, ideas and knowledge conceived by individuals or groups within the network must be synthesized into something meaningful (Burt 2004).

Two additional mechanisms are thought to support institutional brokering: leadership and bridging organisations. Effective network governance "require[s] leaders to elicit common goals, create trust, broker contributions between organizations and individuals, and deploy resources according to a strategic plan" (Huppé & Creech 2012, p.14). Leaders help create common visions in the group, stimulate commitment from members and direct self-organizing processes. The leader may come from within the organization or may be external (Huppé & Creech 2012).

Bridging organisations refer to the institutions or spaces that provide for:
> *Knowledge co-production, trust building, sense making, collaboration and conflict resolution, and may serve as catalysts and facilitators among various levels of governance, promoting the integration of different resource and knowledge systems* (Huppé & Creech 2012, p.12).

Bridging organisations must create bridges between both previously unconnected individuals and groups. They can take many forms including boundary organisations, communities of learning or may form part of larger organizational entities e.g. governmental committees (Huppé & Creech 2012, p.12)

2.4.3. Bridging Organisations

2.4.3.1. The Boundary Organisation as a Form of Bridging Organisation

One particular institution for organisational bridging is the 'boundary organization', an "institutionalized forum where different knowledge and stakeholders work together to bridge the gaps between disparate frames and viewpoints" (Kallis et al. 2009, p.637). They belong neither to the realm of science nor the realm of politics but stand in between, thus "help[ing to] stabilize the boundary between science and politics" (Guston, 1999, p.88). Through the kinds of interactions they enable, boundary

organisations facilitate shifts in concepts and the emergence of new language to talk about problems and solutions (Kallis et al. 2009). They can either exist as separate entities or form part of larger organisations. While boundary organisations seek to play an intermediary role between different groups, the actual boundary remains fluid, and will itself be negotiated within the workings of the organization (Clarke et al. 2013; Guston 2001; Kallis et al. 2009). They include stakeholders from all sides of the boundary, including scientists and politicians as well as mediators who perform a functionary role. Apart from generating knowledge, boundary organizations "produce social order by redrawing and stabilizing the social boundaries between academic communities and non-academic communities, such as civil society, politics, the administration or the economic sector" (Pohl et al. 2010, p.270).

Not distinctive from the concept of boundary organisations, boundary work centres on the idea that "tensions arise at the interface between communities with different views of what constitutes reliable or useful knowledge" (Clark et al. 2011, p.1). Active boundary work, therefore, serves a mediating role between knowledge and action and between science and policy. Thus, Huitema & Turnhout (2009, p. 578) propose that actors at the science–policy interface engage in boundary work to "legitimise their actions and create constructive working relations" (Huitema & Turnhout 2009, p.578). For example, scientists may try to convince politicians or other groups of the objectivity of their work or policy-makers may try to convince other stakeholders of their position based on their commitment to encompassing diverse stakeholder interests (Huitema & Turnhout 2009). Boundary work, diverging from boundary organisations, may be performed in an individual capacity and is not limited to institutional settings.

Effective boundary work, i.e. those actions that allow for meaningful communication to take place across the boundary, is thought to exhibit the following characteristics:

1) Stakeholders from all sides of the boundary contribute to the agenda and the knowledge produced
2) Governance arrangements allow for accountability of the boundary work/organisation to the relevant stakeholders
3) Boundary objects such as maps, reports or standards are co-produced (Clark et al. 2011)

2.4.3.2. The Competency Group as a Bridging Organization

The 'competency group', a nuanced approach to institutional brokering, is proposed by Lane et al. (2011). Competency groups are forums for collaborative thinking, which aim to bring together local knowledge-holders including multidisciplinary scientific experts to develop a shared understanding of local environmental issues with the objective of generating 'new knowledge' without necessarily seeking an explicit solution (Landström et al. 2011). Stassart (2008) defines the competency group as a forum that "brings together natural and social scientists and non-academic participants for mutual learning, questioning and consideration of a problem" (p.1). Importantly, the competency group repositions the role of scientists and local knowledge-holders such that both are seen as experts in their own right. To date, the methodology of the competency group has been tested in both the United Kingdom and Belgium in the fields of flood risk management and animal husbandry respectively (Lane et al. 2010; Stassart 2008)

This research by Lane et al. (2010) takes as its forerunner the works of Gibbons (1994) and Nowotny (2003) et al., who propose the need for Mode 2 knowledge production. Mode 2 knowledge production, or rather its co-production, refers to a space of interaction that blurs the lines between the boundaries of science, politics and society. Moving away from its hegemonic predecessor, Mode 1 knowledge production, Mode 2 places equal value on science and other disciplines, is "socially distributed, application-oriented, trans-disciplinary, and subject to multiple accountabilities" (Nowotny et al. 2003, p.1). Similarly, the term 'co-production' of knowledge refers to a multi-dimensional problem-solving approach based on a close interaction between the various actors. It may be interdisciplinary or transdisciplinary in nature (Aeberhard & Rist 2009; Nowotny et al. 2003).

A study by Stassart (2008) identifies four key principles in running a competency group:

1. Using the narrative form
2. Creating intersections between the different systems of reference
3. Putting knowledge to the test and learning from each other
4. Suspending strategic interests and interactions.

2.4.4. Knowledge Sharing and Social Learning

A wide body of literature proposes that collaborative or interactive governance institutions and processes must promote shared learning (Bremer & Glavovic 2013; Clark et al. 2011; Clarke et al. 2013; Folke et al. 2005). Shared learning between policy makers and other stakeholders facilitates collective visioning. Social learning, defined differently by various literature, for the purpose of this research, refers to the learning and development of shared meanings and values that takes place in a social or organisational context (Pahl-Wostl et al. 2007). Social learning is seen as a "means of developing and sustaining the capacity of different authorities, experts, interest groups, and the general public to manage" complex (socio-ecological) systems effectively (Pahl-Wostl et al. 2007, p.2). Knowledge generation is seen as insufficient is solving complex problems. Building resilient multi-party social networks, shared visions and flexibility through social learning are imperative in dealing with complex systems. Pahl-Wostl (2007) identify seven fundamental network requirements for social learning:

1. Awareness of different goals and perspectives of network actors
2. Shared problem perception
3. Understanding actors' interdependence
4. Understanding the complexity of the management system
5. Cooperation between actors
6. Trust between actors
7. Creating informal as well as formal relationships

Related to social learning, the co-production of knowledge model provides an alternate framework for understanding shared learning in networks. Knowledge co-production is defined as "the collaborative process of bringing a plurality of knowledge sources and types together to address a defined problem and build an integrated or systems-oriented understanding of that problem" (Armitage et al. 2011, p.996). Two predominate modes of co-production are identified: bridging (boundary) organizations that exist at the intersection of science and politics and "interactive and dynamic endeavours of multiple actors where conventional epistemological realms and roles of different actors are blurred" (Armitage et al. 2011, p.966). The latter corresponds with Mode 2 knowledge production (discussed previously). Pohl et al. (2010, p.271) identify

three predominate challenges in the effective co-production of knowledge in sustainable development endeavours: power (addressing power relationships between the various actors), integration (ensuring that a common understanding emerges) and sustainability (ensuring that knowledge co-production serves the purposes of sustainable development).

2.4.5. Collaborative Visioning

Collaborative visioning may be defined "as a process of creating strategic alignment towards shared visions of the future" (Huppé & Creech 2012, p.30). The various actors in governance networks hold disparate visions of what is possible and desirable. Once the ground has been prepared (stakeholders identified, social capital developed and knowledge shared) network actors can address these disparate visions. Collaborative visioning allows for the transfer of tacit knowledge, the development of social capital and for the collective outcome of collaboration to be greater than what individuals would achieve working on their own, outside of the network (Huppé & Creech 2012, p.23).

Collaborative visioning consists of three cyclical steps (Figure 1):
1. Problem definition and framing
2. Mapping possible solutions and pathways
3. Appraisal of actions

Through these steps actors are engaged in a multi-level learning cycle, which includes:
a) First-order learning: does not challenge the underlying assumptions of individual and organizational behaviour
b) Second-order learning: achieves a new level of insight through actors' revisions of their assumptions within their value-normative framework
c) Third-order learning: learners start to reconsider underlying values, beliefs and world views, if assumptions within a world view do not hold anymore (Huppé & Creech 2012, pp.20–21)
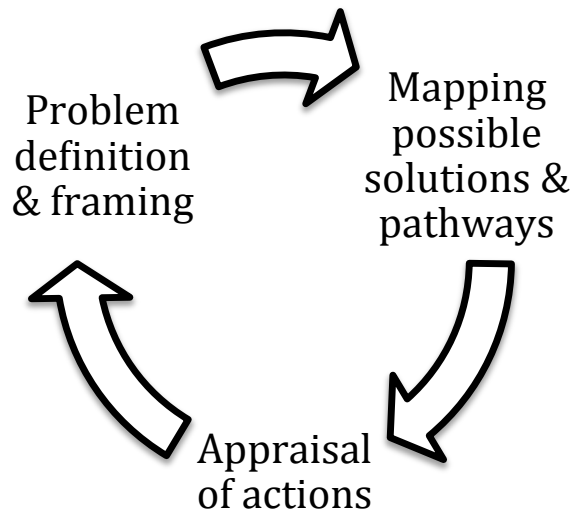
Figure 1: The collaborative visioning process (Huppé & Creech 2012)

2.5. Conclusion

The literature review draws together a range of concepts to understand the institutional and learning processes thought to be integral for knowledge to have a bearing on the coastal governance process. In an era of ICM, deliberation and collaboration are seen to be the central principles guiding management and governance models for the coastal zone. Collaborative efforts require state and non-state actors to come together in a deliberative, non-hierarchical setting. It must include diverse people, each with different knowledges and capacities to contribute. Individuals and groups must suspend their particular interests to work together to produce integrated solutions or ideas. These processes, in order to be successful, need to cultivate environments of trust, respect and mutuality. In addition the process needs to be flexible and iterative, facilitating shared understandings and the creation of new or joint values, problem perceptions and solutions. The process must be self-guided such that members take ownership of, and direct the trajectory and outcomes of the process. The members should share and deliberate both conflicts and common interests early on in the process such that there is an appreciation of the divergent values held in the group. The state should provide guidance and incentives to members while maintaining some level of independence. At a structural level, the process can either be embedded within pre-existing governance institutions or be developed independently with robust feedback

mechanisms between the group and those in management and authority. Lastly, the process should incorporate deliberate methods of knowledge-sharing and synthesis through the guidance or adjudication of designated members with the relevant capacity.

CHAPTER 3: BACKGROUND

3.1. Introduction

In order to understand the relationship between knowledge and governance in the eThekwini Municipality's coastal environment one needs to understand the historical and legal characteristics of coastal management in South Africa. This chapter provides an understanding of the South African coastal governance landscape. Legally, coastal governance is informed by the Integrated Coastal Management Act (ICM) of 2008 (Republic of South Africa 2009), which in turn, is governed by the National Environmental Management Act (NEMA) of 1998 (Republic of South Africa 1998), all of which fall under the broader governance paradigm of cooperative governance. The coastal committees and the experimental competency group are discussed regarding their construction and mandate, so as to frame the discussion.

3.2. South Africa's Coastal Governance System

Environmental and coastal management in South Africa are embedded in a framework of cooperative governance that is embedded in the South African constitution. Cooperative governance, a central theme of South Africa's post-apartheid constitution provides for systematic interactions between the different levels and spheres of government. Various intergovernmental structures are subject to oversight, feedback and monitoring responsibilities between different ministerial bodies; between national, provincial and municipal forums and to the President's Coordinating Council (Burger 2012). In practice, however, there is some discrepancy as to the effectiveness of cooperative governance in the realm of environmental governance. Notwithstanding the general successes of cooperative governance, du Plessis (2005) identifies four primary reasons as to why cooperative governance has been inhibited in the environmental governance domain:

1. A lack of coordination, communication, competency, resources and infrastructure across policy, implementation and management lines
2. A disconnect between environmental, economic and development goals
3. Overlapping mandates between different departments and a misinterpretation of these mandates and the policy and legislation that bring them into being, and

4. A general unwillingness to cooperate

(du Plessis 2005)

It is evident that the system of cooperative governance, as it pertains to the environmental domain, has not been without difficulties. Consequently, it is necessary for the system to be studied with greater depth such that its functions and challenges can be further understood.

3.2.1.The National Environmental Management Act (NEMA)

In 1998, moving away from the previous Environmental Conservation Act and in accordance with the principle of cooperative governance, the South African Government passed the National Environmental Management Act (NEMA), Act No. 107 of 1998 (Republic of South Africa 1998). The NEMA aims:

> *to provide for co-operative environmental governance by establishing principles for decision-making on matters affecting the environment, institutions that will promote co-operative governance and procedures for coordinating environmental functions exercised by organs of state; to provide for certain aspects of the administration and enforcement of other environmental management laws; and to provide for matters connected therewith* (Republic of South Africa 1998, p.2).

Chapter 1 of the Act outlines various national environmental management principles. Principle (r) deals with the coast:

> *Sensitive, vulnerable, highly dynamic or stressed ecosystems, such as coastal shores, estuaries…require specific attention in management and planning procedures, especially where they are subject to significant human resource usage and development pressure* (Republic of South Africa 1998, p.14).

To achieve its aims, the NEMA set up a National Environmental Advisory Forum and the Committee for Environmental Co-ordination (CEC). These two institutions allow for the integration and coordination of various environmental functions, the implementation and monitoring of environmental plans and objectives, mechanisms for stakeholder

interests to be addressed and mechanisms for expert advice to be provided to the Minister of Environmental Affairs (Republic of South Africa 1998).

3.2.2. Integrated Coastal Management (ICM)

The development of ICM in South Africa has been traced by Glavovic (2006c). Glavovic, (2006c) identifies four distinct stages in coastal zone management in South Africa. He classifies the 1970s as an era of ad hoc sector-based management approach. Despite an appreciation for the need for coastal conservation, conservation initiatives in this period were split by sector and carried out by the various state agencies independently and, therefore, lacked coordination (Glavovic 2006c).

In the next stage, the 1980s, there was a move towards "regulating physical development in the coastal zone" (Glavovic 2006c, p.890). The then Department of Environmental Affairs recognized the need to coordinate and regulate coastal zone activities more effectively. Primarily, development projects that could harm the coast and its ecosystems were to be controlled and monitored. While attempts were made at formally legislating Environmental Impact Assessments in 1986, these were withdrawn, and no formal legal instruments were in place until much later, in 1997, when Environmental Impact Assessments became mandatory (Glavovic 2006c). Appreciating this gap, the Council for the Environment (CEC) established the Committee for Coastal and Marine Systems that would deliver recommendations for the development of a national coastal zone management policy. At the same time, there was a sustained and growing interest in capacity-building and knowledge-generation in relation to the coast with the CSIR (Council for Scientific and Industrial Research) developing a close relationship with the Department of Environmental Affairs. While this allowed for progress in understanding ecological and management requirements of the coastal zone, the CSIR and other research bodies, consisting largely of scientists and engineers, made little attempt at incorporating political and socio-economic aspects of coastal zone management into policy (Glavovic 2006c).

The transition to a non-racial democracy in the 1990s led to a greater cognizance of the socio-political aspects of the coastal zone and the impact of apartheid on coastal

management. Coastal zone management, which had, up to now, been dominated by scientists and government officials within a 'conservation discourse' that prescribed technical solutions, would need to become more inclusive, invoke participatory methods and adopt a 'sustainable development' discourse (Glavovic 2006a). Consequently, the Department of Environmental Affairs, in consultation with various stakeholders, sought to develop a Coastal Management Policy Programme (CMPP). Between 1992 and 1994, the CMPP development corpus held workshops and discussions with various stakeholders including; government, liberation organisations, trade unions, the South African National Civics Organisation on behalf of black community-based organisations (CBOs), organised business, parastatal organisations and environmental non-governmental organisations (NGOs) to secure political support. This marked the first "explicit acknowledgement of the political character of coastal management and the importance of securing broad support before initiating a public policy formulation process" (Glavovic 2006c, p.894).

Between 1995 and 1996, a project management team and policy committee were set up to oversee the development of the CMPP. The committee would be accountable for the CMPP and assume financial responsibility (funds were eventually secured via a donation from the British Department for International Development). In 1997, the CMPP was eventually launched. Twenty-two workshops, involving more than eight hundred people from over two hundred organisations, were held to identify coastal issues and define shared visions for each of the thirteen designated coastal regions (Glavovic 2006b). In addition, numerous individual stakeholders and experts were consulted. A National Vision Report, which would lead to the Green Paper (1998) (Department of Environmental Affairs and Tourism 1998), Draft White Paper and finally the White Paper for Sustainable Coastal Development in South Africa (2000), was produced (Department of Environmental Affairs and Tourism 2000). Four key themes were put forward in the White Paper, namely: Recognising the Value of the Coast; Facilitating Sustainable Coastal Development; Promoting Co-ordinated and Integrated Coastal Management; and Introducing a New Style of Management (Department of Environmental Affairs and Tourism 2000). Glavovic (2006, p.897) provides the following evaluation of the White Paper and its contribution:

In contrast to previous efforts, the White Paper highlights, firstly, the value of coastal ecosystems as a cornerstone for human development. Secondly, it is people-centred, stressing the important contribution that sustainable coastal development can make to reconstruction and development. Thirdly, it views the coast as a system and advocates a holistic way of thinking by promoting ICM. Finally, it advocates a new facilitative style of management that involves cooperation and shared responsibility with a range of stakeholders, is responsive to the diversity of the coast and learns from experience. The White Paper points out that realizing the coast's potential will require unprecedented investment in ICM, including political commitment, finances, public awareness, education and training, and new partnerships between key role-players (Glavovic 2006c, p.897).

Following the rhetoric of people-centred, pro-poor ICM, the National Environmental Management: Integrated Coastal Management Act of South Africa (Act No. 24 of 2008) was finally passed eight years later in 2008 (Republic of South Africa 2009). The Act, resembling the White paper, for the most part, aims to:

1. Determine the coastal zone of South Africa
2. Provide for co-ordinated and integrated management of the coastal zone within a framework of cooperative governance and in line with the principles of the NEMA.
3. Preserve, protect, extend and enhance the status of coastal public property as being held in trust by the State on behalf of all South Africans, including future generations
4. Provide equitable access to coastal public property; and
5. Give effect to South Africa's obligations in terms of international law regarding coastal management and the marine environment (Celliers et al. 2009, pp.14–15)

3.2.3. Coastal Committees

Among the institutional arrangements stipulated by the ICM Act, were the National Coastal Committee, Provincial Coastal Committees and Municipal Coastal Committees. Chapter five of the ICM Act establishes the function and composition of these three bodies.

