The role of water regimes in the promotion of hydrosolidarity in the Southern African Development Community (SADC): The case of the SADC Water Sector and the Orange-Senqu Commission (ORASECOM)

by

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LIST OF ABBREVIATIONS

Agenda 21 – Agenda 21: Programme of Action for Sustainable Development

AfDB – African Development Bank

AMCOW – African Ministers Council on Water

AU – African Union

Berlin Rules – The Berlin Rules on Water Resources

CSIR – Council for Scientific and Industrial Research

DRC – Democratic Republic of Congo

EU – European Union

FAO – Food and Agriculture Organisation

GDP – Gross Domestic Product

GEF – Global Environmental Facility

GIZ – *Deutsche Gesellschaft für Internationale Zusammenarbeit*

GWP – Global Water Partnership

HSGOC – NEPAD Heads of State and Government Orientation Committee

IBT – Inter-basin Transfer

ICP – International Cooperating Partners

ICWE – International Conference on Water and the Environment

IGO – Intergovernmental Organisation

ILA – International Law Association

ILC – International Law Commission

IRN – International Rivers Network

IPCC – Intergovernmental Panel on Climate Change

IR – International Relations

IWRM – Integrated Water Resources Management

JIA – Joint Irrigation Authority

JPTC – Joint Permanent Technical Commission

JTC – Joint Technical Committee

LHDA – Lesotho Highlands Development Authority

LHWC – Lesotho Highlands Water Commission

LHWP – Lesotho Highlands Water Project

MAR – Mean Annual Runoff

MDG – Millennium Development Goals

NEPAD – New Economic Partnership for African Development

NGO – Non-governmental Organisation

PAP – Pan-African Parliament

PWC – Permanent Water Commission

OAU – Organisation for African Unity

OKACOM – Okavango Basin Commission

ORASECOM – Orange-Senqu River Commission

ORRS – Orange River Replanning Study

RBO – River Basin Organisation

Revised Watercourses Protocol – SADC Revised Protocol on Shared Watercourses

RIDMP – SADC Regional Infrastructure Development Master Plan

RISDP – Regional Indicative Strategic Development Plan

Rio Declaration – Declaration of Rio on Environment and Development

RSAP – Regional Strategic Action Plan

RWP – Regional Water Policy

RWS – Regional Water Strategy

SADC – Southern African Development Community

SADC Treaty – Treaty of the Southern African Development Community

SADC Watercourses Protocol – SADC Protocol on Shared Watercourse systems

SADC WD – Southern African Development Community Water Division

SADC WS – Southern African Development Community Water Sector

SIWI – Stockholm International Water Institute

TGO – Transgovernmental Organisation

TNO – Transnational Organisation

TFDD – Transboundary Freshwater Dispute Database

TWO – Transboundary Waters Opportunity analysis

TCTA – Trans-Caledon Tunnel Authority

UN – United Nations

UNCED – United Nations Conference on Environment and Development

UNGA – United Nations General Assembly

UN Watercourses Convention – United Nations Convention on the Law of the Non-Navigational Uses of International Watercourses

UNECA – United Nations Economic Commission for Africa

UNDP – United Nations Development Programme

UNEP – United Nations Environment Programme

UNESCO – UN Educational and Cultural Organisation

VNJIS – Vioolsdrift and Noordoewer Joint Irrigation Scheme

WB – World Bank

WCD – World Commission on Dams

WHO – World Health Organisation

Wits – University of the Witwatersrand

WMO – World Meteorological Organisation

WRTC – Water Resources Technical Committee

WSSD – World Summit on Sustainable Development

WWC – World Water Council

WWV – World Water Vision

ZAMCOM – Zambezi River Basin Commission

CHAPTER 1

INTRODUCTION: UNDERSTANDING TRANSBOUNDARY WATER GOVERNANCE IN THE SOUTHERN AFRICAN DEVELOPMENT COMMUNITY

1.1 Introduction and identification of the research theme

Water is both essential in the sense that it is life sustaining, and finite because it cannot be reproduced. Water users, however, are not finite. Populations continue to grow, economies expand, standards of living change and so demand for water increases (Jägerskog, Zeitoun & Berntell 2009: 5; Lenton & Muller 2009: 1). Thus, the capacity to harness and manage water sustainably is critical to the development of any civilisation (Kasrils 2002: 9).

Water management is a complex challenge in the Southern African Development Community (SADC). Firstly, many the most developed countries in the region, such as Namibia and Botswana, are the most water stressed (Malzbender & Earle 2009: 88) and find it difficult to ensure adequate supplies. Secondly, the region faces other challenges including population growth, climate change, movement of refugees, urbanisation and diseases such as cholera, malaria, tuberculosis and HIV/Aids (Swatuk 2009: 22), which are aggravated by water stress. Thirdly, SADC deals with pronounced differences in development levels. Some countries, such as South Africa and Namibia, are more able to mobilise the necessary human, financial and technological resources to address water scarcity and related human welfare needs than others (Ashton & Haasbroek 2002: 187). Finally, several key cities or centres of economic development (such as Johannesburg, Pretoria, Harare, Bulawayo, Gaborone and Windhoek) have been built on or near watersheds or continental divides[1], as opposed to be built alongside rivers, lakes or seafronts, This has resulted in these metropolitan areas being dependent on water that is pumped uphill resulting in great demand for electricity, and subsequently causing wastewater return flows, most of which enter downstream water storage reservoirs (Jacobs & Nienaber 2011: 666). All these issues "affect and will be affected" by the way in which water is managed (Gorbachev 2002: 8).

Adding to this complexity, in SADC there are 15 international river basins (see Map 1) that form linkages across national borders in the region. Another four basins (not in Map 1) link these SADC countries with neighbouring states to the north (Turton & Ashton 2008: 306-307). Four SADC states, namely Botswana, Mozambique, Namibia and Swaziland, have a

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[1] A continental divide is defined as the line following the 'height of land,' or the "drainage divide on a continent such that the drainage basin on one side of the divide feeds into one ocean or sea, and the basin on the other side either feeds into a different ocean or sea, or else is endorheic" (Jacobs & Nienaber 2011: 666)

water resource dependency ratio of higher than 40 percent, meaning that they depend on water generated outside their borders for more than 40 percent of necessary supply (FAO 2010).

Map 1: The 12 SADC mainland countries and the 15 river basins shared between these countries

Source: Turton & Ashton 2008: 307

Water also plays a critical role as a biophysical and social connecter. Conca (2006: 17) points out that the "physically and biologically integrated world is fragmented by political

division into sovereign states, but is also constantly being reassembled by massive, rapid flows of people, goods, money, ideas, images, and technology across increasingly porous borders. These flows produce a dense, socially constructed web that can transmit the causes and effects of seemingly local environmental problems from one place to another ... These transnational linkages are at times more subtle than cross-border flows of … [water], making their global interconnectedness less readily apparent … but no less real". Given that water is essential, complex, scarce and interconnected, it is a resource that can become politicised. At the very least it is a focal point both within and between water sharing states (Jägerskog, Zeitoun & Berntell 2009: 5). Therefore, it is essential to find effective ways to share the resource, thus avoiding potential tension or conflict.

Water has been marked by common interest and collaboration on an international, regional, basin, national and subnational level. Jägerskog, Zeitoun and Berntell (2009: 5) argue that healthy debates about managing transboundary waters, witnessed at multiple international meetings, reflect the fact that transboundary river basins are sites of enormous contestation, collaboration and focus. A prominent example of a codified international river regime that was produced through a process of contestation and collaboration is the *United Nations Convention on the Law of the Non-navigational uses of International Watercourses (UN Watercourses Convention)* that was adopted by the General Assembly in 1997 (Turton & Ashton 2008: 308). Such conventions are meant to facilitate the development and dissemination of norms about water management globally (Conca, Wu & Mei 2006: 269).

Similarly, in SADC, "[t]he water-resources governance framework ... has seen significant changes in the past decade, largely influenced by South Africa's changing role in the region. Previously co-operation over shared water resources has happened mostly on a bilateral basis, often with South Africa being one of the two partners …. Since the mid-1990s the trend has been moving away from bilateral co-operation toward regional and basin-wide co-operation" (Malzbender & Earle 2009: 98). This change was evidenced by SADC states concluding the *SADC Protocol on Shared Watercourses (SADC Watercourses Protocol)* in 1995, later revised as the *SADC Revised Protocol on Shared Watercourses (Revised Watercourses Protocol)* (Turton & Ashton 2008: 312). This too emerged from a process of contestation and collaboration.

The same trend is observed at basin level[2]. Previously, bilateral agreements had been more common. Currently, however, basin-wide (or multilateral) agreements are being concluded and basin-wide organisations established, in which all basin states are represented

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[2] Basin level is the area that "contributes hydrologically … to a stream" (Turton 2003c: 12).

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(Malzbender & Earle 2009: 98). This trend is arising because experience has shown that the establishment of basin-wide organisations, which represent the interests of all basin states, have the greatest likelihood of success in governing international waters effectively (Ashton 2003: 180). This kind of behaviour is evidence that "respective governments are committed to enhancing and strengthening the levels of cooperation between states and reducing the potential for disputes and conflicts to occur" (Turton & Ashton 2008: 313).