The National Coastal Committee is set up to "promote integrated coastal management…
and effective Cooperative Governance by coordinating the effective implementation of
the ICM Act and the national coastal management programme" (Republic of South Africa
2009, p.30). The National Coastal Committee promotes cooperation within and between
the various spheres of government and between organs of state and other bodies
concerned with the coast. Persons are to be appointed to the National Coastal
Committee by the Minister of Environmental Affairs based on their expertise in coastal
issues and/or the office that they hold. The establishment of the National Coastal
Committee was mandatory with the passing of the Act in 2008. However, it was later
abolished with an amendment to the Act in 2012 (Republic of South Africa 2012). The
NCC is replaced by the Ministerial Committee Working Group Eight. This body does not
operate in the same way that the NCC would have, with its members consisting solely of
governmental departments.

The Provincial Coastal Committee (PCC), having similar aims to the National Coastal
Committee, seeks to promote ICM at a provincial level and to establish the Provincial
Coastal Management Programme. The PCC also advises the Member of Executive
Council (MEC), the provincial lead agency and the National Coastal Committee on
coastal management matters within its jurisdiction. Members are appointed to the PCC
by the MEC and are representative of organs of state and community groups or bodies
that have a direct interest in conservation of the coast and its resources. These
members would include organs of state, members of the MCC, CBOs or NGOs and
scientific or research institutes (Republic of South Africa 2009).

The Municipal Coastal Committee (MCC), in contrast to the PCC, is a voluntary body.
Municipalities may establish an MCC to assist with the implementation and
coordination of the ICM Act and the establishment of a mandatory municipal coastal
management programme. The MCC, similar to the PCC, should advise the municipal
manager, municipal council and the PCC on coastal matters within its jurisdiction
(Republic of South Africa 2009). Neither the KwaZulu Natal (KZN) PCC nor the
eThekwini MCC were in operation at the time of study. The KZN PCC was however
reconvened in June 2014.

The Act also established mandatory provincial lead agencies as organs of state that would lead the implementation of ICM and the establishment of provincial coastal management programmes (Republic of South Africa 2009). The lead agency would provide monitoring and support for coastal management, provide logistical and administrative support to the PCC and promote education and awareness of the coastal environment and sustainable use of its resources (Republic of South Africa 2009).

While the above suggests that ICM in South Africa has developed markedly in the last four decades, incorporating the interests of a large spectrum of stakeholders and taking into account the complexity of the socio-ecological system; it must be acknowledged that implementation of the Act has not been without challenges. In the eThekwini Municipality, a voluntary Coastal Working Group, which comprised predominately of civil society organisations and the research community, was functional for many years preceding the ICM Act (Mather 22 May 2013). After the Act was passed, however, due to a restructuring of the committee, changes in its (legislated) role and responsibilities as well as other less discernable issues, the MCC (which would replace the working group) has, at the time of the study, not been convened. Similarly, the KwaZulu Natal Provincial Coastal Committee, which was preceded by the KwaZulu Natal Coastal Working Group before 2006, and, briefly by a PCC until 2010, has not been appointed since the Act took effect[12] (Mather 22 May 2013). Consequently, there is some uncertainty as to the effectiveness of ICM and the institutions that support it in the province. In the case of the eThekwini Municipality, as well as the province, there is a partial breakdown in the knowledge-governance interface, suggesting a need to investigate why this breakdown has occurred and how knowledge can be better mobilised for ICM. Writing about ICM in the City of Cape Town, a coastal metropolitan municipality on the west coast of the country, Celliers et al. (2015) suggest that forums or committees for information-sharing and consensus-reaching are an appropriate immediate means of strengthening ICM within the municipality. However, they suggest that while the need for this kind of institutional support for ICM is recognized, the Act says little on how these institutions should be shaped (Celliers et al. 2015). International literature, furthermore, provides little guidance on the institution of these mechanisms for coastal governance at the local

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[12] The PCC was reconvened in June 2014, after the data collection/interviews had been conducted.

level (Bremer & Glavovic 2013; Clarke et al. 2013; Stojanovic & Ballinger 2009). This study aims to shed some light on the operation of local coastal governance mechanisms.

3.3. The Coastal Competency Group: An Experiment for the eThekwini Municipality

Recognizing the implementation deficit of ICM in South Africa, the need to better produce and mobilise knowledge for ICM and the need for more robust institutions to support ICM at the local level, the CSIR in conjunction with the UKZN School of Built Environment and Development Studies set out to test the applicability of a radical method of co-producing knowledge, the 'competency group' (Celliers & Scott 2011). The competency group, discussed previously, is a methodology applied by Lane et al. (2011) for engaging the public in response to an environmental controversy by co-producing knowledge through the hybridization of science and other forms of knowledge.

The UKZN-CSIR research team set up a competency group along the Durban 'Golden Mile', a complex coastal socio-ecological system with diverse interests, issues and stakeholders. The research team sought to bring together knowledge-holders that held tacit[13], embedded as well as explicit or codified[14] knowledge about Durban's coastal environment. The members of the competency group were selected from the participants in a series of workshops held on 13 July, 22 November and 23 November 2012 as well as supplementary interviews. The competency group, titled the 'Knowledge for Coastal Change Research Group' met six times between March and November 2013. The group consists of the UKZN-CSIR research team, coastal scientists and researchers, a surfer, a municipal management official (sports and recreation), conservation NGOs, a representative of the KZN provincial Department of Environmental Affairs, a member of a community policing forum and resident of the Durban Beachfront, an environmental consultant, an environmental journalist as well as a municipal coastal policy executive and a member of the municipality's coastal

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[13] Knowledge that is embedded in the heads of those engaged in working and is learned through experience (Carayannis & Campbell 2006, p.72)

[14] Knowledge that is, at least one way or the other, written down and stored (Carayannis & Campbell 2006, p.72)

engineering unit[15] all of whom have considerable knowledge of the Durban Beachfront. The main controversy investigated through the competency group is that of coastal water quality in the eThekwini municipality. The broader project, by studying how the Knowledge for Coastal Change Research Group generates new knowledge and works collaboratively, proposed to test the ability of such a group to provide knowledge for coastal governance.

3.4. The eThekwini Coastal Working Group (Municipal Coastal Committee)

The Municipal Coastal Committee is studied alongside the Knowledge for Coastal Change Research Group. As mentioned previously, the eThekwini Municipal Coastal Committee has not been convened since the enactment of the ICM Act. Consequently, its predecessor, the eThekwini Coastal Working Group (eThekwini CWG) is studied here in terms of its experience and operations. The CWG was in operation for at least ten years but stopped meeting in 2010, with the intention of being replaced by an MCC. The functions of the CWG were established in its terms of reference. Membership of the CWG consisted of government, statutory bodies as well as civil society. The CWG was chaired by the Project Executive: Coastal Policy of the Municipality, met at minimum four times per year and was supported administratively by the Municipality's Corporate Policy Unit (Mather 2004). The aims of the eThekwini CWG are:

1. Promote and facilitate integration, cooperation and coordination between all governmental and non-governmental stakeholders within the eThekwini Municipality.
2. Monitor, advise and influence policy, legislation and regulation formulation as it impacts in the eThekwini Municipality.
3. Monitor, advise on and promote integrated planning and management processes within the eThekwini Municipality.
4. Monitor and advise on the control of, and compliance with policy and legislated implementation procedures within the eThekwini Municipality.
5. Promote education and awareness with regard to coastal management issues amongst all stakeholder groups within the eThekwini Municipality.

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[15] Other people including a ward councilor have also attended meetings, albeit inconsistently.

6. Promote and advise on stakeholder capacity building and empowerment within the eThekwini Municipality.

7. Promote, identify and prioritise research and information collection initiatives within the eThekwini Municipality.

8. Promote sustainable coastal development and tourism within the eThekwini Municipality.

9. Promote initiatives that contribute to coastal poverty alleviation within the eThekwini Municipality.

10. Monitor and advise the relevant stakeholders of marine resource issues

11. Communicate with the KZN Provincial Coastal Working Group regarding the various issues above (Mather 2004).

The Municipal Coastal Committee, a discretionary body in terms of the ICM Act, has similar aims and functions to the previously functioning CWG. Members of the MCC are to be appointed by the MEC (Member of the Executive Council) and may be members of the coastal municipality, representatives of NGOs or CBOs, or scientific or coastal research institutions (Celliers et al. 2009).

In order to provide adequate background for this study, the KZN Provincial Coastal Committee and the KZN Coastal Working Group that preceded it are also studied. The KZN PCC, like the Municipal Coastal Committee, consists of various stakeholders including government, civil society and the private sector. The Municipal Coastal Committees are supposed to report to the Provincial Coastal Committees, while the Provincial Coastal Committee reports to the National Coastal Committee[16]. Both institutions, in terms of their role, function as well as operational experience in the case of the CWG, will be discussed further in Chapter five.

3.5. Study area

The study area for the project is the eThekwini Municipality coastline, which is the jurisdiction of the eThekwini Municipal Coastal Committee. The Knowledge for Coastal Governance Research Group, however, specifically focused on a portion of the

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[16] Replaced by the Ministerial Committee Working Group Eight

Municipality's coastline, the 'Durban Golden Mile', which extends from the Durban Harbour Mouth to the uMngeni River (Figure 2). While these two bodies focus on different areas of the coast, it is assumed that this difference will have no significant impact on the results of the study. The Durban Golden Mile forms the central portion of the Municipality's coastline and issues prevailing along the Golden Mile present the predominate issues of the coastline of the entire Municipality. More importantly, the focus of this research is not on the issues and conflicts that arise within the study areas but rather on the institutional processes that are used to govern and manage the zone. To add depth to the study, the experiences of the members of the KwaZulu Natal Provincial Coastal Committee, the broader system in which the eThekwini Municipal Coastal Committee is nested, is drawn upon. There is some overlap in the membership of the PCC and MCC.

3.6. Conclusion

The evolution of coastal governance in South Africa has seen a move away from a technocratic, ad hoc, sector-based management approach in the 1970s to a sustainable development discourse since the coming of democracy in 1994. The South African coastal zone is governed by the National Environmental Management Act (1998) and the Integrated Coastal Management Act (2008), which call for cooperation between the different departments working within the coastal zone within a framework of cooperative governance. The ICM Act, following a discourse of pro-poor, people-centred sustainable coastal development, established the mandatory Provincial Coastal Committees and the discretionary Municipal Coastal Committees. The aim of these committees is to provide coordination between the different departments and role-players within the coastal zone and to carry out the national Integrated Coastal Management strategy. These committees were studied alongside an experimental coastal competency group, which sought to test a radical method of co-producing knowledge in relation to environmental controversies along the coast. The competency group: the Knowledge for Coastal Change Research Group was a research experiment carried out by a research team from the CSIR and the UKZN School of Built Environment and Development Studies.
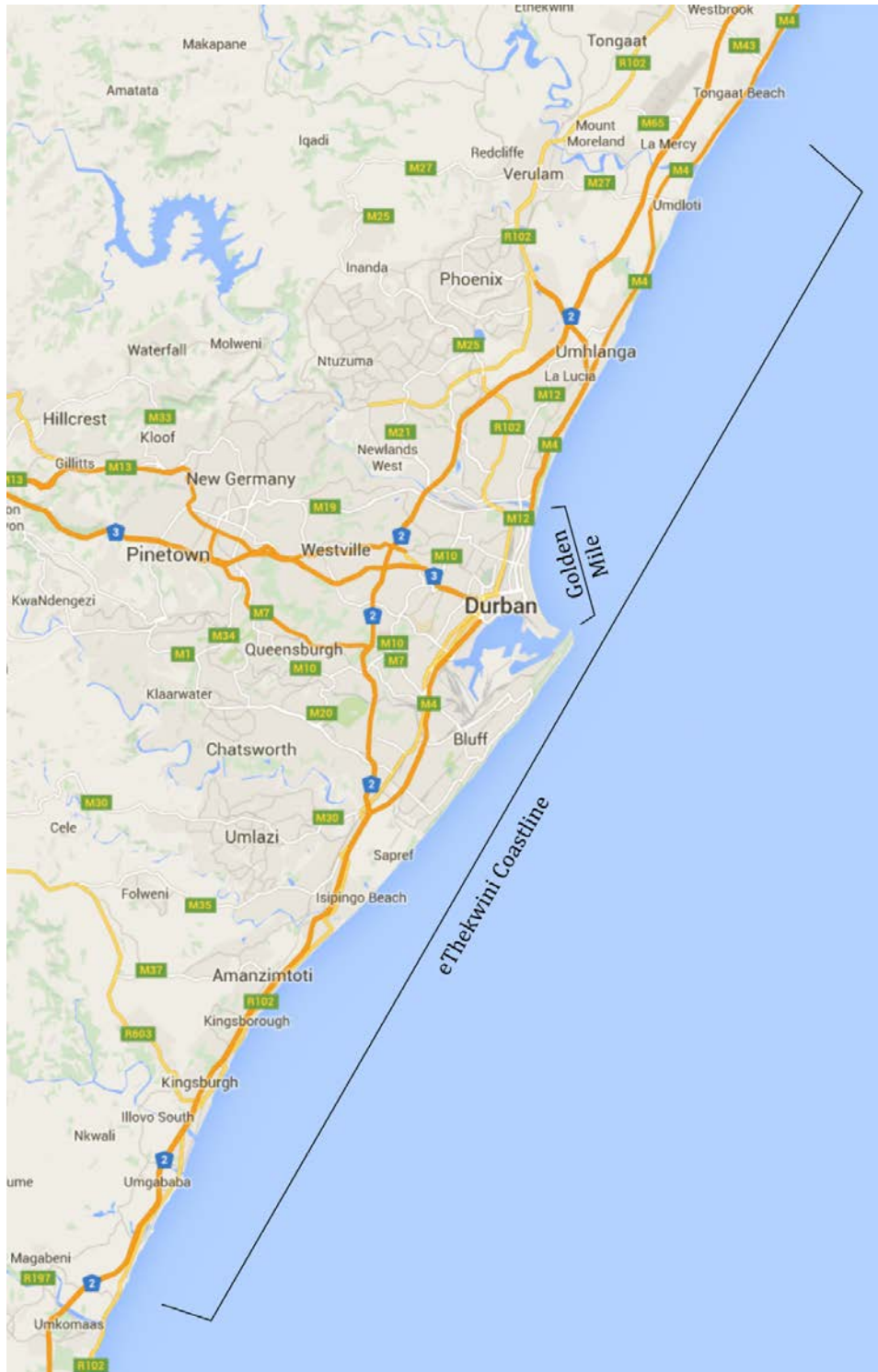
Figure 2: Map showing the extent of the eThekwini Municipality Coastline and the Durban Golden Mile (Source: Google Maps [Accessed: 19 March 2016])

CHAPTER 4: METHODOLOGY

4.1. Introduction

As discussed previously, the study seeks to understand two different approaches to interactive coastal governance within the eThekwini Municipality. The statutory stakeholder forums (the Municipal Coastal Committee and Provincial Coastal Committee) are studied alongside the experimental competency group, a knowledge-holder forum for coproducing knowledge in relation to 'environmental controversies'. In doing so, it seeks to capture the experiences and views of persons within the municipal and provincial coastal governance environment in relation to these two approaches to coastal governance. It was decided that a qualitative study, grounded in a post-positivist[17] framework, would be best suited to address the research objectives. The qualitative approach lends itself to flexible, exploratory, descriptive, inductive methods of analysis and reasoning, permitting holistic and comprehensive results (Rule & John 2011). It is proposed that post-positivist qualitative research can provide critical insight into the values and concepts related to future human and environmental needs, which may be absent in a positivist[18] paradigm (Sharp et al. 2011). "Without post-positivist science to highlight and question the values embedded in those concepts and models we could become frozen in a static set of values with limited ability to revise and reform to suit changing circumstances or under- standings" (Sharp et al. 2011, p.13). In keeping with the tenets of qualitative research, the results of the study do not profess to be generalizable to other coastal environments or to other governance domains but rather to provide a deeper understanding of two specific approaches to coastal governance in the South African context.

The competency group that was set up as part of a research project, the Knowledge for Coastal Change Research Group, is proposed as an instrumental case study. Instrumental case study research seeks not to understand the case per se, but to use the

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[17] "Post-positivists seek to 'deconstruct' concepts and decision processes in order to under-stand backgrounds, values and contexts that influence outcomes… post-positivists undertake intensive case-study-based investigations, typically drawing on qualitative information to illustrate processes, exceptions and barriers" (Sharp et al. 2011, p.1)

[18] "The positivist approach is more traditional and offers immediate utility in an evidence-based, legally defensible policy arena… positivists typically use large quantitative data sets and seek to establish general 'truths' that can be tested and used to forecast" (Sharp et al. 2011, p.1).

case to understand a particular issue or refine theory. The actual case is thought to be of secondary interest to the phenomenon being studied, playing a supportive role to facilitate one's understanding of something else (Baxter & Jack 2008). In this instance, the Knowledge for Coastal Change Research Group, a particular case of interactive coastal governance is counterpoised against the coastal governance forums that have been in existence in the eThekwini Municipality and used to understand the relationship between knowledge and coastal governance processes in these existing forums.

The research is positioned within the interpretative paradigm. The interpretive paradigm assumes that reality is socially constructed with meanings and understandings being developed socially and experientially (Mottier 2005). The social world is not seen "as a collection of external 'facts,' but as a subjectively experienced construct" (Mottier 2005, p.3). Embracing this subjectivity, the interpretive paradigm holds that, "given that this personal grid of interpretation is a fundamental part of our existence, it is impossible to dissociate subjectivity from its horizon of meaning" in our research (Mottier 2005, p.5). Therefore the research and the researcher are seen as intimately linked, the researcher's values are inherent in all phases of the research process and the researcher is seen as inseparable from his or her knowledge (Cohen & Crabtree 2006; Mottier 2005). Considering that I, the researcher, formed part of the UKZN-CSIR research team in the Knowledge for Coastal Change project, this paradigm was thought to be most fitting.

4.2. Research Design

The sources of data for the qualitative research was gathered through open-ended interviews and participant observation by the researcher within the Knowledge for Coastal Change Research Group, as well as drawing on primary policy documents governing the coastal working groups and coastal committees.

In addition to the interviews (the main source of primary data), primary data was sought through participant observation within the Knowledge for Coastal Change Research Group. Data collected at these meetings (including the field trip) were in the

form of field notes. Another source of primary data were the Terms of Reference of both the eThekwini and KZN Coastal Working Groups. These were sourced from the respondents.

4.3. Data Collection

Interviews:

Requests for interviews along with a brief outline of the project's research objectives were sent to all respondents via email. Interviews were conducted in the workplace of the respondents or at an alternative venue on their request. Two interviews were conducted via Skype as these individuals were based outside of Durban. It must be noted that while interviews were requested with political actors within the coastal governance domain, these individuals did not respond to requests (made via telephone and email) and hence no interviews could be conducted.

Open-ended interviews are structured in terms of specific questions they ask but allow for open-ended responses from participants. They allow "participants to contribute as much detailed information as they desire" and for the "researcher to ask probing questions as a means of follow-up" (Turner 2010, p.756). An interview schedule was drawn up in consultation with academic supervisors. The interview schedule was constructed around four key themes; the role of the institution or committee, the functioning of the institution or committee, the role of knowledge in coastal governance and the challenges experienced. Questions posed to respondents differed depending on which institution the respondent was affiliated with. The interview questions were guided by the research questions. Interviews conducted ranged from between forty and eighty minutes. An example of the interview schedule may be found in Appendix A.