Conca (2006: 12) contends that "[r]egime building has become the grand strategy of global environmental protection". This quote and the above comments about global, regional and basin level water regime building indicate that water regimes, specifically fully-representative multilateral water regimes, are seen as a way to deal with the complexity of governing transboundary river basins.

Given the prevalence of developing and supporting water regimes at global, regional and basin level, it is essential to reflect on the capacity and effectiveness of these structures to deliver on good water governance. If such reflection is not pursued the risk of advancing ineffective or partly effective solutions is high. Widespread work has been done on articulating what effective water governance is and how it can be achieved. This dissertation focuses on this debate about effective water governance by using hydrosolidarity as an overarching approach to 'good' water governance. Hydrosolidarity is based on ideas of shared rather than egoistic water governance and suggests that "societal freshwater and ecological services will have to be seen in a river basin perspective …. [which aims at achieving] .... balance and compromises between upstream and downstream interests and ecosystems" (Falkenmark 1999). Hydrosolidarity is a way of envisioning a preferred water governance reality. In the governance of transboundary waters hydrosolidarity encourages the creation of cooperative institutional structures; promotes stakeholder participation in water governance; encourages development of shared knowledge; and allows for enhanced integration and linkages between riparians and other actors (Gerlak, Varady & Haverland 2009: 314-317). Thus hydrosolidarity has both aspirational and prescriptive dimensions.

The above raises issues of theoretical and practical interest, which are the focus of this dissertation. Two points, of theoretical interest, should be noted. It is necessary to consider how best to govern ever scarcer freshwater resources collaboratively (Ashton 2003: 180). In particular, hydrosolidarity is considered to determine if it is an appropriate approach to governing transboundary waters. This requires that the normative content and indicators of hydrosolidarity be clarified. Also, the grand and partial theories of International Relations (IR) have much to offer in terms of understanding, analysing and developing water regimes, which represent a specific kind of regime. This requires the consideration of literature relating

to forms of cooperation, regimes and international organisations. More specifically, the potential for water regimes to deliver on hydrosolidarity is considered.

The analysis of these two theoretical questions requires that theory developed by water managers be combined with theory developed by IR scholars. This is a task of merging different theoretical languages and thinking from different disciplines. Literature and theory on good water governance and hydrosolidarity have predominantly been developed by technical experts and water managers whose backgrounds are not in IR. Yet, it is the regime, which has strong roots in the IR discipline, which is expected to implement these technical indicators of good water governance. This can be a cumbersome task and Du Plessis (2000: 11) suggests that the water discourse is often devoid of specific theorising in relation to IR. Thus, whilst the water discourse is embedded in the competing theoretical perspectives of IR, it is often not explicitly articulated as such, although it should be noted that this has slowly started to change over the last ten years. Making theoretical stances explicit and understanding the potential of IR to merge with theories of other disciplines is an elucidating task for a scholar of IR, and thus forms part of this dissertation.

Significantly, this dissertation takes a pragmatic approach to theorising. This implies that the complex challenge of transboundary water governance is considered in reality or practice. A range of IR theories, where relevant are applied to the manifestation of transboundary water governance in order to understand the capacity of these regimes to deliver on hydrosolidarity. The reason for this is that "a single theoretical lens involve(s) trade-offs and can produce enduring blind spots unless accompanied by complementary, countervailing efforts to 'recomplexify' problems" (Sil & Katzenstein 2010: 9). Thus the purpose of the study is not to further the development of a specific theoretical position or fit the study into a certain theoretical mould. Rather, theory is used to more deeply understand and assess specific practices within the complex problem of transboundary water governance.

On a practical level, there is a perception that it is a 'good idea' to form multilateral water regimes (Malzbender & Earle 2009: 98). The various treaties, informal and formal mechanisms constituting these regimes need to be evaluated in terms of their effectiveness (Ashton 2003: 180). Given that SADC is facing a unique and complex set of transboundary water-related challenges, there is a need to find effective ways to govern water cooperatively in this region. It is therefore necessary to scrutinise the quality of water governance and water regimes in SADC.

The aim of this study is to explore transboundary water governance and hydrosolidarity in relation to mainland SADC (excluding island member states). This is achieved by considering

existing regional and basin level developments and exploring how effectively they contribute to hydrosolidarity.