The interviews consisted of personal introductions, an explanation of the research, reading and signing of the informed consent form and then followed by the conversation based on the interview questions. The interviews developed organically; with noteworthy discussions that did not stem directly from the interview questions, ensuing both intermittently and at the end of the interview. The data was collected through an audio recording and later transcribed by hand. All respondents granted

permission for their interview to be recorded. However, some respondents requested anonymity in the research output. A brief profile of the respondents, respecting the rights of anonymity, is provided below in Table 1:

Table 1: List of respondents

	Name	Position and Organisation	Sector	Date	Knowledge for Coastal Change Research Group	eThekwini Coastal Working Group	KZN Coastal Working Group (PCC)
A	Andrew Mather	*Coastal Policy Executive* eThekwini Municipality	Government (municipal)	22/05/13	✓	✓	✓
B	Tandi Breetzke	Previous: KZN Department of Agriculture and Environmental Affairs Current: Environmental Consultant	Consulting/ government (provincial)	10/09/13	✓	✓	✓
C	Diana Dold	Previous: *Regional Coordinator* WESSA Current: Coastwatch	NGO	23/09/13		✓	
D	Mr D (pseudonym)	KZN Department of Agriculture and Environmental Affairs	Government (provincial)	01/10/13	✓	✓	✓
E	Louis Celliers	*Research Group Leader* Coastal Systems CSIR Natural Resources and the Environment	Research	07/10/13	✓		✓
F	Fiona MacKay	*Researcher* Oceanographic Research Institute (ORI)	Research	09/10/13			✓
G	Dr G (pseudonym)	Coastal Research Organisation	Research	11/10/13	✓		
H	Rod Bulman	*Public Participation Specialist* Phelamanga Projects	Private sector	15/10/13			✓
I	Rory Wilkinson	South African Property Owners Association (SAPOA)	Private sector	24/10/13		✓	✓
J	Sean Fennesey	Researcher Oceanographic Research Institute (ORI)	Research	09/10/13	✓		

Participant Observation:

The interviews were supplemented by participant observation at meetings of the Knowledge for Coastal Change Research Group, which was recorded through a series of field notes. I attended six three-hour competency group meetings, including the project inception meeting as well as a field trip. The table below captures the notes used in the research (Table 2).

Table 2: Knowledge for Coastal Change Research Group meetings

Meeting No.	Date of Meeting	Agenda or activity
1	12 March 2013	Introduction to the project, introductions among group, mapping of activities and values in the coastal zone.
2	23 April 2013	Field trip around Durban's Golden Mile
3	30 May 2013	Understanding concept of water quality, causes of poor water quality, resources/activities needed to address poor water quality
4	21 August 2013	Knowledge produced by group thus far, understanding water quality modeling (presentation), discussion of model
5	3 October 2013	Member presentations (tourism & eThekwini Coastal Management Programme), name of the group, current state of the coastal zone, vision for the coastal zone going forward
6	19 November 2013	Future of the group, reflections of the experience, knowledge gained, research output and members contribution

Collection of Primary Documents

The interview data was collected through audio recordings and later transcribed by hand. The terms of reference of the eThekwini CWG and the KZN PCC were received via email from a respondent. The field notes were taken by hand and later typed up. All the data was stored on cloud for easy access and safe storage.

4.4 Sampling

Ten key respondents were interviewed. They were purposively selected based on their experience in the coastal environment and their involvement with the Knowledge for Coastal Change Research Group, the KZN Provincial Coastal Committee (formerly the KZN Coastal Working Group) or the eThekwini Coastal Working Group. In purposive

sampling, the emphasis is on quality rather than quantity, with the objective being to achieve high quality, saturated data rather than maximizing numbers (Bowen 2005). The respondents were selected from diverse sectors, namely; coastal and oceanographic research institutions, government (managers), consultancies, NGOs and the private sector. Some respondents were selected in advance while others were selected based on suggestions by early respondents (snowball sampling[19]). Experience in coastal governance and knowledge of the coastal zone was seen as the predominating selection criteria, with all respondents having between 12 and 30 years experience working in the coastal domain.

4.5. Data Analysis

The data was analysed through a simple thematic analysis. Thematic analysis is a method of data analysis that seeks to identify and examine themes and patterns of meaning within a data set. A process of iterative 'coding' is used to identify themes or patterns as they emerge. Braun & Clarke (2013) propose that thematic analysis consists of six phases: familiarising yourself with your data (1), generating initial codes (2), searching for themes (3), reviewing themes (4), defining and naming themes (5) and producing the report (6). These phases are non-linear and must be applied flexibly to fit the data. The researcher moves back and forth through the phases as needed and the process develops over time and must not be rushed (Braun & Clarke 2013). Initial themes were based on the research questions as well as the conceptual framework as developed in Chapter two. Upon further reflection, these themes were revised to produce a final set of themes and sub-themes that would reflect the data. *Dedoose,* a web-based qualitative data analysis tool, was used to make the coding process easier. *Dedoose* allowed for easy coding and manipulation of the data, as well as for easy extraction of excerpts within each theme from the transcriptions. These interview excerpts are used to illustrate findings in Chapter five and six.

4.6. Limitations of Study

As with other qualitative research projects, despite the small sample size, the study was able to provide critical insight into the values and concepts relating to coastal

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[19] Snowball sampling refers to a method of sampling where existing study subjects identify future subjects among their acquaintances.

governance in the eThekwini Municipality. The qualitative method provides the opportunity to "generate rich, detailed data that leave the participants' perspectives intact and provide[s] multiple contexts for understanding the phenomenon under study" (Denzin & Lincoln 2000).

To arrive at high quality saturated data, a diverse group of knowledgeable and experienced respondents who are willing to participate in the process authentically and honestly are required. It is noted, however, as reflected by one of the respondents, that government officials may be apprehensive about fully disclosing information about the structures and context in which they work (Fennessey 9 October 2013). In order to mitigate this problem, respondents were assured of anonymity if they requested it. In addition, non-state actors, who had an understanding of coastal governance and management from a government perspective were also interviewed. One respondent, who works in the private sector, had worked within government previously.

A further limitation, with respect to the selection of study participants, is the absence of black, disadvantaged and/or marginalized groups. Limiting study participants to a largely white, educated and advantaged sample set may result in discounting the perspectives of other socio-economic groups. For example, different socio-economic and/or racial groups may have different perspectives on what coastal governance and management is or is not, or may hold a different set of values around the coast. However, the respondents selected were limited to members of the three forums and therefore the absence of disadvantaged and/or marginalized groups within the forums resulted in an analogous absence among the study's participants. It would have been methodologically inconsistent for disadvantaged and/or marginalized groups extraneous to the forums to have been interviewed.

Termination of the CWG

It is acknowledged that the termination of the eThekwini Coastal Working Group coupled with the fact that the eThekwini MCC has yet to be appointed, poses a limit on the understanding of the potential functioning of the MCC. While the CWG is thought to be the predecessor of the MCC, the MCC is a function of the ICM Act and would, in all

likelihood, operate a little differently compared with the CWG. Similarly, the PCC[20], a mandatory body whose members are to be appointed by the MEC, is a direct successor of the KZN CWG, a voluntary body and is likely to have functioned differently.

Timing of interviews

Finally, it must be noted that most interviews were conducted between the fourth and fifth (out of six) meetings of the Knowledge for Coastal Change. As a result, respondents' views of the process may be susceptible to changing over the last two meetings. In order to address this gap, close attention was paid to participant feedback in the fifth and sixth (final) meetings of the group. Due to the nature of the dissertation; its timeline as well as its scope, the research did not lend itself to a longitudinal study in terms of the interviews. This posed a limit on understanding the evolution of member perceptions and experiences within the competency group. Again, this gap is addressed through participant observation and the field notes that followed from these observations. In addition, the non-operation of the MCC and PCC during the period of study prevented any possibility of first hand experience and observation of their meetings, which would have allowed for greater breadth in the data collected.

4.7. Conclusion

The study seeks to understand two different approaches to interactive coastal governance within the eThekwini Municipality through a qualitative research approach. The study is based in the interpretive paradigm, where the research and researcher are seen as intimately linked and where the subjective experience of the researcher is embraced. The data collection was carried out through in-depth interviews and participant observation within the Knowledge for Coastal Change Research Group. Supplementary data was procured in the form of the terms of reference of the eThekwini CWG and KZN CWG. The analysis was carried out through simple thematic analysis. This included familiarizing oneself with the data by giving time to read and make sense of it before any analysis was done. After that, the data was coded through *Dedoose*, with initial themes, based on the research questions, being drawn upon. The

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[20] The KZN PCC was re-established in June 2014, at which time the interviews and data collection had already been conducted.

themes were then reviewed and refined iteratively to provide a final set of themes for analysis.

CHAPTER 5: A COMPARISON OF THREE DIFFERENT COASTAL MANAGEMENT FORUMS

5.1. Introduction

Chapter five presents the results of the study drawing on the interviews and participant observation (within the Knowledge for Coastal Change Research Group) to answer the research objectives. The concepts presented in Chapter two will be used to analyse the results and will be followed by a discussion. It examines the three different forums for coastal governance to understand how these institutions function in practice and how they can be improved or adapted to ensure better production, coalescence and mobilisation of knowledge for decision-making in the municipality and province.

5.2. The Role and Function of Coastal Management Forums

This section examines the *Ethekwini Coastal Working Group (CWG)*, the *KZN Provincial Coastal Committee* (*PCC*, formerly the *KZN Coastal Working Group*) and the *Knowledge for Coastal Change Research Group* in terms of their purpose (role), how they function in practice and the challenges that they face based on the views of the interview respondents. Section 5.2 provides a preliminary analysis and comparison of the three institutional arrangements, answering research question one: what is the role and function of the two different approaches to coastal governance i.e. the *eThekwini Coastal Working Group* and *KZN Provincial Coastal Committee* and the *Knowledge For Coastal Change Group*? The analysis will be undertaken by examining to what extent these three forums facilitate the effective resolution of coastal issues. In addition, it explores how these forums can be improved to support more robust coastal management and the production, coalescence and uptake of knowledge for decision-making in the coastal zone.

5.2.1. The eThekwini Coastal Working Group

The eThekwini CWG has been in operation since the early 2000s. With the passing of the ICM Act in 2008 it was due to be replaced by the eThekwini Municipal Coastal Committee. The CWG met until 2010, after which it was decided that it would stop meeting until the province appointed the KZN PCC, the body to which all MCCs in the

province would report. The CWG was a voluntary body and was open to anyone who had a stake in the municipality's coastal environment. Initially, members of the CWG were composed largely of representatives from the public and civil society. As it developed, however, greater representation from different departments within the municipality became apparent. At the beginning, the CWG was more flexible in terms of its meeting procedure and agenda, with members being allowed to contribute agenda items on the day. Later on, however, as the institution developed, the meetings took a more structured approach, with agenda items having to be submitted and approved before the meetings. The CWG met between four and six times a year while it was operational (Mather 22 May 2013).

In reflecting on why the MCC has failed to meet or be established since 2010, one respondent suggested that the eThekwini Municipality was relatively more "resourced and capacitated" than other local municipalities and could deal with issues without having the CWG or MCC in place (Mr D 1 October 2013). In probing respondents as to the functioning of the CWG they responded that it had "worked well until 2010", that it was "very useful", allowing for better coordination between municipal departments and improved response-time to problems as a result of greater awareness and reporting of issues (Dold 23 September 2013; Mr D 1 October 2013). In addition, the CWG allowed the Municipality to improve communication with the public (any member of the public was allowed to attend meetings), developed capacity amongst municipal officials and other coastal actors and helped to build networks between them (Dold 23 September 2013; Mather 22 May 2013; Mr D 1 October 2013).

The purpose or role of the CWG, as understood by the respondents (who had been members of the eThekwini CWG) was fourfold: Firstly, it provided a platform for the "facilitation of the resolution of coastal issues" (Mr D 1 October 2103). Secondly, it was formed "largely as a response to coastal stakeholders in eThekwini requiring a platform to raise their concerns or issues for resolution at a local level" (Mr D 1 October 2103). Previously these localised issues would be taken to the KZN CWG, flooding its agenda with issues that could be discussed and resolved at the local level (Mr D 1 October 2103). Thirdly, the CWG was used to provide "a sounding board for decision-making and policy development" such as the development of the Strategic Objectives or the

Coastal Management Programme for the municipality (Mr D 1 October 2103). Fourthly, it is a means of facilitating coordination between different municipal line departments. It allowed them to work in an integrated way, rather than working only towards their separate mandates without considering the mandates of other departments (Breetzke 10 September 2013; Mather 22 May 2013).

The respondents were given the opportunity to reflect on the challenges they encountered within the eThekwini CWG. Among the challenges identified was inadequate representation from departments other than coastal management (Breetzke 10 September 2013). It was thought that there was a lack of political will amongst state actors to engage in such processes and work together for a greater objective (Breetzke 10 September 2013; Dold 23 September 2013) and it was noted that there was often tension between different actors and different departments, with participants "sometimes … going for each other, really aggressively", thereby impeding the cooperation of the group (Mather 22 May 2013). Furthermore, many municipal actors had 'tunnel vision' initially, only understanding and appreciating a single perspective or mandate (Dold 23 September 2013). This was compounded by the fact that different line departments had different priorities and operational time lines. For example, if the engineering department was in the process of implementing a big project they would not attend CWG meetings as this was seen as less important (Mather 22 May 2013). Further contributing to this was the fact that the chair had no mandated authority over the line departments and relied on 'moral persuasion' and 'goodwill and cooperation' for recommendations to be taken forward and be implemented (Mather 22 May 2013). Lastly, the members felt that meetings required too much of a time commitment with "meetings sometimes [taking] place every two months" (Mather 22 May 2013).

5.2.2. Provincial Coastal Committee/ KwaZulu Natal Coastal Working Group (KZN CWG)

To provide a context for the eThekwini CWG and to gain an in-depth understanding as to how these inter or multidisciplinary forums work in practice, the KwaZulu Natal Provincial Coastal Committee (previously the KwaZulu Natal Coastal Working Group) is examined. The KZN PCC is the higher-level body to which the eThekwini CWG reported.

The two bodies were similar in terms of their construction and how they operated, albeit operating at different levels (Mather 22 May 2013). This permits lessons learnt at the provincial level body to have relevance at the municipal level. The KZN CWG was established as a voluntary body in the late 1990s. Like the eThekwini CWG, it was in operation until 2010. The PCC is legislated by the ICM Act (Act No. 24 of 2008), making the KZN CWG (now the PCC) a mandatory body whose members would need to be appointed by the MEC (Mr D 1 October 2013).

Both the Municipal and Provincial CWGs (PCCs) were advisory and consultative rather than decision-making bodies, using 'moral persuasion' to influence different government departments and actors to act in a certain way. The KZN PCC was "not a decision-making body" but provided for the "exchange of information and the influencing of decisions" that were taken by decision makers (Bulman 15 October 2013). It was a forum where "people who were decision makers in provincial and municipal affairs could learn more about what the implication of their decisions would be" (Bulman 15 October 2013). In addition to the primary body of the PCC, the committee set up various sub-committees or technical working groups. These sub committees would deal with specific issues, e.g. boat launch sites, driving on the beach and estuaries (Breetzke 10 September 2013).

The KZN PCC was initially quite flexible in its agenda and makeup but became more structured as it developed. Like the eThekwini CWG, all members were allowed to submit items to the agenda. The agenda would be compiled and circulated by the chair. The PCC would function as the link between the different tiers of the coastal management hierarchy. The province would report to the national level committee while the metropolitan and district municipalities would report to the PCC. Initially actors within the PCC were drawn largely from civil society, NGOs and the private sector. Later on, like the eThekwini CWG, it included more government departments and municipalities (Breetzke 10 September 2013; Mr D 1 October 2013).

The KZN PCC served to foster better cooperation between the different provincial departments, such as the Department of Agriculture and Rural Development and the Department of Economic Development, Tourism and Environmental Affairs, creating an

opportunity for them to learn from each other in relation to coastal issues and take mutually supportive actions. It allowed different departments to learn about each other's work and the impacts that each department's activities and decisions had on the other (Mr D 1 October 2013).

Reflecting on their experiences with the KZN PCC, the respondents expressed a number of ideas as to the functioning of the forum. Breetzke believed that the committee was 'very effective' in terms of bringing different stakeholders together and allowing them to "discuss and share goings-on in the province" (10 September 2013). This led to a relatively high level of cooperation between the different departments, which would otherwise not have been possible. Different departments were able to "learn from each other" and reach better understandings of each other's activities. In addition, the different municipalities had the opportunity to discuss things and "influence the national department… it really was a forum for cooperative governance" (Dold 23 September 2013). It was also evident that the group relied heavily on a powerful chairperson that would direct committee activities, manage personalities and conflicts within the group and hold members responsible for tasks assigned (MacKay 9 October 2013). The process was dominated predominately by those most passionate about the coastal environment, with others members, especially those from government being 'pulled along' or not attending at all (MacKay 9 October 2013).

An important function of the committee was that it allowed people to build networks that would be useful outside of the committee meetings, fostering further dialogue and resolution of issues related to the coast. The informal dialogue and relationships that were formed between people were "really critical: people became acquainted with each other" and each other's work (Breetzke 10 September 2013). These networks were "integral in [pushing] coastal management forward" (Breetzke 10 September 2013). It was also noted that the relationships between members and the different groups within the committee improved over time, improving overall cooperation and effectiveness as an advisory or consultative body. Dr G (11 October 2013) reflects: "because people met regularly with each other and they started to know each other, [the] dynamic changed… they really started working well together" both within and outside the committee. Therefore, the committee also served to create a 'shadow space' or 'shadow system':

"the significant inner social workings that constitute what we call the 'invisible aspects' of municipal institutions for learning and decision-making processes" (Leck & Roberts 2015, p.61). These 'shadow spaces' comprise "personal relationships and alliances, formed and maintained through networks of actors with common challenges and experiences, as well as values and beliefs that transcend formal organisational structures and regulations" (Leck & Roberts 2015, p.62).

Furthermore, the subcommittees of the PCC were thought to be very effective in resolving specific issues e.g. the boat launch sites and estuary subcommittees. They were able to bring together a few (between eight and 20) core stakeholders to solve complex issues, often generating novel ideas and solutions (Bulman 15 October 2013; MacKay 9 October 201;). For example the issue of boat-launch sites as they pertained to the issues of driving on the beach and protecting coastal terrestrial life was readily resolved with the help of the subcommittee, the KZN Boat Launch Site Advisory Group (Breetzke 10 September 2013).