1.2 Literature overview

This section offers a preliminary overview of literature in key areas relevant to this study. The theoretical dimensions of this study consider good transboundary water governance as expressed through the concept of hydrosolidarity. Thereafter, IR theory relevant to the study of multilateral water regimes is analysed to determine if water regimes can deliver on hydrosolidarity. The practical dimensions of this study focus on a regional water regime, the SADC Water Sector (SADC WS)[3] and a basin level water regime, the Orange-Senqu River Commission (ORASECOM). This is an exploration of the way that water regimes at different levels operate in SADC and how effectively these regimes can deliver on hydrosolidarity.

This literature overview and the ensuing approach to this dissertation takes an inherently eclectic approach. Eclecticism is "any approach that seeks to extricate, translate, and selectively integrate analytic elements – concepts, logics, mechanisms, and interpretations – of theories or narratives that have been developed within separate paradigms but that address related aspects of substantive problems that have both scholarly and practical significance" (Sil & Katzenstein 2010: 10). Such an approach reflects various features. The complexity of a problem is expressed, rather than simplified to fit into a specific paradigm. Also, eclecticism embraces diverse concepts and causal linkages that generate useful insights for scholars and practitioners. Finally, the purpose is to construct theories and associated narratives that help to pragmatically engage with real social conditions. This process of combining theoretical approaches to analyse problems, does not have to be exclusively rooted in IR, but can draw on thinking from other disciplines such as biology and sociology (Sil & Katzenstein 2010: 19-23).

1.2.1 Hydrosolidarity and transboundary water governance literature

The United Nations Educational and Cultural Organisation (UNESCO) International Conference on Water in 1977 laid the foundations for debate around issues of water and environmental governance (Jeffrey & Gearey 2006: 1). Throughout the 1980s the sustainable development agenda gained precedence. It was, however, the International Conference on

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[3] SADC Water Sector (SADC WS) refers to the regional water regime in SADC. It has three main institutional components, the SADC Council of Ministers, the Water Resources Technical Committee (WRTC) and the SADC Water Division (SADC WD). The SADC WD is the Secretariat and the 'organisational face' of SADC WS (SADC 2011: 39).

Water and the Environment (ICWE) in Dublin (1992) that developed the *Dublin Principles* on which Integrated Water Resources Management (IWRM) is based. These principles formed part of a shift from traditional engineering approaches to integrated approaches where water supply and demand, water conservation, and demand management measures are all simultaneously considered. ICWE led to the United Nations Conference on Environment and Development (UNCED) that further refined the Dublin ideals. Following the adoption of the *Dublin Principles* (see Box 1 on Page 29) there were efforts throughout the 1990s to develop an integrated water management approach (Turton *et al.* 2007: 2-3). This gave rise to numerous different conversations that tried to capture the essence of this changing environmental management paradigm. In this respect, ecohydrology, hydrosolidarity and IWRM represent closely related paradigms that capture much of the development and debate around water governance. These concepts are discussed in greater detail later in the study (see Chapter 2) but a brief contextualisation is provided below.

In general terms, ecohydrology considers water, the broader environment and people to be fundamentally linked. Thus, the water cycle needs to be understood within the context of the broader environment and human interaction with these processes (Gerlak *et al.* 2011: 257).

In 1996, the concept of hydrosolidarity was first introduced by Falkenmark[4] at the World Conservation Congress. In 1998, Falkenmark used the term, in public, in her Volvo Prize Lecture in Brussels. The 1990s emergence of the term 'hydrosolidarity' was influenced by debates in the 1970s that focused on issues of appropriate technology and socially responsible views of development and resource management. The concept has also been popularised by linking it to approaches to water research and policy building, by serving as the focal point of the 2003 and 2006 World Water Forums, by its use in publications across disciplines, and by its prominence in regional and international organisations such as the United Nations (UN), the Organization of American States and the Stockholm International Water Institute (SIWI) (Gerlak, Varady & Haverland 2009: 312-314).

Similarly to ecohydrology and hydrosolidarity, IWRM, emphasises that water should be managed in a holistic manner. This approach is popular amongst water managers as it offers a way of managing water at basin or catchment level. Although IWRM had much earlier roots, the debates of the 1970s and 1980s consolidated this thinking. As a result the 2002 World Summit on Sustainable Development (WSSD) led to the agreement that all countries should adopt IWRM plans by 2005. These plans were seen as key components to achieve

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[4] See page 3 for a definition of hydrosolidarity. Professor Malin Falkenmark is associated with the Stockholm International Water Institute (SIWI) and is one of the leading thinkers globally around issues of water-related ecosystem management.

the 2015 Millennium Development Goals (MDGs). At this point the Global Water Partnership (GWP) started playing a more active support and developmental role in the promotion and development of IWRM at country level (Simalabwi 2007: 40). Accordingly, it is important to recognise that IWRM, hydrosolidarity and ecohydrology are all heavily influenced by the thinking of Falkenmark and her colleagues, explaining the close relationship between the concepts.

In addition to the debate about what constitutes good water governance, Conca (2006: 5) contends that "[t]he world's water is indeed subject to deeply and increasingly transnational forms of governance. .... If global governance consists of governing acts that have broadly international reach, ... [including] ... the framing of policy, the setting of standards, and the mobilization and allocation of resources, then water is indeed subject to governance that is increasingly, though certainly not exclusively, global". He therefore suggests that the World Water Council (WWC), GWP, World Commission on Dams (WCD), International Rivers Network (IRN), and various commissions are examples of the manifestation of this transnational governance.

Transboundary water governance is topical for multiple actors in various contexts all over the world. An extensive body of literature covering the topic has emerged, indicating how influential and important transboundary water governance issues are in practice. This domain has generated interest from actors in government, civil society and various academic disciplines (Jacobs & Nienaber 2011: 665). This diverse group of people contributes to an understanding of transboundary water. Although much of the literature is strongly influenced by IR theories of regimes and international cooperation, this literature is often not specifically related to IR or the political sciences and not necessarily produced by IR scholars. Often academics with backgrounds in the natural sciences, geography and other disciplines contribute to the transboundary water governance discourse. As such the influence of IR thinking is often implicit rather than explicit (Du Plessis 2000: 11).

The literature on transboundary water governance covers a number of IR relevant themes, including topics like:

- The potential for transboundary water stress to cause conflict. Emergent hypotheses from this debate are that water is more likely to be a catalyst for cooperation (Turton 2002b: 245) since the cost of war between states is essentially higher than that of negotiating sustainable cooperative compromises. Conflict remains likely at localised scales between actors who directly experience water scarcity (Ashton 2011).
- How to foster transboundary water cooperation. This is a topic that has arguably produced the largest output. This literature focuses on a range of issues such as the development of water regimes (Jägerskog 2003; Turton 2003b), water institution

building (Bandaragoda 2000; GWP 2009), benefit sharing along transboundary rivers (Granit & Claassen 2009) and transboundary river treaties (Wouters 2000; Conca, Wu & Mei 2006; Kistin *et al.* 2009).

- Power asymmetries and inequality in transboundary river basins and how to manage this issue (Van der Zaag 2007). Related to this is the development of ideas around hydro-hegemony (Zeitoun & Warner 2006). Hydro-hegemony suggests that transboundary basins often have a hegemonic actor that can act either as a basin bully or a basin leader depending on the nature of cooperation in a basin. These hegemons can be critical to the stable functioning of water relations in a region.

- The variety of actors that can be involved in water governance in a region. In particular the role of non-state actors in transboundary water governance is considered (Meissner 2004; Conca 2006).

- The roles of norms in the governance of transboundary waters (Jacobs 2009).

- The role of IWRM, hydrosolidarity and related terms in the management of transboundary waters. These processes advocate holistic, integrated approaches to river management (Falkenmark 2003; Essaw 2008; GWP 2013a).

From this overview it is apparent that as far as hydrosolidarity and transboundary water governance are concerned, there is literature that can be drawn on to understand the various facets and challenges of managing transboundary rivers. It is important to recognise that whilst there is a lot of literature on this topic, the actual original content of the literature has been developed by a relatively small cadre of scholars. Falkenmark and closely associated colleagues are particularly influential in the literature drawn on for this study as it is really under her leadership that hydrosolidarity has been articulated and developed. Thus, this dissertation inevitably draws on a relatively narrow or scholar-specific canon of literature.

1.2.2 International Relations literature and multilateral water regimes

Many theories from IR provide useful tools to analyse multilateral water regimes. Over the last 40 years scholarship about regimes has been widespread, much of which is applied in the sense that it focuses on regimes in specific issue areas and contexts. In particular, there is some seminal theoretical work about positioning the notion of international regimes within IR scholarship.

Within world politics, regimes became a global phenomenon in the twentieth century (Rittberger 1995: i). As such, "[t]here is now no area of international intercourse devoid of regimes, where states are not circumscribed by the existence of mutually accepted sets of rules" (Little 1997: 298). Subsequently, Krasner's (1982: 186) definition of regimes as "sets of implicit or explicit principles, norms, rules and decision-making procedures around which

actors' expectations converge in a given area of international relations", has gained widespread acceptance. Of particular importance is the fact that this definition suggests that a regime is not just about rules, but also potentially involves a high level of institutionalisation.