However, the KZN PCC did experience some challenges. It was noted that the agenda tended to be 'bogged down' by smaller, more local issues. Appreciating that "very little was being done", people brought "almost tedious issues to the committee" (MacKay 9 October 2013). This was later addressed through the formation of subcommittees and municipal and district level committees. There was often poor representation and participation. Some departments and districts did not attend; others "attended but didn't participate", while others were not considered the 'right' people from these departments (MacKay 9 October 2013). For example, some departments would send a representative with no decision-making authority, impeding the possibility of recommendations being taken forward. MacKay, a marine scientist and member of the previous PCC reflects:

> *we desperately tried to get the Department of Water Affairs and Minerals and Energy because they were key to the issues but they just never came, and even District Municipalities. They didn't pitch…. there are also a lot of useless, inactive people sitting on committees… You need the exact right people…. Everybody who has a stake in that environment needs to be there* (9 October 2013).

There was also some uncertainty among the respondents about the outcomes and tangible products of the committee as it had "no direct product apart from the meeting minutes, which is probably a bad thing" (MacKay 9 October 2013) and even these were not shared beyond the members of the committee (Celliers 7 October 2013). Furthermore, The body had no decision-making authority. It could not make decisions on behalf of other agencies (Celliers 7 October 2013). It relied on 'goodwill' and 'moral persuasion' for recommendations to be taken forward, which was not always effective (Celliers 7 October 2013). Mr D reflects on this fundamental weakness of the committee:

> *Whether or not issues get taken forward with these kind of forums depends largely on whether there is a legal mandate to do so… You need decision makers there. You have to have high-level people that are influential. You need the right people. I'm not discounting the fact that there are people at a local level who have lots of knowledge* (1 October 2013).

There was a tendency for the committee to get slowed-down by political issues (MacKay 9 October 2013; Wilkinson 24 October 2013) with people in the committee (stakeholders) often having 'vested interests' that they tried to push forward, making the committee less objective (Breetzke 10 September 2013; Wilkinson 24 October 2013). There was a clash of priorities within the Department of Environmental Affairs. Some actors were acting in accordance with the principles of ICM and NEMA while others would ignore them, sanctioning activities that should not have been allowed:

> *On the one hand, you had the Department calling for assistance (how can we stop this) and [on the other hand] giving sanction to do the very things that they were trying to stop. It was a very interesting dichotomy. The Department was running in two very different cleaved paths, the mop-up mob trying to solve the issues, [and the] minister at the time was giving strange permissions that maybe shouldn't have been given. There was a lack of coordination* (MacKay 9 October 2013).

5.2.3. The eThekwini CWG and the KZN PCC as systems of collaborative governance

It may be contended, drawing on the experiences of the eThekwini CWG and the KZN PCC (previously the KZN CWG), that these institutions form a system of collaborative governance within the coastal environment. They are systems of governance that involve both state and non-state actors in interactions that are deliberative with an intention to influence coastal management by the state (Bremer & Glavovic 2013). The concept of collaborative governance as presented in the conceptual framework (Chapter two) is a useful concept to evaluate these institutional arrangements. The defining feature of the PCC and the CWG are that they involve both the public (civil society) and government in a deliberative forum aimed at problem-solving. These institutions provided a space or platform for interaction between the different stakeholders, which would otherwise be absent. Both forums sought to enhance decision-making and problem-solving by bringing together independent units of authority and fostering dialogue, knowledge exchange and communications among them (Huppé & Creech 2012). Through these institutions, different stakeholders in the coastal environment can build networks (social capital), build capacity (human capital) and are provided with a space for cross-disciplinary and cross-department engagement.

Drawing on the theory it is proposed that these forums possess the salient features of a collaborative governance model. However, when interrogating the softer characteristics of the two organisations they differ from the 'collaborative governance' institution described in the literature in a number of respects (Clarke et al. 2013; Norgaard et al. 2009). Firstly, the model proposes that a collaborative or network governance institution requires the right level of social capital to function correctly. This can only be achieved when the institution has the appropriate composition of members and an environment that facilitates engagement and collaboration (Huppé & Creech 2012). The CWG and PCC, while having a range of members, lack sufficient representation from departments other than Coastal Management. In the case of the PCC, insufficient representation from some municipal districts was also observed. The potential to build social capital is further hindered by the lack of political will, with those most committed to attending and participating constructively, being largely limited to those in research organisations and NGOs or those who are particularly passionate about the coastal

environment (Adger 2012). Impacting on the nature of dialogue within CWG and PCC are political issues, members pushing their vested interests and differing priorities, and social tensions that inhibit members' cooperation (Gunningham 2009). This results in poor uptake of recommendations given by the committee as well as inhibited and inauthentic participation in, and attendance of meetings.

It is further proposed in the collaborative governance model that the correct level of 'institutional brokering' and leadership is crucial for effective network governance to take place (Huppé & Creech 2012). While the CWG and PCC provide the structural mechanism for disconnected network nodes to come together and collaborate, their effectiveness was constrained by the limited power of the leadership. While both institutions have appointed leaders, and function better when guided by more powerful leaders, they necessarily rely on 'moral persuasion' to influence members. In the previous (non-statutory) iterations of both institutions, their impact relied directly on members' commitment to taking decisions and suggestions forward to their respective organisations and spheres of influence (Mather 22 May 2013). These earlier institutions had no mandated authority to effect decisions made, nor were its members all decision-makers, a seeming weakness in this type of institution (Breetzke 10 September 2013; Dold 23 September 2013; Huppé et al. 2012). Interestingly, the subcommittees of the PCC did not suffer from this weakness. Possible reasons for this may be that the sub-committees had fewer members, dealt with very specific (and resolvable) issues and hence involved people with specific and similar knowledges and institutional commitments. For example, the KZN Boat Launch Site Advisory Group, a subcommittee of the PCC, was a multi-stakeholder project that worked to establish a Boat Launch Site Monitoring System (BLSMS) during 2011. The BLSMS would scientifically establish safe and unsafe areas for launching boats on the province's beaches such that environmental damage as a result of launching is kept to a minimum (Mann et al. 2014). This suggests that the impact of committees with a focused mandate, like the sub-committees, is more readily realised because they consist of fewer members, members with a similar professional background, e.g. technical knowledge and deal with specific and resolvable issues.

While the CWG and PCC are not constructed as institutions for knowledge production per se, their objectives inherently support the production, or at least the coalescence of different knowledges to facilitate more robust decision-making and management of the coastal zone. The ICM ACT sets out in its objectives for the two institutions the promotion of ICM and effective cooperative governance (Republic of South Africa 2009). ICM, both internationally and within South Africa takes a governance approach of collaboration and negotiation among stakeholders within the coastal environment (Celliers et al. 2009). The evidence shows that the CWG and PCC have the ability to facilitate knowledge sharing and social learning and that this was broadly perceptible in both institutions (Breetzke 10 September 2013; MacKay 9 October 2013; Mr D 1 October 2013). In general, the various members within the forums shared knowledge, best practices and experiences with each other. However, there was a tendency of some members to participate and share more readily than others. On occasion, some departments within the Municipality would send people who were reluctant to share, essentially making them non-contributors to the forum and compromising the objective of mutuality and reciprocity in the forum (Huppé & Creech 2012). This suggests that selecting or appointing the appropriate members in these forums, and having strong leadership and member buy-in has a direct impact on the effectiveness of the forum. Not only do members need to hold the right set of knowledge but also need to have influence in the spaces that they come from, need to be open to sharing and learning and need to, at some level, appreciate the value of collaborative approaches to coastal management and decision-making (Kallis et al. 2009; Susskind 2010). It is proposed that members of decision-making forums need to appreciate their interdependence and behave in a manner that supports this interdependence and mutuality rather than displaying non-participative or non-cooperative behaviour (Huppé & Creech 2012).

Furthermore, as evident in the previous PCC, developing trust in the forum takes time, with members initially displaying anti-cooperative behaviour but later growing to trust each other more. Where a culture of trust and mutuality is not present it is proposed that the potential for 'coaching' members and cultivating this kind of environment must be explored (Pohl et al. 2010). The literature indicates that this may be achieved through allowing members to take ownership of the process and trajectory of the forum from the outset, being made aware of the different perspectives and goals of members,

and managing power relations within the forum (Pohl et al. 2010). The latter is supported by the experiences of the CWG and PCC, which were known to function better with a powerful leader who could create a culture of cooperation and inclusiveness directed the forum (Mather 22 May 2013).

On comparing members experience in the two forums with the four steps in knowledge brokerage as explained by Burt (2004) it is evident that only the first two steps are realized. That is, members are made aware of each other's problems and interests (step one) and best practices are to some extent acknowledged and transferred (step two). However, steps three (using analogies to connect seemingly unconnected ideas) and four (products are synthesized into something meaningful) are not evident in the two forums. The only direct product from the forums was the minutes of meetings, which was thought to be inadequate and a challenge for the forum (Celliers 7 October 2013; MacKay 9 October 2013). Limiting the product of these committees to meeting minutes restricted their impact, as these minutes would only be available to those who attended the committee. In addition, the minutes did not contribute to the larger body of knowledge of the coastal management environment. Without these steps being present, the knowledge produced in the forum is neither fully integrated nor has it been fully transferred between the different individuals or specialist groups within the forum (Burt 2004).

While knowledge production is not an explicit aim of the PCC or CWG, it is thought that effective production and coalescence of knowledge would result in collaborative visioning among the members. Collaborative visioning, defined "as a process of creating strategic alignment towards shared visions of the future" (Huppé & Creech 2012, p.30) may be seen as an underlying objective of collaborative coastal governance forums (Mather 22 May 2013). Processes of knowledge-sharing and social learning, when effective, should lead to collaborative visioning among the members of the institution (Huppé & Creech 2012). The results of the interviews showed that of the three levels of the collaborative visioning learning process (first-order learning, second-order learning, third-order learning), most learning within the forums only reached the first-order level. In other words, members shared their knowledge and experiences but did not engage at a level that would allow them to question or alter their underlying

assumptions (Huppé & Creech 2012). It may be argued that the explicit aim and objectives of the forums do not profess to engage second-order or third-order learning in terms of their mandates, however, if this kind of learning does not take place, members remained attached to their own 'vested interests' (Breetzke 10 September 2013), are trapped in 'tunnel visions' (Dold 23 September 2013) and do not have the 'political will' (Dold 23 September 2013) to support and engage fully in the forum. Accordingly, members in the forum had the expectation of engaging beyond a simple sharing of knowledge (first-order learning) to the questioning and altering of perceptions and found the absence of this stage of learning to be a challenge for the forums (Breetzke 10 September 2013, Dold 23 September 2013). In the absence of second and third order learning members are unable to confront their biases and assumptions, inhibiting their ability to work for a cohesive vision and set of values around the coast (Huppé & Creech 2012).

Thus, the experiences of the respondents of the eThekwini CWG and the KZN PCC show that these stakeholder forums are deemed successful in bringing different stakeholders together in a single space for the purpose of discussion and deliberation. It is evident that without the CWG and PCC there is limited opportunity for different municipal and provincial departments and stakeholders to engage. Evidence shows that there are unique circumstances, however, where individuals either have pre-existing relationships with other members or go out and purposefully forge these relationships e.g. some members knew each other because of their previous jobs or through informal social networks (Mr D 1 October 2013). The latter requires the individuals to have an appreciation for the interdisciplinary knowledge necessary for understanding and managing the coastline and the competing demands and priorities this presents (Clarke et al. 2013; Mcfadden 2010). This perception is the exception among stakeholders rather than the norm. Consequently, the non-operation of these forums is a drawback to the management of the coastal environment and the different players involved with this. Managers and policy-makers should, therefore, guarantee that these forums are always in operation and address political and administrative backlogs[21] (as experienced between 2010 and 2013) that hinder their operation.

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[21] The eThekwini CWG and KZN PCC did not operate within the period in which the field work was done (March 2013-November 2013) due to backlogs in selecting members and in the case

In conclusion, when these forums are in operation greater effort needs to be made to create a culture of trust and interdependence to allow members to suspend their individual (disciplinary) interests in the interest of a common, collective vision (Ansell & Gash 2007). Similarly, members need to be made aware of the importance of the forums to increase their commitment to attending the forum as well as their meaningful participation and cooperation in it. There is scope for improving the nature of deliberation in the forums and moving them towards spaces for co-producing new knowledge about the coastal environment through careful leadership and management of the forums, as well as nurturing the relationships within them (Huppé & Creech 2012).

5.2.4. Knowledge for Coastal Change Research Group

The Knowledge for Coastal Change Research Group was set up by the Knowledge for Coastal Change research team as a research experiment along the Durban 'Golden Mile'. It was based on a model developed in the United Kingdom for providing knowledge to help solve 'environmental controversies' (Lane et al. 2010). This group of researchers brought together local knowledge-holders and scientists with knowledge of the environmental controversy of coastal management into a transdisciplinary setting. Members of the group were selected based on their knowledge of the coastal environment, as opposed to their political stake or position of authority (representing a specific entity). The members were selected to represent the range of knowledge that exists in relation to the coastal zone using a typology of 'types of knowledge', ranging from tacit, embedded professional and codified knowledge (Carayannis & Campbell 2006). It was, therefore, a knowledge-holder forum as opposed to a stakeholder forum. The meetings were chaired predominately by the UKZN members of the research team (academics in the field of Development Studies) and intermittently by the CSIR members of the research team (researchers in the coastal environment). The meetings were explicitly designed in a manner that would allow all knowledge-holders to contribute equally to the meetings (Field notes, Meeting 3, 30 May 2013).

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of the CWG, waiting for the over-arching body, the PCC, to first be established. The PCC was reconvened in June 2014. The CWG has yet to be convened.

The Knowledge for Coastal Change Research Group sought to test the competency group model of knowledge production in the context of South Africa, as a developing country with complex socio-economic conditions, and specifically within the eThekwini Municipality. The objective of the Knowledge for Coastal Change Research Group was a once-off research initiative, which aimed to feed into the eThekwini Coastal Management Plan for the central coastal zone of the eThekwini Municipality. Reflecting on their experiences within the Knowledge for Coastal Change Research Group members (who were not part of the UKZN-CSIR research team) understood its purpose as a transdisciplinary forum that would serve to provide knowledge for strategic and long-term planning (Fennessey 9 October 2013; Mr D 1 October 2013). It was "geared towards planning for a future you want to create" (Mr D 1 October 2013). Its construction was such that all members were encouraged to contribute and be part of the process in a 'non-confrontational' setting (Mr D 1 October 2013).

Rather than beginning with a particular environmental controversy, the group was made to share their experiences of and knowledge about the 'Golden Mile', identifying its value as well as issues and controversies that exist there (Field notes, Meeting 1, 12 March 2013). Accordingly, members of the competency group engaged in joint fact-finding that helped to create authentic dialogue (Innes & Booher 2000). To further support authentic dialogue the competency group collaboratively mapped conflicts, values and their interests along the Durban 'Golden Mile' early on in the process (Field notes, Meeting 3, 30 May 2013). This is supported by Innes & Booher (2000) who purport that the identification of conflicts and interests within the group and between members be carried out and shared at the beginning of the process for authentic dialogue to take place. By the third meeting of the Knowledge for Coastal Change Research Group its members had selected the issue of coastal water quality as one of the major controversies along the Golden Mile. The issue of Coastal Water Quality was further deliberated upon in subsequent meetings (Field notes, Meeting 3, 30 May 2013).

The core contingencies required in a deliberative governance process are trust, time and interdependence (Ansell & Gash 2007). Evidence shows that the competency group was thought to have a high level of attainment in all three (Mr D 1 October 2013). Through the six meetings, members began to trust each other and became more open to

sharing and learning. By working in this setting people's ideas changed and "they [started] to listen to other people" (Mr D 1 October 2013). As a result, it may be understood that the time spent with the group (five by three to four hour meetings and a field trip) was sufficient to break down mistrust among the members, facilitating shared understandings and a move towards appreciating their interdependence as members of the group and as knowledge-holders in the coastal environment. It must be acknowledged, however, that several members of the forum already had formal or informal relationships with each other, which accelerated the development of an environment of trust and mutuality (Ansell & Gash 2007). For example, Celliers, Mather and Mr D had all participated in the PCC. In the same vein, members attendance of, and commitment to the forum was influenced by these pre-existing relationships, with those who did not attend, tending to be those who were either unfamiliar with the team, the organisations or process involved (Field notes, Meeting 6, 19 November 2013).

The competency group sought to improve peoples' understandings of the issues in the area and their complexity. Dr G, a research team member reflects on the groups' ability to foster mutuality, trust and understanding:

> The value in the competency group meetings is that people understand more about what other people are doing in that space and also [creates a] dynamic of people being more relaxed with one another and trusting each other (11 October 2013).

As found by Stassart (2008), in documenting the experiences of a competency group related to animal welfare issues arising out of different forms of animal breeding and farming practices in Belgium, he noted that the competency group focussed on the problem at hand, suspending members' individual stakes and agendas. While members were given the opportunity to raise their issues they would "ultimately need to focus on the problem at hand" (Mr D 1 October 2013). The different people or groups would "need to find some kind of middle ground rather than being specific or falling into one's particular position" (Mr D 1 October 2013). In the competency group members "add value from their experience and knowledge but are moving towards a common vision or way forward" (Mr D 1 October 2013).

By jointly identifying the issues and conflicts in the study area, the competency group was able to engage joint problem definition and framing, the first step in the

collaborative visioning process (Huppé & Creech 2012). Moving beyond this, to the second step in the collaborative visioning process, namely jointly mapping possible solutions and pathways (Huppé & Creech 2012), members were asked to map values and aspirations for the area as well as to brainstorm a possible future for the competency group or similar transdisciplinary processes (Field Notes, Meeting 5, 3 October 2015; Field Notes, Meeting 6, 19 November 2015). When comparing the experiences of the experimental competency group with the four main principles of running a competency group as purported by Stassart (2008), it is found that all four principles were present. Firstly, the group used the 'narrative form' allowing members to share their stories and experiences at meetings and on the field trip along the central coastal zone of the city in particular (Field notes, Meeting 2, 23 April 2013). Secondly, "intersections between the different systems of reference" (Stassart 2008) were created when members were asked to map jointly the values and problems that they identified along the coastal zone, creating an overlap between social, environmental, technical and economic perspectives and knowledges (Field notes, Meeting 1, 12 March 2013). Thirdly, evidence of knowledge being put to the test could be observed in the fifth and sixth meetings where technical representations of water quality monitoring and modelling were presented and feedback invited from the members (Field notes, Meeting 5, 3 October 2013; Field notes, Meeting 6, 19 November 2013). In addition, members acknowledged learning from each other in both the meetings and on the field trip (Fennessey 9 October 2013; Mr D 1 October 2013). Lastly, members felt that the environment and culture of sharing created within the competency group allowed individuals to suspend their individual interests for a greater, collective objective (Breetzke 10 September 2013; Mr D 1 October 2013).

Lane et al. (2011) purport that the competency group method is best suited to situations where a specific 'scientific' problem is identified rather than a broad visioning approach. The evidence corroborates this with some respondents, especially those on the research team, suggesting that the eThekwini coastal environment was too large a problem area for this kind of knowledge production process to be useful (Celliers 7 October 2013; Field notes, Meeting 6, 19 November 2013). On the other hand, there were respondents who felt that it would be useful to rather focus on high-level

strategies and visions at a municipal or provincial level (MacKay 9 October 2013; Mr D 1 October 2013).

There was a consensus among the members that the competency group did not manage to incorporate all knowledge groups (Field notes, Meeting 6, 19 November 2013). Specifically, political actors (councillors), the commercial sector (business) and some forms of tacit knowledge-holders, e.g. informal traders and residents living on the beachfront, were absent from the group (Field notes, Meeting 6, 19 November 2013). It must be noted, however; that the research team did invite both a local ward councilor and an informal trader to be members but they did not attend (Field notes, Meeting 6, 19 November 2013). A concerted effort was made in a series of preliminary workshops to engage with a wide-range of knowledge-holders (Audouin et al. 2014). In addition, the fact that the knowledge holders (members) were chosen before the issues of coastal water quality was identified meant that not all members had an in-depth understanding of the controversy, posing a limit on what knowledge they could contribute (Field Notes, Meeting 6, 19 November 2013). This is supported by the literature that advocates that an effective collaborative governance initiative not only requires a diversity of knowledge-holders but also knowledge holders that are proficient with the right skills and expertise (Clarke et al. 2013). If the exact fit of knowledges and knowledge-holders are not present, knowledges-sharing and learning is imbalanced, with some members having more to contribute but less to gain than others, with the net benefit of participation for these members being minor. In addition, the respondents felt that, the competency group, being a voluntary body it would be difficult to sustain and members would need to be "rewarded in some way" for participating in these kinds of forums (Dr G 11 October 2013). This is supported by the literature on cooperative governance, which advocates that the state, to ensure the success of a cooperative governance initiative, should provide incentives for participation and disincentives for non-participation (Gunningham, 2009). It must be appreciated, however, that the Knowledge for Coastal Change Research Group was always intended as a once-off research initiative, which aimed to feed into the eThekwini Coastal Management Plan for the central coastal zone of the eThekwini Municipality.

It is also worth appreciating that there was a high level of agreement among members on the value of the coastal environment and the discourses around sustainable and inclusive coastal management (Field notes, Meeting 5, 3 October 2013). Members expressed a need for more profound knowledge-production initiatives, such as that of the competency group, going into the future (Field notes, Meeting 6, 19 November 2013). Furthermore, there was a consensus among the members that the competency group meetings were structured in a way that was non-confrontational, allowing everyone to contribute equally without being intimidated (Field notes, 19 November 2013). Thus, the forum facilitated a deliberative process that encouraged mutual sharing and understanding. The engagements were 'respectful' and allowed members to both share with and 'learn from each other' (Field notes, Meeting 6, 19 November 2013). This suggests that the facilitation style of the competency group, the personalities present as well as the structure of the discussions and debates were conducive to a process of shared learning. The competency group was deliberative (facilitated productive dialogue between members), largely participatory and accommodating (incorporating diverse members and their respective values and knowledges) and integrated (reconciled different perspectives and encouraged mutual understandings) (Bremer & Glavovic 2013). Mr D (1 October 2013) reflects on the experience:

> It's non-confrontational; people come together to work together on a shared vision rather than it being a CSIR project and CSIR taking the lead irrespective of what comments are coming through. You get contributions from different parties on whether or not they agree on various steps. Working in this kind of way, everyone has been part of the process. There is mutual respect all round.

5.3. Conclusion

The preceding discussion presented a comparison of three different coastal governance forums, namely; the eThekwini Coastal Working Group, the KZN Provincial Coastal Committee and the experimental Knowledge for Coastal Change Research Group. The CWG and PCC were advisory stakeholder forums that sought to bring together different actors and stakeholders within the coastal zone to facilitate dialogue and the resolution of coastal issues. They aimed to influence decision-making through recommendations

and the goodwill and cooperation of members. Being stakeholder forums, the CWG and PCC are a way of including everyone who has a stake in the coastal environment – they are established on the principle of representation. They are required by South African law, which asserts that everyone has a right to be part of decision-making over issues that affect them. The National Environmental Management Act (NEMA) of 1998 states that:

> *the participation of all interested and affected parties in environmental governance must be promoted, and all people must have the opportunity to develop the understanding, skills and capacity necessary for achieving equitable and effective participation and participation by vulnerable and disadvantaged persons must be ensured* (Republic of South Africa 1998, p.12)

As a result of this participatory approach, there will be potential conflict around different issues and stakes, which makes these types of forums inherently political (Whatmore 2009). While the CWG and PCC were successful in bringing together members of different departments and stakes in the coastal environment, they experienced challenges in representation from some departments and capturing political will amongst some members. These forums were further constrained by their lack of legal authority to effect decisions.

The Knowledge for Coastal Change Research Group, on the other hand, aimed to bring together knowledge-holders rather than stakeholders, to produce new knowledge around the coastal environment. Rather than representing their interests or stake in the coastal environment, the participants are there because of their knowledge of the environmental issue, representing different types of knowledge and knowledge holders to produce knowledge of the coastal zone. Therefore, the group was constructed based on the different types of knowledge around the management of the issues that arise in the coastal zone. While the forum was thought to be successful in bringing together different knowledge-holders and allowing them to suspend their individual interests and work towards an integrated vision and body of knowledge, it presented its own challenges. The Knowledge for Coastal Change Research Group was unable to secure the attendance of all knowledge-holders because it had no legal mandated authority and no incentives for participation as it was a research project. Drawing on the evidence

presented thus far, table 3 (page 67) presents a comparison between the three different institutions studied:

Drawing on this preliminary analysis, the subsequent chapter will discuss the processes and challenges for knowledge production and uptake within the municipality's and province's coastal environment. Furthermore, the relationship between knowledge and management and governance in the eThekwini Municipality's coastal environment, how knowledge can be better produced and taken up in coastal governance spaces will be analysed. Chapter six will also present a case for a transdisciplinary knowledge exchange forum in the municipality.

Table 3: Comparison of key features of three different coastal governance institutions

	eThekwini Coastal Working Group (2000-2010)	KZN Provincial Coastal Committee (1998-2010)	Knowledge for Coastal Change Research Group (November 2012 – December 2013)
Role and purpose	Influence decision-making through recommendations. Tended to hold a coordination role rather than decision-making.	Influence decision-making. Tended to hold a coordination role rather than decision-making.	Co-produce new knowledge through negotiation and address underlying biases of members.
Membership	Membership was voluntary – anyone who had a stake in the coastal environment was invited to attend.	Membership was voluntary with specific stakeholders being invited to attend by the KZN Department of Economic Development, Tourism and Environmental Affairs.	Membership was voluntary with specific stakeholders being sampled and invited to attend – the criterion being their knowledge rather than their stake in the coastal zone.
Diversity and representation	Membership was diverse; stakeholders from all sides were present. However, there was a tendency for some departments to be underrepresented and those most passionate about the process to be better represented.	Most governmental departments were represented – less focus on individuals and non-state actors and a greater focus on cross-department state actors.	Not fully representative – some sectors did not respond to invitations/requests from the team, as they did not value the process enough or were unable to commit to it.
Legal character	Voluntary forum, its successor would be instituted through the ACT but also discretionary.	Initially voluntary – later mandatory through the ACT.	Entirely voluntary, a research experiment.
Legal authority and mandate	No legal mandate to effect decisions relied on moral persuasion and goodwill of members to take decisions forward.	No legal mandate to effect decisions, relied on moral persuasion and goodwill of members to take decisions forward.	No legal mandate to effect decisions/ recommendations - relied on cooperation and trust building between members to take knowledge and experiences forward.

Table 3 continued…: Comparison of key features of three different coastal governance institutions

	eThekwini Coastal Working Group (2000-2010)	KZN Provincial Coastal Committee (1998-2010)	Knowledge for Coastal Change Research Group (November 2012 – December 2013)
Incentives / resources	Individual members not provided with incentives to attend. A municipal agency funded by the municipality.	Individual members not provided with incentives to attend. A provincial agency funded by the province.	Individual members not provided with incentives to attend. An investigational forum funded by the DST – no long-term support. Proposed feeding of outcomes into eThekwini Coastal Management Plan for the Golden Mile.
Leadership	Chaired and led by Andrew Mather, *Coastal Policy Executive* eThekwini Municipality.	Chaired and led by Andrew Mather, *Coastal Policy Executive* eThekwini Municipality.	Chaired and led by UKZN-CSIR research team.
Major challenges	Lack of legal mandate, administrative issues leading to cessation of the forum, lack of time, lack of political buy-in amongst some members, conflicting priorities.	Lack of legal mandate, administrative issues leading to cessation of the forum, time, lack of political buy-in among some members and departments, conflicting priorities.	Lack of legal mandate, lack of representation of some forms of knowledge. Independence from the municipality may have impeded legitimacy of the forum.
Collaborative visioning	Only partially achieved.	Only partially achieved.	Assessed by participants to be successful – members were able to suspend individual interests for a common goal.
Products	Minutes of meetings.	Minutes of meetings.	Transcription of meetings and academic research reports and papers.

CHAPTER 6: KNOWLEDGE EXCHANGE FORUMS

6.1. Introduction

This chapter takes as its point of departure the idea that effective coastal management and governance requires a move away from technocratic governance methods to collaborative approaches where opportunities for knowledge to be co-produced which have a bearing on governance processes, are more readily found (Bremer 2013; Bremer & Glavovic 2013; Clarke et al. 2013; Mcfadden 2010). It examines the knowledge production processes in an experimental forum, the Knowledge for Coastal Change Research Group, and a critique of this process by the participants. The chapter answers research questions two to seven: (2) how is knowledge currently produced for policy-making in the eThekwini coastal governance environment? (3) What are the challenges for producing more 'usable' knowledge? (4) What are the challenges for ensuring uptake of this knowledge by managers? (5) What do members propose as the features and composition of forums for interaction and negotiation for knowledge production and coalescence? (6) What do members envision as the scope and legal character of a competency group-like forum in the municipality's coastal environment? (7) How do members understand the role and possible relationship of the two different forms of knowledge production and coalescence in the context of the South African coastal governance landscape?

Section 6.2 discusses the pathways for the production and uptake of knowledge within the eThekwini Municipality's coastal environment and presents the proposed features of a knowledge-governance interface for effective collaborative coastal governance and transdisciplinary knowledge production. Section 6.3 presents an argument for the creation of a coastal transdisciplinary knowledge exchange forum drawing on the competency group as an instrumental case study. Section 6.4 discusses the structure, scope and legal characteristics of the proposed forum. Section 6.5 provides a summary and conclusion of the chapter.

6.2. Mobilising Knowledge for Coastal Governance

6.2.1. Methods of Knowledge Production for Coastal Governance in the Municipality

In addressing the research objectives, respondents were asked a number of questions related to the current processes of coastal knowledge production and uptake within the municipality. Three predominate pathways for knowledge to be produced for coastal governance were identified:

1. *Academics* (within universities and other research organisations) are thought to produce considerable knowledge with regards to the coastal environment. Much of this knowledge, however, produced primarily for academic purposes, does not find its way to municipal managers and consequently has little opportunity to impact coastal governance (MacKay 9 October 2013).

2. *Consulting services* are commonly used in the eThekwini Municipality's coastal governance environment (MacKay 9 October 2013). The eThekwini Municipality (and its different departments) mandates scientific research organisations such as the Oceanographic Research Institute (ORI) and the Council for Scientific and Industrial Research (CSIR) to produce reports, rather than 'self-generating' this knowledge (MacKay 9 October 2013).

3. A large portion of the knowledge required for coastal management and governance is also generated through applied knowledge gained through *experience* i.e. embedded knowledge (Carayannis & Campbell 2006). Coastal Management "cannot be understood theoretically [alone]" (Mr D 1 October 2013) and decisions are made based on the formal training and experience of managers (Celliers 7 October 2013).

While considerable research is conducted in the coastal governance environment, it is thought that "data and managers are far apart" (Celliers 7 October 2013). Managers make decisions based on their formal training or experience, which often has "no connection with the complexity of the issue and the environment" (Celliers 7 October 2013). There is little accumulation of experiential knowledge, with managers paying little attention to gaining and using new knowledge. When scientific reports are produced and given to municipal managers "they don't bother [reading] it if it is more

than one or two pages" (MacKay 9 October 2013). There is also a tendency for municipal managers and ministers to ignore science. They don't "listen to scientific advice anymore... Municipal managers and ministers sometimes just override science" (Dold 23 September 2013). They tend to ignore or override science because it "does not suit the political agenda" (Dold 23 September 2013). Therefore "promoting dialogue and collaboration between scientists, managers, policy-makers and coastal resource users is ultimately key to aligning research with policy and management priorities" (Glavovic 2006b, p.88).

For knowledge to have a bearing on governance and management processes, opportunities for managers and knowledge-producers to engage and for social and joint learning to be institutionalised are needed (Bremer & Glavovic 2013; Clarke et al. 2013). The respondents felt that by creating more opportunities for knowledge to be shared and issues to be raised in the Municipality or Provincial Department, one moves closer towards a scenario where "management and planning is more successfully geared towards having some type of meaningful impact on the ground" (Mr D 1 October 2013). Without a knowledge exchange forum, there are no opportunities for managers to receive information in "an environment where they can sit with the stakeholders or knowledge producers... and translate data and information into knowledge that can be used and understood" (Celliers 7 October 2013). Furthermore, it was proposed that without a collaborative forum there are inadequate pathways for knowledge to be taken up into decision-making. However, when these knowledge exchange forums are commissioned, careful attention must be paid to creating a mutually beneficial, non-threatening environment, where divergent contributions are valued (Bremer & Glavovic 2013). Creating this culture will allow the forum to successfully co-produce knowledge, rather than being a space for simply deliberation as was the case of the eThekwini CWG and KZN PCC.

Secondly, respondents felt that science needs to be put into popularised, accessible forms in order to impact the management process, that is, intersections between the different systems of reference need to be created (Stassart 2008). Scientists and researchers, particularly those at universities, "don't feel it's their role to distil that information for management purposes" (MacKay 9 October 2013). Scientists have a

responsibility to "get that knowledge out there so [that] people know" (Dold October 2013) and need to "present it in a way that make[s] people believe in your information and data" (Celliers 7 October 2013). At the same time, however, science must not be distilled and 'watered down' to an extent that it begins to lose all meaning (Dold 23 September 2013). It is alleged that for these different knowledges to have a meaningful impact on coastal management, the interface between the different knowledge systems (natural science, social science and tacit knowledge) must be constructed as what is termed as a 'governance' setting rather than a 'science-based interface'. In a 'science-based interface' science or technical knowledge is seen as the foundation of decision-making and other knowledges secondary to this (Bremer & Glavovic 2013). It is therefore proposed that a shift from science-dominance to a situation where all knowledges are seen as equivalent is required (Lane et al. 2010).

Thirdly, given the South African social and developmental context, respondents stressed that social considerations need to be related to science (Dr G 11 October 2013; MacKay 9 October 2013; Wilkinson 24 October 2013). In other words, there needs to be an integration of environmental, economic and social development priorities for knowledge to be seen as legitimate and taken up effectively (Glavovic 2006a). It must be acknowledged that data and information are given meaning through the context and that "in many cases where you share data and information there's [a] dispute related to the validity and quality of the information and whether or not its complete, contextual and used in the right context" (Celliers 7 October 2013). Thus, data that is (or appears to be) not fully cognizant of the context in which it is to be used is open to distrust by both the public and managers and is challenged. Fourthly, as suggested by the theory, managers and political actors need to become more receptive of the different knowledges and understand their interdependence (Pohl et al. 2010). If the "relevance [of the knowledge] isn't understood by the policy makers then it doesn't serve any purpose" (Bulman 15 October 2013). As much as it is the responsibility of scientists and academics to distil science to make it accessible to managers, it is also a requirement for people sitting in those roles to take it up... they "just [need to] recognize the knowledge and take it" (MacKay 9 October 2013). In other words, a management culture that bases decisions on a range of knowledges rather than simply personal vocational experience is a prerequisite for the success of knowledge exchange forums.

The above evidence suggests that a body of knowledge exists and is produced in relation to the eThekwini coastal environment. However, this knowledge is not interdisciplinary and does not take into account the intricate social context of the coastal zone. In addition, there seems to be limited aspiration among stakeholders (e.g. coastal zone managers) to acquire new knowledge and knowledge outside of their particular disciplines. This alludes to the root problem; managers and other stakeholders within the coastal environment are not aware of the importance of acquiring and engaging in a cross-disciplinary manner and co-producing transdisciplinary knowledge. This may be due to limited knowledge of such principles and practices, e.g. the experiences of other countries that have had success with such processes. Alternatively, this may be part of a management culture that does not promote novel and innovative management practices (Buhlungu et al. 2007). Lastly; it is evident that insufficient opportunities exist for new knowledge to feed into management processes, suggesting that links between managers and researchers and academics need to be enhanced.

6.2.2. Challenges to Providing Knowledge for Policy Making

The evidence suggests that while academics and consultants produce knowledge related to the coastal environment, it is not always used, with decisions often being made independently of the data. Consultants, who are commonly natural scientists, usually provide knowledge for coastal management in the form of Coastal Management Plans. These neglect the complex social, economic and development priorities of the coastal zone, resulting in a 'knowledge gap'.

The competency group is an experiment to show an alternative way of providing a more holistic knowledge base for coastal management. The competency group seeks to remedy this gap by bringing diverse knowledge-holders together to produce more robust, socially relevant knowledge. In endeavouring to understand the relationship between knowledge and policy and management, respondents were asked to identify the major challenges for mobilising high-quality, practical knowledge for policy-making and management. While a number of challenges were discussed with respondents, three primary challenges were identified: a lack of political buy-in and poor accountability, limited resources and social capital, and limited time. Related to the lack

of political buy-in, the absence of shared visions and values among actors was thought to be contributory.

Political buy-in and poor accountability

All respondents identified the lack of political will or buy-in as a challenge for preventing new knowledge to be taken up by government and management. Breetzke suggests that "government is still uncomfortable with the governance thing" and that they "do not like being responsible to civil society and the public" (Breetzke 10 September 2013). This suggests that those in management roles are uncomfortable with and are not used to being held to account and that the management culture in municipalities does not encourage accountability to the public. Dold (October 2013), the current chair of Coastwatch and a member of the previous MCC, reflects on this problem:

> *I think the challenge is that there isn't much political buy-in...I think that's the bottom line. The people who work in the departments would like it but the politicians they don't see the necessity. They still feel they can tell people what should happen* (Dold 23 September 2013).