In the 1970s Keohane and Nye (1977) and Bull (1977) pioneered work around international regimes. In 1982, this was followed by an initiative by a group of scholars who published a special edition called 'International Regimes' in *International Organisation*. These authors offered three viewpoints on regimes. The first group of authors views regimes as a permanent and influential characteristic of IR, asserting that all pervasive patterns of behaviour need to develop regimes to sustain themselves (Young 1982; Puchala & Hopkins 1982). The second group of authors is critical of regimes arguing that they obscure economic and power relations, and also suggesting that principles and norms do not play as much of a significant role in international relations as regime theorists suggest (Strange 1982). The third group of theorists offers a midway view of regimes. On the one hand the international system is one of states maximising power in an anarchic environment, but on the other hand, the restrictive nature of regimes on individual action can under certain conditions have significant impact in an anarchic world (Stein 1982; Jervis 1982). This publication offers a consolidated view of the different aspects of regimes, how they fit into the global context, and their benefits and limitations. It also lays the foundations for a large body of work with seminal contributions coming from Keohane (1984), Krasner (1983) and Oye (1986).

The next consolidated publication on regimes was edited by Rittberger and Mayer (1995) in their book titled *Regime theory and International Relations,* which highlighted four main issues. Firstly, they tried to develop a research agenda for researching international regimes. Secondly, they investigated conceptual and theoretical challenges focusing on regime analysis. Thirdly, the notions of regime formation and change were considered. Finally, they considered the idea of regime consequences. This publication thus offered a perspective of the research gaps, challenges and opportunities for studying regimes.

The most explicitly IR related publications around water regimes have come from Jägerskog (2003) and Turton (2003c) who view regimes in a generally positive light; and Conca (2006) who is critical of regimes. These are not the only scholars who have contributed to water regime literature, but most others have done so from a less explicitly IR stance. As such these three authors deserve focused consideration in this dissertation.

Anders Jägerskog titled his 2003 study *Why states cooperate over shared water: The water negotiations in the Jordan River Basin*. He considers the interplay between structures and actors and how this affects negotiations in the basin. He aims to ascertain the quality of cooperation that follows on from the Israeli-Palestine interim agreements and the Israeli-

Jordanian Agreement. He draws on regime analysis to answer this question and suggests water regimes are gaining increased attention as a concept. He also suggests that water regimes are useful "analytical frameworks for assessing the quality of the cooperation in the post-agreement phase" (Jägerskog 2003: 47).

Anthony Turton titled his 2003 study *The political aspects of institutional developments in the water sector: South Africa and its international river basins*. In this study he looks at how the potential negative (zero sum) outcomes of basin closure can be transformed into a positive (plus sum) outcome in South Africa's international river basins (Turton 2003c: 3). This is done in part through regime analyses to understand how regimes operate as a mechanism for desecuritisation in water resource management. Turton's regime analysis entails giving an overview of regime theory and how it is relevant to closed river basins. He also considers the conditions necessary for regime creation in the water sector. He suggests that water regimes have three main characteristics: a mutually accepted set of rules and procedures, an agreed upon set of hydrological data and a conflict management mechanism to address conflict potential. Whilst Turton openly embraces the use of regime theory as a mechanism for interpreting cooperation around transboundary watercourses, he cautions that regime theory has its limitations. He suggests that this theory risks emphasising what has been agreed on at the cost of what is being achieved; risks over-emphasising the static elements of a reality rather than the dynamic elements; is particularly state focused, directed more at rules and norms rather than powers and interests; risks being overly issue-specific; and tends to ignore the domestic elements of a given situation (Turton 2003c: 96-179).

Ken Conca's (2006) book has the title *Governing water: Contentious transnational politics and global institution building*. Conca investigates how water is governed globally, suggesting that regimes have been enormously influential in this regard. He contends that regimes have not been highly effective and that there are other institutional forms that are ignored and not given enough credit, because of the influential nature of regimes. These alternatives include phenomena like epistemic networks, the global market and transnational non-governmental organisations (NGOs).

Literature on regimes also needs to be understood within the context of theorising about forms of cooperation that states and other actors can pursue, such as unilateralism, bilateralism, regionalism and multilateralism. Theory on forms of cooperation is closely related to regime theorising, as it describes the membership and geographic focus of regimes in greater detail. Multilateralism is of particular relevance to this study given the focus on multilateral regimes in water governance. One of the earlier definitions of multilateralism, formulated by Keohane (1990: 731), suggests that it is about coordinating national policy through the inclusion of three or more states by opportune arrangements or

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institutions; agreeing on formal or informal rules that clarify behaviour and roles in order to specify activity and expectations; and seeing institutions as signs of more enduring multilateralism because, for institutions to emerge, agreed-upon rules need to be enduring. Notably, this definition places strong emphasis on the role of states and institutions.