Therefore there is a lack of accountability and an under-provision of public services, with those responsible for implementing policy and providing services not being held to account by the public. Joshi & Houtzager (2012) maintain that 'the standard model of accountability'[22], is inadequate in developing country contexts. In this model, elections are only an effective source of accountability when public debate and opinion is unrestrained and inclusive (Joshi & Houtzager 2012). There is also evidence to suggest that government's attempt in KwaZulu Natal to promote accountability at the local level through ward committees has been ineffective with many officials undermining this accountability through ideas of self-enrichment and poor allocation of state resources (Buhlungu et al. 2007). Therefore, despite citizen dissatisfaction with poor service

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[22] The Standard Model of Accountability in a representative democracy comprises two interconnected systems of accountability – politics (policy-making) and administration (technical design and execution of policy). Citizens delegate to elected political representatives decision-making authority to govern and make public policy, and exercise control through the institutions of representative democracy. Public officials (administration) then execute policy through public bureaucracy (Joshi & Houtzager 2012, pp.148–149).

delivery and misappropriation of resources, the vote is unable to unseat the dominant party even at the municipal level, making elections a poor quality control mechanism (Buhlungu et al. 2007)

Moreover, even when there is a political mandate for forums like the PCC these tend to "become bogged down in a political process", losing their vigour as institutions for knowledge sharing and democratic engagement (Bulman 15 October 2013). Evidence shows that in forums like the MCC and PCC, the "worst aspects of party politics came into play" and often "opportunities to have a positive influence on policy [are] lost because of…a lack of political will" (Bulman 15 October 2013). This is corroborated by the literature, which holds that despite South Africa having adequate policy, this policy is often not implemented at a local level due to the increased politicization of Municipal management and a culture of self-enrichment, with those in administrative roles often acting in self-interest rather than objectively (Buhlungu et al. 2007). From an administrative perspective, "the State's functions and responsibilities in middle-income countries and some low-income countries has led to the growth of large, complex and opaque organizations that… have acquired tremendous discretion in decision making, are perceived as unaccountable and have become a political force in their own right" (Joshi & Houtzager 2012, p.148). Adding to this, it is thought that there is some dissonance in the Municipality's institutional memory, with councilors often having short-term contracts, that is, five years in office, and a management outlook that supports short-term interests (Field notes, Meeting 6, 19 November 2013). This will be expanded upon below.

Resources and Social Capital

In addition to the lack of time, limited resources and low social capital were also thought to pose a challenge to transferring knowledge to government and management spaces (Breetzke 10 September 2013). Financial and other planning and management resources are essential to support processes for knowledge to be properly mobilised through forums. The processes need to be supported by the state and members need to be given incentives for participation (Gunningham 2009). Working within the municipal medium term expenditure framework, however, means that budgeting needs to be undertaken three years in advance. Breetzke (10 September 2013) noted however that

budgeting is not undertaken for these kinds of knowledge-sharing activities unless there is someone driving it (Breetzke 10 September 2013). Without budgeting, financial constraints are experienced down the line. Consequently, departments are left with limited resources and are hamstrung in their operations.

In terms of social capital, evidence shows that the municipal coastal environment suffers from two related issues: people working in the environment do not have sufficient training and knowledge to deal with the tasks at hand, and there is a very high staff-turnover, making staff members with capacity hard to retain (Dold 23 September 2013). Previously, people stayed in one position for a long period, today, however, "staff turnover in government is just too fast" (Dr G 11 October 2013). In government departments, one may "work with people, build capacity but then tomorrow they've moved to another department" (Dr G 11 October 2013). In addition, people with the expertise are 'thinly spread' (Dr G 11 October 2013) and may not be in a position to perform optimally. It is thought that the optimal "uptake of knowledge into policy and governance processes depends on it being managed by someone who is watching the policy and governance windows" (Bulman 15 October 2013). However, with departments being under-resourced in terms of human capacity, this is not always possible (Bulman 15 October 2013). Therefore, a more nuanced view of collaborative governance and co-producing knowledge in the South African coastal zone is needed. It would be unwise to assume that models like the competency group would function in the same way in South Africa as they might function in the United Kingdom or Europe, where human and financial resources are more readily found. For example, the Knowledge for Coastal Change Research Group as well as the United Kingdom Pickering case study were both research projects, with allocated research budgets (Lane et al. 2010; Stassart 2008). This level of funding, as well as human capacity, in terms of a research team (and to a lesser extent members), would be difficult to secure in many local municipalities.

Time

Acknowledging that mobilising knowledge across the knowledge-governance interface requires specific pathways or spaces for actors to engage, it was found that insufficient time impeded this process (Mather 22 May 2013). Ansell & Gash (2007), who hold that

successful collaborative governance needs adequate time for consensus-building to take place support this finding. Many government departments feel that they are 'meetinged out' and do not want to attend more meetings, especially when these are not directly related to their primary mandate (Mr D 1 October 2013). Departments have "different priorities and modes of operation", which determine how staff members perceive the importance of meetings like the MCC and PCC (Mather 22 May 2013). Compounding the problem is the fact that many departments are under-capacitated, with the "people doing the work being very thinly spread" (Dr G 11 October 2013). These people "don't actually have the luxury of that much time to sit and talk" and must attend to their primary commitments, leaving them little time for anything else (Mather 22 May 2013).

In order to work around this issue of limited time, respondents were of the view that forums for democratic engagement and knowledge-sharing need to take place less frequently (for example two times per year instead of six) with ad hoc meetings being convened when pressing issues arise (Dr G 11 October 2013; Mather 22 May 2013). Furthermore, government departments, as well as other organizations working within the coastal domain are under-capacitated and need to look at increasing staff capacity such that people who need to attend meetings or other engagements can do so (Mather 22 May 2013). Admittedly, the latter is easier said than done, as organisations may not have the financial resources or posts to employ more people or people with the appropriate skills may not be available (Mather 22 May 2013). Diverging from this idea, the literature suggests that for meaningful knowledge exchange and deliberation to take place, participants need to be given adequate time to share with and learn from each other. Without enough time, the process of social learning and second and third-order learning is hindered, and members are not able to re-evaluate their underlying biases, principles and assumptions (Huppé & Creech 2012). The lack of human resources reveals critical issues in relation to knowledge production for coastal management.

Conflicting planning priorities
Apart from the above challenges, respondents also felt that problems in implementation, planning across scales and short-term planning frameworks (as discussed above) further impeded the effective mobilisation of knowledge in the coastal governance domain. South Africa is also thought to be "very quick with churning out

frameworks and plans" but falls short in implementation (Dr G 11 October 2013). Similarly, South Africa's coastal policy (The ICM Act and NEMA) is thought to be 'excellent' from a policy perspective but "its not being implemented" (Dold 23 September 2013). There is a disconnect between managers and officials, who are responsible for the technical design and rational execution of policies, and the knowledge-producers and politicians who inform and make policy. There is also tension between technocratic, top-down, forms of government and Cooperative Governance[23] approaches within the municipality's administration. While the South African government has adopted a policy of Cooperative Governance, this is poorly implemented in the environmental and coastal domains. There is a lack of coordination and an unwillingness to cooperate among different role-players, a disconnect between environmental, economic and development goals and an indistinct understanding of different mandates and policies around the management of the coastal environment (du Plessis 2005).

The short-term planning approach[24] followed by officials not only leads to a relatively high turnover of staff but also directs the underlying approach to planning and management. Highlighting the problems with the structure of management planning frameworks, Dold (23 September 2013) reflects:

> *Now short-term planning is one year, medium-term three and long-term five years. Scary. You can't live like that. It's not sustainable. Five years is long-term planning and there is the crux of the sustainable development problem! You cannot plan sustainably for five years.*

Similarly, it was felt that trying to implement a universal system of coastal management has 'failed us' and has been to the province's detriment (MacKay 9 October 2013). The KZN coastal zone is thought to have a different character to that of the Cape and that

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[23] Cooperative Governance is a South African governance framework that was legislated with the coming of democracy. It calls for a shift from parties being conflictual and confrontational to their becoming partners within a co-operative model of governance.

[24] All South African Municipalities must produce an Integrated Development Plan (IDP), which is a five-year plan that is compiled to determine the development needs of the municipality. The projects within the IDP are linked to the municipality's budget. The municipality is responsible for the co-ordination of the IDP and must draw in other stakeholders in the area who can impact on and/or benefit from development in the area.

"generic platforms don't work for us" (MacKay 9 October 2013). The Act "put everything into one big national system", but the KZN coast is "so different in so many ways" and is "not even near the national norm" (MacKay 9 October 2013). The KZN coastline, having a sub-tropical climate, is warmer than other coastal areas in South Africa, making it a prime swimming and water sports destination, for both local users and tourists. KZN also hosts two of the country's biggest and busiest ports: Durban and Richards Bay, posing different demands on its coastal zone compared with other regions. Therefore even when municipal actors are visible and productive, they may be paying the price for inept policies and programmes at the national level (Buhlungu et al. 2007). Consequently, any knowledge exchange forum must be tailored to the locality in which it exists and members should be involved at all levels of its construction, that is, from the design phase through to evaluation and monitoring phases (Huppé & Creech 2012).

Many of the issues discussed above speak to the issue of transformation in South African government and management since 1994. While there has been large success in de-racialising government, disseminating fiscal resources to the local level and producing progressive policies, there is evidence to suggest that municipalities are still performing inadequately (Buhlungu et al. 2007). Service delivery is still deficient, citizen' grievances are not responded to properly and there is a culture of self-enrichment and over-consumption on the part of municipal councilors and staff (Buhlungu et al. 2007). However, these failings cannot be attributed to municipalities alone. The intergovernmental system does not support local government adequately; powers, functions and capacity-building responsibilities are poorly delineated, and municipalities are hamstrung by having to deal with vast problems of unemployment, poverty, urbanization and HIV Aids (Buhlungu et al. 2007).

6.3. A Case for a Transdisciplinary Knowledge Exchange Forum in the Municipality

6.3.1. Introduction

The following section presents an argument for the need to create a transdisciplinary knowledge exchange forum as proposed by the literature (Lane et al. 2011). As suggested by Lane et al. (2011), stakeholder forums are insufficient in dealing with environmental 'knowledge controversies' where the public disagrees with, and challenges science. These controversies unsettle scientific explanations by offering alternate explanations of the phenomenon, forcing experts to 'slow down' their reasoning and allow for different knowledges and experiences to have a bearing on the issue at hand (Whatmore & Landström 2011).

Respondents were asked to share what they understood by transdisciplinary knowledge production before interrogating their views on the need for such knowledge exchange processes in the eThekwini Municipality's coastal management domain. Members of the of the competency group as well as others who were members of the PCC or CWG were asked, the latter being provided with a basic understanding of the theoretical concept of competency groups and transdisciplinary knowledge production at the outset. While some respondents felt that the competency group was a unique process in its focus on sharing and gaining knowledge (Mr D 1 October 2013), others felt that the technical working groups or subcommittees of the PCC, as well as other forums like the Pipeline Forum, did produce knowledge in a transdisciplinary way (Dold 23 September 2013; MacKay 9 October 2013). The data, reinforced by the literature, suggests that stakeholder forums are insufficient in addressing the complex issues that arise in the coastal environment and that there was a need to explore alternate forums that could go beyond deliberation, to producing new knowledge and methods of dealing with coastal issues, in the way that the PCC subcommittees and Knowledge for Coastal Change Research Group successfully did (Clarke et al. 2013).

It is worth noting that while most members of the Knowledge for Coastal Change Research Group understood that its objective was to produce knowledge by engaging different knowledge-holders, some respondents felt that it would never be truly

representative of the different users and stakeholders in the coastal zone, thereby limiting its usefulness (Dr G 11 October 2013). This view is a clear indication that the model of the competency group and its objective was not fully understood, and that these respondents were still stuck in 'stakeholder mode', which explains the deliberation over 'interests' rather than knowledge.

6.3.2. Need and capacity

Interrogating the need for a competency group or a similar knowledge exchange forum in the eThekwini Municipality's coastal governance environment it was found that all participants felt that there was a definite need for it, however, some respondents were "not sure [if the municipality could] afford it outside of our existing processes" (Celliers 7 October 2013). Being faced with a multitude of issues and being generally under-resourced it was felt that it is unlikely that the municipality would be able to set up a competency group for every area or issue that arises (Celliers 7 October 2013). However, it is acknowledged that there should ideally be competency groups "along the whole of South Africa's coastline" (Dold 23 September 2013) and that "the municipality needs to acknowledge that we require specific knowledge production processes for the coast and not just within environment and biodiversity" (Mr D 1 October 2013).

Bulman (15 October 2013), a public participation expert and member of the previous PCC, offered his own understanding of why a transdisciplinary exchange forum was necessary:

> *One of the advantages of transdisciplinarity is that it allows you to move in totally unexpected ways because it reveals not only new knowledge, but also new policy pathways and new policy potential.*

Accordingly, a transdisciplinary knowledge exchange forum would not only allow the municipality to produce new knowledge but would allow people to "interrogate their foundational beliefs and approaches" that tend to be a modernist, mode 1 way of thinking about knowledge for the coast and the environment (Field notes, Meeting 6, 19 November 2013). This is confirmed by the literature which suggests that a successful collaborative visioning process will not only engage first-order learning but will

facilitate second-order learning, in which actors revise their own assumptions as well as third-order learning, in which actors reconsider their underlying values, beliefs and world views (Huppé & Creech 2012)

MacKay (9 October 2013), a member of the previous PCC and marine scientist, while appreciating the need for transdisciplinary processes, pointed to the weakness of the municipality in creating and managing these processes:

> *[the municipality] desperately needs it but I don't know if there's the capacity across all spaces. It's going to be a bunch of academics and senior consultants sitting together. That's not fair. It's not representative of everyone who uses the coast and how it should be managed. So I don't know if we're ready for it but we definitely do need to move in that direction.*

All the respondents felt that a transdisciplinary knowledge production forum such as the competency group "would be a very useful exercise, especially to elicit more on-the-ground local knowledge" (Breetzke 10 September 2013). It was agreed that there was a need to generate knowledge that is more robust and inclusive of different perspectives and create a more effective mechanism for converting data and information to usable knowledge, that is, knowledge admissible to managers (Celliers 7 October 2013; Mr D 1 October 2013). It was felt that the robustness of knowledge delivered to management spaces increases if "informed by people on the ground" (Mr D 1 October 2013). In addition, "working in these [types of processes] changes peoples' ideas – they start to listen to other people" (Mr D 1 October 2013). It was thought that issues would be solved in a "more expedited way" by instituting these kinds of transdisciplinary institutions i.e. the competency group (Mr D 1 October 2013).

Therefore, the respondents felt that a competency group or a similar forum would be useful in producing new, more integrated knowledge and solve problems more efficiently. Bulman (15 October 2013), explains why a knowledge exchange forum is essential in generating new knowledge that takes into account the complexities of the coastal environment:

> *Apart from anything else, the coastal zone is a largely unexplored frontier because it's a place where land and marine influences come together, and we know precious*

little about it. We know some things and what I have learnt is that what I know is
just some indication of how much more there is to know.

Celliers (7 October 2013), a member of the previous PCC and a member of the Knowledge for Coastal Change Research Group research team, reflects on the process of transforming data and information to knowledge:

It's very difficult to transition from data and information to knowledge. Knowledge
implies that you not only share information but also you improve understanding of
the information and buy into the information so that the issues are better
understood after the information has been assimilated and interpreted. It seldom
happens in these very formalized meetings.

This suggests that less formalized meetings, i.e. competency group-like processes, are needed to better transform data into information and knowledge as they allow for greater integration of the different knowledges and perspectives at hand.

Breetze (Field notes, Meeting 6, 19 November 2013) considered a forum of coastal knowledge-holders a necessity rather than a 'luxury' for the municipality but emphasized the careful planning of how and where to place such a forum in the institutional structure of the municipality such that it would be effective. It was however acknowledged that a forum of this nature would be difficult to set up and maintain "owing to the high amount of resources and time needed" but that it would likely "lead to more robust management decisions" (Field notes, Meeting 6, 19 November 2013).

The preceding discussion demonstrates that all respondents, whether members of the competency group or not, appreciated the need for alternate modes of coastal management and governance and new methods of knowledge production as a basis for better managing the coastal environment and the multiple complexities that it holds. This confirms the important points raised in recent literature, which argue that complex environmental problems require a move from technocratic modes of government and resource management to collaborative and deliberative modes of 'governance' (Bremer & Glavovic 2013; Clarke et al. 2013; Teisman 2013). However, evidence shows that

there was scepticism among the respondents as to whether the municipality had the resources to implement such an institution. The main reason given by the respondents for their scepticism being the lack of human capacity in local government. Consequently, any attempt to implement such an institution should be carefully designed such that it accommodates the institutional capacity of the municipality, rather than posing unreasonable demands on its human and financial (Bremer & Glavovic 2013). In addition, the possibility of commissioning consultants to facilitate such a knowledge exchange forum could be explored if the capacity was not found within the municipality (Landström et al. 2011).

6.4. Designing a Transdisciplinary Knowledge Exchange Forum for the eThekwini Coastal Zone

6.4.1. Introduction

The following section will discuss the proposed elements required, based on the evidence collected, for a transdisciplinary knowledge exchange forum related to the municipality's coastal zone. It will address the structural requirements, scope and size, placement within the current management system as well as legal characteristics of such a forum. At the outset, it is important to note that while the experimental Knowledge for Coastal Change Research Group proved to be a useful experiment with many lessons learnt, the respondents felt that a knowledge exchange forum in the eThekwini Municipality or South African coastal environment at large, would need to be designed somewhat differently to the competency group.

6.4.2. Components of the Proposed Forum

In addressing the structural and operational components of a knowledge exchange forum, respondents stressed that it would need to be representative and inclusive of the different knowledges, interests and authorities in the coastal environment:

> *The challenge is making sure that it is representative because what tended to happen with the old PCC, although we worked very very hard against it, was that the civil society sector tended to be represented by older white people... the missing*

factor was representation from communities that live on the coast and who are affected by coastal developments (Bulman 15 October 2013).

You have to make it more inclusive... if you stick with the [current] model and the current environment you're always going to end up with these groups that look exactly the same. You're going to get the people and organizations that are interested there, and have a natural inclination to be there...so its going to be civil society, research organizations and its always going to be short of the people you really need there – the politicians and the managers (Celliers 7 October 2013).

It was thought that to produce robust knowledge that was cognizant of the diverse social, economic and political pressures of the municipality that a more inclusive group of knowledge holders would need to be secured. In other words, the make-up of the Knowledge for Coastal Change Research Group was thought to be lacking, as it did not include some tacit knowledge holders, the tourism and business sector and the political representative only attended two of the six meetings. This experience emphasizes the need to construct the proposed knowledge exchange forum in a way that would accommodate the limited capacity of the municipality. In addition the selected knowledge-holders would need to be provided with incentives or a legal obligation to participate. It cannot be presumed that there will be a willingness to participate from all knowledge-holders and this needs to be planned for.

In addition, some respondents felt that it would only be successful if there was someone championing the process. Breetzke, a consultant and member of the previous PCC and eThekwini CWG, reflected that:

These sort of things are only going to be successful if you have a champion ...You need someone to take ownership and establish the resources and people needed to implement some of the actions... you need a champion. If you don't have a champion that is really committed to the process, they're going to come once in a while... the competency group shows exactly that. That you have certain people that are very knowledgeable and passionate and want to be part of it (Breetzke 10 September 2013).

This points to the need for a leader from either inside our outside the group, as advocated by Huppé & Creech (2012). This leader would manage and direct the process such that the group could generate shared visions, broker members' contributions and create an environment of trust and mutuality. In addition the leader would direct the outputs of the forum into a strategic plan or consolidated knowledge base (Huppé & Creech 2012). However, given the South African social context and the reluctance of some role-players to contribute to voluntary processes (either because of time pressures or not seeing their value) it would be preferable that this leader comes from inside the coastal management fraternity (Breetzke 10 September 2013). If the leader were to be an outsider e.g., an academic researcher, this may impact how seriously the members take the process, as the forum may be seen as extraneous to the municipal administration and its operations (Breetzke 10 September 2013).

To have a meaningful impact on the way the coast is governed and managed, participants felt that the process needed to include decision-makers, have some political or managerial mandate and should contribute to some formal planning process:

> *Whether or not issues get taken forward with these kinds of forums depends largely on whether there is a legal mandate to do so… You need decision makers there. You have to have high-level people that are influential. You need the right people* (Mr D 1 October 2013).

This is reflected in the literature which suggests that any collaborative governance institution should be state-led, have dedicated resources to support it and should produce tangible products such as reports, standards or policy recommendations that feed into the management system (Clark et al. 2011)

While some felt that the process should include all stakeholders in the costal zone, others felt that a competency group would be better fashioned as a 'group of managers' that would assist executives in solving complex issues in creative ways. (Breetzke 10 September 2013; Dr G 11 October 2013). The former viewpoint suggests that there is still a perception amongst those interviewed that forums that do not include all stakeholders lack legitimacy. This view can be termed 'stakeholder thinking' which requires a deeper understanding of the potential for knowledge-holder forums, as

opposed to stakeholder forums, to make a meaningful impact on coastal management. This attests to the fact that persons within the South African coastal management domain are not accustomed to knowledge-holder forums. They, as in other governance and management domains in South Africa, are committed to stakeholder engagement and public participation as a means of assuring equity and accountability in decision-making and any suggestion of moving away from this seems illegitimate. Therefore implementing knowledge-holder forums will require a social learning process and 'getting used to' this idea in the South African coastal environment. The former could be achieved through educating politicians and managers on the effectiveness of this kind of forum and the drawbacks associated with its absence (Clarke et al. 2013).

Similarly, it was thought that members would need to be provided with some form of reward or incentive for participation to ensure commitment and effective participation in a knowledge exchange forum (Dr G 11 October 2013). This agrees with the literature on collaborative governance which states that members should be provided with incentives for participation or disincentives for non-participation (Gunningham 2009).

Coinciding with the literature (Huppé & Creech 2012), it was thought that knowledge produced in this kind of forum would need to be disseminated in a suitable way and "be made available to the institutions and relevant authorities in managing and formulating policies in coastal management for consideration" (Field notes, Meeting 6, 19 November 2013). In other words, the forum would need to produce an appropriate output that could be accessible and usable by those in managerial roles. Burt (2004) proposes that tangible and meaningful products are to be produced by the institution as the fourth step in an effective knowledge brokering process

In terms of time commitment, it was thought that "it should meet four times a year" (MacKay 9 October 2013) or should "meet maybe twice a year [routinely]… and otherwise on an ad hoc basis when particular issues come up… Otherwise it takes up too much time. You can already see that people don't always come" (Dr G 11 October 2013). While these sentiments seem to be shared by the respondents, the experience of the experimental competency group as well as the literature seems to indicate otherwise (Landström et al. 2011; Stassart 2008). One of the reasons the Knowledge for

Coastal Change Research Group was effective in generating meaningful interactions in an environment of trust and mutuality was that there was sufficient time for members to get to know and interact with each other and each other's knowledges. This feeling of trust and mutuality is thought to be essential to developing social capital in the forum, where members can arrive at shared norms and values and aspire for social cooperation and social relationships of their own accord (Cohen and Prusak 2001).

The Knowledge for Coastal Change Research Group met monthly for three to four hours, which was a found to be an adequate interaction time for a transdisciplinary institution. As an institution that aims not only to share ideas and experiences but also produce knowledge this seems reasonable, as knowledge is not only co-produced in each separate meeting but develops through successive meetings. Thus, further investigation would need to be conducted on what the appropriate (and minimum) time commitment for this kind of forum would be, striking a balance between being too demanding and having members missing meetings and, on the other hand, having too few meetings and curtailing the knowledge production process.

6.4.3. Shared Visions

It was suggested that for a knowledge exchange forum to be successful, not only would you need the right people there, but these people "need to see the value in having the forum" (Mr D 1 October 2013). The process "requires the political chiefs to buy into the notion of sustainability rather than short-term economic benefits" (Dold 23 September 2013) and in this way build a shared vision:

> *The foremost [challenge] is understanding the purpose of the forum and what it can achieve. In other words if people come into the forum expecting to receive decisions that favour them particularly and if they get frustrated because they're not getting any decisions out of that forum then its never going to work. But if they come in saying here's an opportunity for me to learn a little bit more about, to hear what's happening in other areas that impinge on what I'm doing and maybe come from a discipline that I'm not particularly involved in then we have a chance to work* (Celliers 7 October 2013).

To facilitate these shared visions, the data, coinciding with the literature, proposes that the process must engage social learning (Pahl-Wostl 2007). The members should understand the different values, perspectives and complexity of the system; should cooperate with and trust each other; should jointly map problems and solutions; and there should be formal and informal relationships between members. While shared visions are thought to be essential in the effective running of such a process it is worth appreciating that if the meetings and interactions between members are managed and designed appropriately, it is proposed that members would develop shared visions through the meetings (Huppé & Creech 2012). Thus a broader, shared vision or perhaps a desire to learn and better manage the coast would need to exist among members at the outset, but this vision would be fine-tuned through the process itself. In other words, through their engagement with the forum, participants would engage in second and third-order learning, thus confronting their own biases and assumptions and arriving at shared visions in the process (Huppé & Creech 2012).

6.4.4. Integration into the Governance System

One of the objectives of the study was to try and understand how a knowledge exchange forum like the competency group would fit into the current coastal management and governance structures within the Municipality. Broadly, it was evident that all respondents felt that it would need "to contribute to some formal planning process" (Mr D 1 October 2013), have "sufficiently senior people at the meeting [and also] have some level of status with the municipal manger" (Breetzke 10 September 2013) for it to have an influence on coastal governance. This agrees with the literature, which suggested that for this kind of knowledge exchange forum to be effective, it would need some form of political mandate or would need to be initiated by the state, have access to financial resources and would need to provide members with incentives for participation (Kallis et al. 2009). Boundary organisations, it is proposed, can either exist as separate entities or form part of larger organisations (Clarke et al. 2013; Guston 2001; Kallis et al. 2009). It would however, need to be "[decided] upfront what purpose it's going to have. It can't just become an academic exercise" (Breetzke 10 September 2013)

6.4.5. Scope and Size

The primary research upon which the Knowledge for Coastal Change Research Group was modeled contended that the competency group method was best carried out with a few members (between 10 and 15), including natural scientists, social scientists, residents (tacit knowledge holders) and the research team (Lane et al. 2010). The members would not be representing their stakes or interests in the area but offering their expertise and knowledge on the issue. This small group would deal with a specific, tangible issue, e.g. the issue of flooding-risk management in Pickering, a town in the United Kingdom, as presented by Lane et al. (2011).

The evidence, however, provides a more nuanced understanding of the possible scope for such a knowledge exchange forum in the eThekwini Municipality. In projecting the scope for this kind of forum, there were two contrasting viewpoints. On the one hand it was felt that this kind of forum would be most appropriate in dealing with long-term planning, that is, "the challenges that we haven't anticipated" (Mr D 1 October 2013) while leaving the

> formal forum [the MCC]… to deal with short term issues, in a shorter time frame …. so ultimately you don't want the municipalities mandate for meeting with certain things being conflicted or being caught up in terms of anticipating or planning for the future e.g. if you have a sewer problem, fix it, you don't need to have people brainstorming how to do that… They key thing is that this [the competency group] is useful for long-term planning (Mr D 1 October 2013).

It was thought that the vision set by the knowledge exchange forum could start the larger ICM process, which could then inform the identification of goals and objectives to achieve the broader vision. This would be valuable in identifying and prioritizing potential strategies in the initial planning stages of managing the coast (Field notes, Meeting 6, November 2013). The proposed forum would, diverging from the previous MCC and PCC, need to place great emphasis on "knowledge generation rather than focusing specifically on legal requirements" although one participant felt that it would be useful to have one forum that could deal with coastal management from both a legal and strategic perspective (Mr D 1 October 2013).

Others, predominantly those forming part of the research team, felt that it should deal with specific coastal issues or smaller coastal areas at a municipal or district level: "where this kind of thing is useful in particular is with the technical working groups, that focus in on issues" at the local level (Dr G 11 October 2013). It was also felt that this type of forum would be useful at the level of district municipalities, which are less capacitated (Celliers 7 October 2013).

Dr G explains that in its current makeup the competency group would be ill-suited to playing a visionary role as it is not representative of all those who have a stake in the environment:

> *Knowledge holders deal with a solutionary space rather than a visionary space. If you think of setting a vision for a space you need to build consensus with all the people using the space. You're missing some of the people that matter, so it's not an inclusive vision. If you set your vision without consulting broadly it become difficult down the line with somebody who wasn't involved wanting to do something different in the space* (Dr G 11 October 2013).

Supporting this notion and further emphasizing the idea that a proposed transdisciplinary forum would be better suited to dealing with smaller, more concise issues, Breetzke explains that "because you're talking about a complex issue in a big area it would never work. You would have to hire a hall. So with looking at just a small area you could actually have people knowledgeable about the specific issues" (10 September 2013). This view agrees with the literature that holds that collaborative governance institution or a knowledge-holder forum is most successful when dealing with a particular problem or when deadlock in decision-making arises (Kallis et al. 2009; Landström et al. 2011). Evidence shows that the respondents felt that the competency group model would be difficult to forge as a fully representative forum, including all stakeholders in the coastal zone but would be better suited as a strategic forum that includes targeted knowledge holders with an intention to co-produce knowledge that would influence policy and management. However, it must be noted, that this perspective, as mentioned previously, is an indication that the respondents were still thinking in a 'stakeholder' rather than 'knowledge-holder' mode and not fully understanding the role of the competency group. Looking to the example of Lane et al.

(2011), the research group did not seek to invite a fully representative group of people, rather they invited specific natural and social scientists and residents who they felt had high levels of knowledge around the issue of flooding in Pickering, rather than having political interests.

Thus, while the literature on competency groups and co-production of knowledge purports that this kind of forum is best suited to dealing with technical or smaller issues, the experiences of members of the experimental Knowledge for Coastal Change Research Group suggest otherwise (Lane et al. 2010; Stassart 2008). This may be as a result of the visioning and values identification activities that took place within the Knowledge for Coastal Change Research Group, which were perceived to be successful. The members of the Knowledge for Coastal Change Research Group were asked to envision and map what their ideal coastal zone would look like and to identify what they felt were the main values that the coast offered (Field notes, Meeting 1, 12 March 2013). Conversely, it is worth appreciating that the Knowledge for Coastal Change Research Group did not have the opportunity to deal with a specific pre-existing problem (or deadlock in decision-making) in coastal management, and, therefore, members could not appreciate its possible efficacy in proving knowledge for something very specific. For example, Lane et al. (2011) present a particular issue, that is, flood risk management, in a small area of the United Kingdom. While the issue of water quality was discussed in the Knowledge for Coastal Change Research Group, this was done so from a broad perspective. There was no specific water quality problem or pressing management issue that the group was trying to address rather; the issue of poor water quality, in general, was examined (Field notes, Meeting 3, 30 May 2013).

6.4.6. Boundaries and Legal Character of the Proposed Knowledge Exchange Forum

Regarding its relationship with the PCC and MCC, some members felt that the forum should sit outside the current structures. They felt that the competency group would be 'slowed down' if it had to work within the PCC or MCC (MacKay 9 October 2013). The PCC and MCC are complex legal processes which are often 'bogged down' and would hinder the knowledge exchange forum from being "exciting and inspirational and

knowledge generating" (MacKay 9 October 2013). It was however noted that the formal bodies (the MCC and PCC) would need to have a direct line of communication and relationship with the competency group if it was established. Mr D envisioned the forum as being separate but needing to "work together with the MCC" (1 October 2013). He suggested that the role of the forum would not be entirely different from the MCC, the role of which was "not only to deal with legal requirements but also to share knowledge and learn about international best practices" (Mr D 1 October 2013)

Bulman explained that having two separate forums, with two different identities, would ensure that the kind of robust knowledge sharing and generation intended could transpire:

> *I think it would have to run parallel and I think you'd have to preserve the notion of the provincial committee as being a forum for a variety of actors who retain the ability and the right to make their own decisions. So that means that there's no coercion within the PCC and that there can be no coercion from the PCC to any kind of municipal or local structure but there must be a door between the two. There must be clear lines of communication between the two* (Bulman 15 October 2013).

This notion was supported by the literature on competency groups, which proposes that the forums are independent from the conventional management and governmental institution, operating independently but having feedback mechanisms with the authorities (Whatmore & Landström 2011). Importantly, the competency groups, while operating independently, have the influence to enact decisions made and are not merely a theoretical or research exercise, as was the case of Lane (2011) when they dealt with the issue of flooding in Pickering. It must be appreciated however, that in the South African context, separating the proposed knowledge exchange forum from the MCC and PCC would mean that it would have less legitimacy and also have to rely on moral persuasion (as was the case of the eThekwini CWG and KZN PCC) for decisions or recommendations to be carried forward. One of the reasons for the success of the competency group in the Pickering case study was that its decisions would be carried forward, and as a result, there was greater motivation for members to participate. Therefore a balance between creating an independent forum that could generate

knowledge in an exciting and vigorous way, and getting caught up in the politics of a municipal forum, needs to be found.

Diverging from the above, four respondents felt that the proposed knowledge exchange forum "needs to be part of current forums and structures… if you want to make headway" and that it should not be seen as "two separate forums. It will be unfortunate if it is seen that way" (Mr D 1 October 2013). Breetzke, former chair of the provincial CWG, felt that the competency group should not be a separate entity to the MCC but be a project of the MCC that would work to address particular issues as they arose (Breetzke 10 September 2013). This could be done:

> *…legally as well. What the Act allows is, for you to put in another layer of management: I think there is place for both [the MCC and PCC and the knowledge exchange forum], especially if you can link the two. I wouldn't say its either or… the two need to talk to each other; the MCC being the more formal, legislative requirement. If you want to go in depth into an issue, the [competency group] is incredibly useful* (Breetzke 10 September 2013).

This was supported by a respondent with experience at the provincial level who supported the idea of the forum existing separately but supporting the MCC (Dr G October 2013). She stated that: "Where [she] think[s] this kind of thing is useful in particular is with the technical working groups that focus in on issues" (Dr G October 2013). For example, the technical working group on boat launch sites, the Boat Launch Site Advisory Group, brought in knowledge-holders (Breetzke 10 September 2013) that had technical and experiential knowledge on the issue, with a direct aim of resolving who and where beach driving and boat launching would be allowed in the KZN coastal zone.

One further respondent conceives a knowledge exchange forum differently at the municipal and provincial levels. A knowledge exchange forum is "really valuable where you have the least collection of resources or your lowest level of resources, which is at local government level" (Celliers 7 October 2013). He suggests that the MCC at the municipal district level should run as a 'negotiation process' rather than a 'chairman-like run forum' as specified in the Act (Celliers 7 October 2013). He suggested that this

could be introduced through a bylaw that effectively converts the MCC into a "knowledge negotiation institution that helps to fill the gaps where they lack capacity" (Celliers 7 October 2013). Since the PCC is both a mandatory and statutory body it would be difficult to convert it to a knowledge exchange forum:

> *so in that case there may be reason to justify a technical, transdisciplinary sub committee or something like that... I doubt it can be directly part of the PCC without changing the way the PCC is convened, and run* (Celliers 7 October 2013)

The above discrepancy of perspectives in supported by the literature on 'boundary organisations' that hold that they can either exist as separate entities or form part of larger organisations (Clarke et al. 2013; Guston 2001; Kallis et al. 2009). Boundary organisations belong neither to the realm of science nor the realm of politics but stand in between, thus "help[ing to] stabilize the boundary between science and politics" (Guston 1999, p.88). Having a similar aim to the competency group, boundary organisations seek to bridge the gap between disparate frames and viewpoints and facilitate shifts in concepts and new language to talk about problems and solutions.

6.5 Conclusion

It is evident that all respondents felt that there was a need for some form of knowledge exchange forum or modified coastal governance process that focused on knowledge production. For this to be realized, it was thought that dedicated resources, including a dedicated budget and someone to head the process, were essential to setting up this kind of forum (Breetzke 10 September 2013; Dold 23 September 2013). Deliberate efforts to secure political buy-in and support for the process would also need to be made (Breetzke 10 September 2013).

The preceding discussion demonstrates that there was little agreement amongst the interviewees as to whether a knowledge exchange forum in the eThekwini Municipality's coastal zone should be fashioned as a high-level strategic or visionary forum or as a lower level technical forum that would deal with specific issues. Through the experiences gained via the experimental competency group, as well as the previous PCCs technical subcommittees one might argue that there is scope for introducing a

transdisciplinary knowledge exchange forum at both levels, albeit with slightly different features. A visionary body would be effective at a provincial level. This would not be representative but rather include people with high levels of knowledge around the coastal environment – that is, political, scientific, economic and social knowledge. This group could function as an advisory group or a reference group to the city or province (Field notes, Meeting 6, 19 November 2013). This high-level, strategic forum would provide advisory support to the mandatory PCCs and the discretionary MCCs, without itself having mandated authority over either. To have an impact on these statutory forums, the strategic knowledge exchange forum would need to have specified deliverables and have opportunities to engage with both the PCC and MCC.

At a municipal level, a transdisciplinary knowledge exchange forum could either be the MCC itself (by altering the way the forum operates) or be an ad-hoc forum that comes together in support of the MCC when a deadlock in dealing with a particular problem arises by providing new, integrated knowledge. Due to limited capacity it is unlikely that any municipalities would be in a position to afford the statutory MCC and a knowledge exchange forum simultaneously. If the former option is pursued, this would need to be enacted through a bylaw that would change the way the MCCs operate. Thus, further inquiry would need to be carried out within the municipality and province, to determine the appropriate make-up of a transdisciplinary forum if there is support for such a body.

It may, however, be preferable for the MCCs to be modified to operate as transdisciplinary institutions for the reason that; these institutions are currently non-operational and would be in the initiation phase and would therefore not require a modification of an existing process but rather the implementation of a new process. In addition, experience suggests that full inter-departmental representation is difficult to find, meaning that an institution that advocates for knowledge as the criteria for participation (a knowledge exchange forum) rather than representing the interest of stakeholders may be more substantial in its impact. Lastly, an MCC whose focus is shifted to knowledge production may be better modeled as an institution for collaborative governance, as opposed to a competency group that is primarily a research apparatus, rather than an alternative governance institution (Whatmore &

Landström 2011). As a collaborative governance institution, the MCC would be state-led and involve diverse knowledge-holders in a deliberative process seeking to generate new values and ideas through a process of social learning that could feed directly into policy and management spaces (Ansell & Gash 2007).