Ruggie (1992: 564) reacted to Keohane's (1990) definition suggesting that it fails to recognise the qualitative elements of multilateralism. Multilateralism tends to involve goals of justice, obligation, and developing and upholding the international rule of law. As such, the question of how well multilateral cooperation fosters these ideals is more important than how many actors are involved or what institutions are developing. Thus, for Ruggie (1992: 564-571), multilateralism is about coordinating relationships between three or more states which agree on generalised principles of conduct; practise indivisibility in the way that costs and benefits are spread within the collective; and uphold diffuse reciprocity implying that over time members can expect to receive a relatively equal distribution of benefits.

Whilst Keohane and Ruggie are seen as providing some of the foundational debate around the issue of defining multilateralism, there are numerous other contributors. Rixen and Rohlfing (2007: 390), for example, emphasise the role that multilateralism plays in observing and developing international law, in building consensus about international issues, in renouncing the use of force and in dealing with traditional and non-traditional security issues (such as climate change, the environment, and human rights). Camroux (2011: 6) also suggests that both Keohane and Ruggie's definitions are lacking because they place too much emphasis on the roles of states and institutions, thus undermining the role of non-state actors who can also be party to multilateral action. In a globalised world there is a complex array of actors involved in transboundary problems. Funke and Nienaber (2012: 105) point out that apart from states and governments, civil society movements, business, influential individuals, epistemic communities and NGOs also play critical roles by contributing information, stalling agreements, and shaping perceptions about issues. Similarly, Bischoff (2008: 179) contends that civil society involvement with multilateralism is critical to keeping it relevant and accountable to people at grassroots level.

In 2012 an extensive study was commissioned by the European Union (EU) to examine the EU's contribution to multilateralism. This initiative explores multilateralism as a concept, an aspiration, and a form of international order (MERCURY 2012). Two of the team members, Bouchard and Peterson (2011: 11) suggest that all interpretations of multilateralism agree on three main points: "the importance of rules; inclusiveness in terms of the parties involved or affected; and voluntary cooperation that is at least minimally institutionalised". Given that

these conclusions are based on a systematic overview of literature on multilateralism, these points are used to guide the interpretation of multilateralism in this dissertation.

Literature on regimes and forms of cooperation emphasises the formal institutionalisation of regimes which is often expressed through the development of international organisations. As such, international organisations are an important point of analysis for this study. Clive Archer (2001) does a detailed study of international organisations in his book entitled *International Organisations*. He defines an international organisation as "a formal, continuous structure established by agreement between members (governmental and/or non-governmental) from two or more sovereign states with the aim of pursuing the common interest of the membership" (Archer 2001: 33). Accordingly, international organisations can fulfil a variety of roles within the context of multilateral water regimes. They can act as instruments that cater for the needs of their members, particularly when sovereign states are members and have the power to limit independent action by the international organisation. They can act as an arena for action to take place and create the space for members to meet, discuss, argue, debate, and cooperate. They can also be independent actors that shape debate, thinking, behaviour and decision-making in relation to water or whatever issue they focus on (Abbott & Snidal 1998: 16; Archer 2001: 69-73).

Having considered the partial theories about regimes, forms of cooperation and international organisations; it is important to consider where this body of theory fits into the broader IR discourse. Turton (2003c: 98) points out that "[r]egime theory forms part of the upsurge of neo-liberal institutionalism in various social sciences". Realists and liberal institutionalists (rationalists) have developed positions on regimes. Liberal institutionalists focus on how regimes allow states to overcome obstacles to collaboration that arise because of the anarchic structure of the international system. Realists are interested in how states use their power to influence the nature and agenda of regimes. Both, however, agree that regimes are the product of rational, self-interested actors. Multilateralism and international organisation-partial theories rest on similar assumptions to regime theory and as such also fall into the theoretical paradigms described above (Little 1997: 298).

Given the similarity of their assumptions (discussed in greater detail in Chapter 3) neo-liberalism and neo-realism can be referred to as rationalist theories (Reus-Smit 2009: 216). For the purposes of this research, the extent to which water regimes (as part of the rationalist project) are able to promote hydrosolidarity needs to be considered. A preliminary concern is the extent to which water regimes, in their current state-centric construction, are able to transcend 'beyond themselves', to engage with issues of representative stakeholder participation in water governance. Given that any theory or body of thinking has its strengths

and weaknesses, it is important to understand and critique the assumptions of a given set of ideas. Often, alternative bodies of theory are useful tools to elucidate these assumptions and identify weaknesses in existing theories. For example, a constructivist critique is used to clarify the assumptions and implications of the rationalist paradigm (see Chapter 3). Given that regimes are closely linked to the rationalist approach, it is important to understand the implications of this approach.