CHAPTER 7: CONCLUSION

7.1. Introduction

The study set out to explore how knowledge is produced, mobilised and taken up in the realm of coastal governance in the eThekwini Municipality. This was accomplished through examining two different forms of coastal governance forums: the state-commissioned eThekwini Coastal Working Group and KZN PCC (previously the KZN Coastal Working Group) and the experimental Knowledge for Coastal Change Research Group. International experience with environmental planning and management attests to the inefficacy of traditional, technocratic management approaches being able to deal with the complexities of the coastal environment – that is, a diversity of social, environmental and economic concerns and priorities (Clarke et al. 2013). It is proposed that "tensions arise at the interface between communities with different views of what constitutes reliable or useful knowledge" (Clark et al. 2011, p.1), requiring 'boundary organisations' or 'boundary work' to bridge the gap between disparate knowledges and points of view (Kallis et al. 2009). Thus, the study sought to understand the scope for alternative or modified modes of governance to create a more effective production and mobilisation of knowledge in the eThekwini coastal environment, which, similar to other municipalities in South Africa, is governed largely through a technocratic management approach, with little evidence of 'governance'. The current chapter provides a summary of the findings of the study and draws conclusions to the primary research questions. While a comparative study of the two different institutional arrangements was not the objective of the research, their similarities and differences were drawn upon to understand better existing and prospective knowledge production and coalescence methods in the Municipality's coastal environment.

7.2. Methodology

To understand the two different forms of interactive coastal governance the study, framed within the interpretative paradigm, drew on the experiences and views of persons within the municipal and provincial coastal governance environment. This was carried out through in-depth interviews with ten respondents, some of whom were members of the eThekwini CWG or the KZN PCC, others members of the Knowledge for Coastal Change Research Group, and others members of both. Participant observation

was also used as a method of data collection in the case of the Knowledge for Coastal Chang Group. Simple thematic analysis was used to analyse the data. A process of iterative 'coding' was used to identify themes or patterns as they emerged. Initial themes were based on the research questions and conceptual framework (Chapter two). These were revised later to produce a final set of themes and sub-themes to reflect the data.

7.3. Background

The dominant coastal management paradigm in South Africa, as well as internationally, is Integrated Coastal Management (ICM) (Glavovic 2006c). ICM is a method of coastal governance that seeks to bring together different coastal actors into a deliberative space to effect more robust, sustainable management of the coastal zone. ICM seeks to equip better local and regional coastal management in planning for climate change, uncertainty and other socio-ecological challenges.

In South Africa, the coastal zone is managed in accordance with the Integrated Coastal Management Act (2008), which falls under the National Environmental Management Act. The Act institutionalises Municipal Coastal Committees and Provincial Coastal Committees which are deliberative forums consisting of coastal stakeholders and cross-department managers (Celliers et al. 2009). The MCCs and PCCs are forums for deliberation rather than decision-making, relying on moral persuasion and the commitment of members to take recommendations forward. The eThekwini CWG, which was due to be replaced by the MCC, was in operation until 2010 when it was halted. Similarly, the KZN PCC was halted in 2010 due to administrative backlogs in appointing members but was reconvened in June 2014[25]. These forums are studied to understand current processes and challenges for coastal management and how knowledge can be better produced or coalesced to better manage and govern the coast.

The Knowledge for Coastal Change Research Group, on the other hand, was a research experiment along the Durban 'Golden Mile' funded by the Department of Science and Technology. It sought to test a radical method of conducting transdisciplinary

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[25] The data collection and interviews had already been completed at this time

knowledge production called the competency group (Lane et al. 2010). The competency group brings together different knowledge holders (rather than stakeholders) into a transdisciplinary setting to produce innovative solutions and knowledge around a particular environmental controversy (Lane et al. 2010). The research team comprised of social and environmental scientists from the University of KwaZulu Natal and Council for Scientific and Industrial Research. The group was in operation from November 2012 to December 2013.

7.4. Findings

Chapter five and six present the main empirical findings. This section will synthesize these empirical findings to answer the study's research objectives:

1. To understand how knowledge is produced, coalesced and mobilised in the coastal governance domain, looking specifically at two different institutional arrangements, namely; the *eThekwini Coastal Working Group* and *KZN Provincial Coastal Committee* and the *Knowledge For Coastal Change Group.*

2. To understand the role of and the (possible) relationship between these institutions and the broader coastal governance environment, focusing specifically on the interface between knowledge and governance.

7.4.1. A Comparison of the Three Coastal Forums

The current structures, namely, the eThekwini Coastal Working Group and the KZN PCC, were thought to be forums for interactive governance, allowing members to share experiences, problems and ideas, build networks and enhance their understanding of the activities and priorities of the different departments. These forums were primarily a space for discussion and cooperation rather than a space for knowledge-production. Despite challenges in representation, political support and disparate visions, these forums were thought to be effective in enhancing communication and coordination between the different departments. That said, CWG and PCC were unable to facilitate new ideas or approaches to coastal management, and members were still concerned with their individual stakes and interests rather than working towards a common vision for the coast. In other words, the forums were unable to reach the second and third

level of the learning cycle: revision of assumptions, values and world-views (Huppé et al. 2012). This reflects the standard management culture and decision-making process in the South African environmental management fraternity where public participation and stakeholder engagement are seen as the only way of ensuring accountability and legitimacy (Buhlungu et al. 2007). Optimal collaborative governance institutions, rather than brokering agreement, should seek to generate new values and ideas through a process of social learning (Clarke et al. 2013; Norgaard et al. 2009). This robust generation of ideas and values and production of new knowledge and solutions is scarcely detected in the CWG and PCC. There is little understanding of alternate methods of governance or the usefulness of 'boundary work' and 'boundary organisations' (e.g. the competency group) to bring together disconnected or poorly connected network nodes to combine resources and expertise for problem-solving and knowledge generation (Clarke et al. 2013; Kallis et al. 2009).

The experimental Knowledge for Coastal Change Research Group, on the other hand, was a voluntary body whose explicit aim was to co-produce knowledge in a transdisciplinary setting (Celliers & Scott 2011). The Knowledge for Coastal Change Research Group was able to develop social capital by facilitating constructive and repeated interactions between different actors, and a collective vision by jointly defining problems and mapping possible solutions (Huppé & Creech 2012). The experiences of members of the Knowledge for Coastal Change Research Group suggests that the forum was successful in achieving its primary objective, however, lacking representation from particular knowledge-holder groups, and having no mandated authority or incentives for participation weakened the potential influence of the group. While some respondents felt that the Knowledge for Coastal Change Research Group was a unique process, others felt that the subcommittees of the PCC e.g. the Boat Launch Site Advisory Group were transdisciplinary forums, which were also able to produce a robust and integrated knowledge.

7.4.2. Knowledge Production in the eThekwini Coastal Environment

The evidence indicates that knowledge is generated in the coastal environment largely through the use of consulting services or through the experience of managers and state actors. While the academic community does produce knowledge on coastal issues, this

knowledge is rarely disseminated to management and governance spaces and, therefore, has little bearing on the way the coast is governed and managed. At the same time, there is a predisposition amongst managers to go about managing the coast in line with their personal and technical experience and inclinations i.e. embedded knowledge, without seeking new knowledge or different types of knowledge (Carayannis & Campbell 2006). Thus, management of the coastal environment is largely based on experiential knowledge of officials and consultants rather than a broader set of different types of knowledge (social, political, cultural). In complex systems, such as the coastal system, it is recognised that failures in management and governance arise not only out of a lack of knowledge but also out of inappropriate uptake of knowledge that is available (Huppé & Creech 2012). This requires 'boundary work' or 'institutional brokering' at the interface between knowledge and governance to bring together poorly connected or disconnected network actors, facilitating shared visions and integrated and more robust knowledge generation and uptake (Norgaard et al. 2009).

Producing more 'usable knowledge' requires that the knowledge produced is more accessible to managers. Firstly, academics must disseminate knowledge in such a manner that it is easily understood and implemented by managers; this may be through producing management-specific research outputs, making presentations to the management community or fostering consultative relationships between managers and academics (Bulman 15 October 2013; Dold 23 September 2013). In addition, scientists and the academic community must produce knowledge that is inclusive of the multifaceted social and economic characteristics of the coastal landscape and its users. The management community may be less inclined to using purely scientific knowledge, as it is a poor representation of the complexity of the South African coastal environment. Furthermore, better networks between knowledge-producers, the public (stakeholders) and managers need to be facilitated to produce such knowledge. These networks or boundary organisations can either exist as separate entities or form part of larger organisations (Clarke et al. 2013; Guston 2001; Kallis et al. 2009).

In addition to the above, knowledge may be poorly utilized due to a management culture that gives little support for decision-making and problem-solving based on a broader hybrid of knowledge and places little emphasis on adaptive management

practices. Therefore, a core challenge is shifting this management culture to one where using a broader knowledge base for decision-making becomes the norm. Furthermore, management capacity in municipalities needs to be increased such that managers have the necessary time to engage in processes that provide them with new knowledge for better or modified management practices and decisions. Many people in management positions are inundated with work with little time to spare.

7.4.3. Towards the Inclusion of 'Knowledge Exchange Forums' in South African Coastal Zone Management Processes

From an institutional perspective, deviating from the competency group literature (Lane et al. 2010), the evidence shows that an effective space for interaction and negotiation within the coastal environment would only be realised through a mandated institution, rather than a voluntary body. The proposed Knowledge Exchange Forum, essentially a boundary organisation, would facilitate shifts in concepts and the emergence of a new language to talk about problems and solutions (Kallis et al. 2009). The institution would have mandated authority to take forward recommendations or decisions, and allocated resources and incentives for member participation would need to be secured. Furthermore, the body would need to have specific products or deliverables so as to avoid it becoming an 'academic exercise' or a talk-shop. Operationally, the institution would need to attract members that were both sufficiently representative of the knowledge types related to the coastal environment and having a high level of influence in the various bodies or departments in which they work, so as to take forward decisions or recommendations. In keeping with the literature, it was thought that there would need to be political will amongst members and other state actors to engage this kind of forum. Furthermore, a powerful leader (chairperson) who has influence over members and the ability to nurture a culture of trust, cooperation and shared visions and objectives is required (Huppé & Creech 2012). It is evident that a 'knowledge exchange forum' in the eThekwini Municipality may be better fashioned as a collaborative governance institution than a competency group. Collaborative governance institutions are state-led deliberative forums for policy-making that engage non-state actors to generate new values and ideas through a process of social learning (Clarke et al. 2013; Norgaard et al. 2009).

While there was a consensus that the eThekwini Coastal environment had much to benefit from the introduction of a transdisciplinary knowledge exchange forum, there was little agreement on how this forum should be positioned. On the one hand, it was thought that the forum should sit outside of current structures, capturing the robustness concomitant in having a malleable, dynamic forum, independent of the slow-moving and politically determined state forums. Conversely, a pragmatic approach thought to be achievable within the resource, time and capacity constraints of the municipality was to modify the way the current forums operate or create a transdisciplinary subcommittee of the MCC. Considering the capacity of the municipality along with the purported need for these forums to have political support and buy-in, it is thought that the latter approach would be viable. It must be acknowledged, however, that success of these modified MCCs in producing more usable knowledge is contingent upon the ability of the chairperson(s) to create an environment of sharing and learning and trust and mutuality i.e. a champion. In addition, the issue of ensuring appropriate and adequate representation and providing incentives for participation and attendance would still need to be addressed. This finding departs from the primary literature, which positions the competency group as independent from current coastal management structures (Lane et al. 2010).

Therefore, the respondents envision the proposed knowledge exchange as being closer to a 'collaborative governance' process rather than a competency group. In the collaborative governance literature, the institution is state-led, the state provides incentives for participation, and the state establishes performance indicators for both the process as a whole as well as individual performance (Gunningham 2009). Collaborative systems of governance rather than brokering agreement endeavour to engender new values and ideas through encouraging mutual sharing and understanding. This is contingent upon there being adequate time for consensus-building, an environment of trust and high levels of interdependence between members (Ansell & Gash 2007). It could be said that the competency group was able to generate these new values and ideas through a process of social learning. On the other hand, the eThekwini CWG and KZN PCC, while successful in creating a space for dialogue and cooperation, were not suited to generate new values and ways of thinking about the coastal environment and the issues that arise within it. Therefore, any system of

collaborative governance or transdisciplinary knowledge production in the municipality's coastal environment should look closely to the experiences of the competency group, especially regarding its egalitarian facilitation-style and the culture of trust and mutuality that it was able to create.

7.5. Recommendations for Further Research

The study shows the scope of a transdisciplinary forum extended itself beyond a technical, problem-solving forum to a high-level visionary space. Further study needs to be conducted as to how a forum of this nature is best constructed, including the basis for membership, the products of such a committee and the relationship of such a committee with municipal and provincial departments and the MCC specifically. In addition, the study alluded to the inherent difficulty in conducting and sustaining transdisciplinary activities in a culture of technocratic government. Therefore, further study needs to be carried out in how this institutional inhibitor can be overcome or how it can be harnessed to effect better coalescence and production of knowledge. Lastly, the study bore testimony to the capacity constraints of the eThekwini Municipality and more specifically smaller district level municipalities. This suggests that for any transdisciplinary coastal governance forum to be successful in the South African context, it would need to be replicable at the level of the lowest capacity and resources. Consequently, further research may be necessary for deciding on how best to design the forum such that it is effective even at this low capacity and resource level – that is with a few members, limited political support and limited incentives.

7.6. Policy Implications and Recommendations

While the primary purpose of this research was not to determine policy implications, the following policy recommendations are suggested to address the challenges for better production and coalescence of knowledge for coastal governance:

a) The current MCCs should be modified to operate as transdisciplinary forums, where members are not only encouraged to share knowledge and experiences but to co-produce new knowledge and interrogate their own underlying epistemological and political biases.

b) Ad-hoc municipal subcommittees should be set up and called upon when a deadlock in solving a particular coastal problem arises. These subcommittees

should be made up of a few people with high levels of knowledge in the particular matter.

c) A high-level visionary forum should be set up at a provincial level to produce broad visionary strategies for the KZN coastline. This body should produce research reports for the benefit of managers and provide consultation services to both the PCC and MCCs.

d) State actors, civil society and the public should be made aware of the benefits of engaging in transdisciplinary knowledge production processes as opposed to purely technocratic management approaches for coastal management.

7.7. Conclusion

The members of the competency group and the respondents to the study, who were all very experienced and knowledgeable about the coastal zone, saw the need for more transdisciplinary, hybrid knowledge production (tacit embedded and codified integrated). They believed that more democratic governance and management of the coastal zone was required to make policy outcomes more legitimate and effective, i.e. 'deliberative turn' in policy-making was required. It is important to note, however, that while most members of the Knowledge for Coastal Change Research Group understood that its objective was to produce knowledge by engaging different knowledge-holders (rather than stakeholders), some respondents felt that it would never be truly representative of the different users and stakeholders in the coastal zone, thereby limiting its usefulness. This view is a clear indication that the model of the competency group and its objective was not fully understood, and that these respondents were still thinking in 'stakeholder mode', which explains the deliberation over 'interests' rather than knowledge.

The study concludes that although there has been some progress in recognizing the need for alternative governance and, to a lesser extent, knowledge production techniques in the coastal environment in the eThekwini Municipality, there are still critical challenges, particularly from implementation and policy perspective, which hold many opportunities for development. These constraints are influenced largely by a lack of local government capacity and resources and a lack of political will amongst some state actors. Any attempt to introduce a transdisciplinary knowledge exchange forum or

collaborative governance institution must take cognizance of the limited capacity found in local government and a lack of familiarity with these approaches in the local coastal governance environment: a developing democracy with a complexity of social, environmental and economic priorities. That said, the eThekwini Municipality and coastal environment at large have much to benefit from alternate modes of coastal governance and knowledge production. The current forums are inadequate to produce transdisciplinary knowledge and resolutions, especially in the face of climate change and growing environmental uncertainty and must, therefore, seek to harness a more diverse range of knowledges and experiences. "Expertise is more widely distributed within society than many might imagine. The question becomes how to mobilise and to diversify that expertise…" (Lane et al. 2010) for better coastal governance.

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APPENDIX A: INTERVIEW SCHEDULE

Interview Schedule for Masters Dissertation

Name: Tazkiyyah Amra
Project title: The Production and Coalescence of Knowledge: a Study of Coastal Governance Processes in the eThekwini Municipality.

*Instructions to interviewer are in italics. Questions to be read out are in normal *print*

Briefly introduce yourself, explain the objectives of the research project & read out the informed consent form and gain permission to proceed with the interview. Responses of each interview to be recorded on an audio recorder. Brief notes to be taken down by hand. May prompt interviewee or provide explanations/ clarifications as necessary.

1. What institution / organisation do you represent in the committee? *MCC interviewees only*
2. How long have you been with this organisation? *MCC interviewees only*
3. What knowledge do you hold about the coastal environment?
4. How have you accumulated this knowledge (e.g. Professional history, personal experiences, special interests)?
5. Would you categorize your knowledge as tacit, embedded or professional or both? Explain your answer. *Interviewee to be provided with written definition of each of these categorisations.*
6. How long have you been a member of the Competency Group/ MCC?
7. Describe your role as a member of the Competency Group/ MCC?
8. Could you describe the kind of interaction that takes place between members within the Competency Group / MCC? Give examples of specific cases.
9. How are decisions made/knowledge produced within the Competency Group/ MCC? Does the chair have the final say or do all members have to come to an agreement before a decision is made? Give examples of specific cases.
10. In what settings are the meetings held for the Competency Group/ MCC?

MCC interviewees only:

11. To what extend is it *(the MCC)* effective in providing a forum for dialogue, co-ordination and co-operation between key organs of state and other people involved in coastal management in the municipality? Discuss.
12. To what extent do you feel that the MCC is effectively promoting ICM?
13. Do you feel that recommendations given by the MCC are effectively translated into policy/ action? Give examples

Competency Group interviewees only:

14. Do you feel that the Competency Group approach is an effective way of producing usable knowledge?
15. In your view what is this approach?
16. How is it different from other coastal governance forums?

All:

17. What do you understand by disciplinary; multi-disciplinary; interdisciplinary and trans-disciplinary knowledge production? *(Provide a brief explanation of Transdisicplinarity)*

18. Have you participated in any research team for trans-disciplinary knowledge production (in the past)? Do you think that there is a need for such knowledge production processes in the eThekwini Municipality's coastal governance environment? Explain why?

19. What do you see as the challenges for setting up effective spaces of knowledge production and negotiation (sharing) in the eThekwini Municipality coastal environment?

20. How can more usable knowledge (that takes into account the divergent socio-economic, political and environmental concerns within the municipality's coastal environment) be produced?

21. Do you feel that the South African coastal governance and policy landscape has room for this kind of knowledge production and negotiation process (Mode 2 / transdisciplinary)? How do you see it fitting into our current governance and management structures?

22. How has participating in these processes changed your thinking about coastal zone management?

Thank you