These contesting perspectives necessitate the theoretical approach of this dissertation, which involves an overview of multilateral regime theory. The practical manifestations of regimes are interpreted, using a selection of IR theories to elucidate conceptual strengths and weaknesses of regime thinking. The aim of this is to determine whether multilateral water regimes are robust and flexible enough to play a role in pursuing the ambition of hydrosolidarity.

This theoretical analysis draws strongly on rationalist theorists' perspectives on regimes, cooperation and international organisations. This is because it is these theorists that have laid out the definitions, features and roles of these partial theories. Also, it is important to recognise that it is a very small group of IR scholars that have worked on transboundary water governance issues globally and more specifically in Southern Africa. Thus the theoretical understanding of water regimes depends heavily of the work of Turton, Meissner, Jägerskog, Conca and Jacobs.

1.2.3 Regional and basin level water regimes in the Southern African Development Community

Transboundary water contains 68 percent of the area of the SADC region, provides for 74 percent of the region's people and constitutes 91 percent of the available surface water resources in the region (Kistin *et al.* 2009: 1). This has led to regional cooperation around shared water. Whilst it is important, from a political perspective, to have regional arrangements in place to create an enabling environment for sharing water, there is fairly wide consensus that the basin level is the logical environmental unit for studying water and related land impacts (Falkenmark & Rockström 2004: 195, 206). In order to understand better how to implement hydrosolidarity at basin and regional level, two different water regimes are studied: SADC WS (regional level focus) and ORASECOM (basin level focus).

The hallmarks of regional cooperation in SADC are the formulation of the *SADC Protocol on Shared Watercourses* (SADC Protocol) of 1995 and the revised version thereof, as well as the establishment of a Regional Water Sector in 1996. The Water Sector is supported by the Water Division (SADC WD) which is a Secretariat and provides administrative support (SADC 2011: 39). It should be noted that regional cooperation around water actually pre-dates the

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formation of SADC. Institutionalising ways to share and cooperate around water is important, given the high level of interdependence in the region, and the shared nature of this resource.

This provides strong evidence of the existence of a legal and policy-level water governance framework in SADC. Nevertheless, as Ramoeli (2002: 111) contends, SADC faces a number of challenges, namely developing legal and institutional frameworks for the establishment and functioning of River Basin Organisations (RBOs) in all the region's basins; developing multilevel alternative dispute resolution mechanisms and forums; and harmonising national legislation with the *SADC Protocol* and other international water laws. Some of Ramoeli's concerns are reflected by Turton and Ashton (2008: 313) who point out that "despite clear evidence of growing cooperation between states, less progress has been achieved in the development of joint institutions to manage shared water resources. While joint technical commissions have been formed for several basins … these … remain almost purely advisory in nature; each country still conducts its normal processes of decision making for managing the water resources within the boundaries of its sovereign territory".

Thus basin level commissions, also referred to as RBOs, have little freedom to govern their designated water resources as they do not have the mandate to enforce their recommendations. Without robust RBOs at basin level, environmental security issues and conflict potential are likely to increase (Turton 2002a).

Hooper (2006: 41) suggests that an RBO, in its mature form, "has clearly identified roles and responsibilities; implements river basin management plans in response to changing conditions; operates effectively within established institutional arrangements; uses transparent reporting mechanisms; and uses an IWRM approach". Cassar and Mock (2003: 2) agree but also point out that a number of factors can hinder the fulfilment of such a mandate. Insufficient support and autonomy from the governments; and large degrees of political, economic and cultural diversity within the basin and its riparian states can inhibit RBO cooperation. Unclear or poorly defined steps to implement basin-wide goals, and insufficient mechanisms for transparency and stakeholder inclusion can also undermine the efforts of an RBO.

Given the importance and concerns pertaining to basin level organisations, it is important to understand how water governance and the implementation of hydrosolidarity occur at basin level. ORASECOM is studied to deepen insights on this issue. ORASECOM is the multilateral basin commission (or RBO) that operates in the Orange-Senqu basin[5], which falls within the SADC region. It should be noted that there is relatively little literature available

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[5] The Orange-Senqu Basin will henceforth be referred to as the Orange River or the Orange River basin.

about the effectiveness and impact of ORASECOM. This is because the organisation is relatively new and the fact that it has a largely technical mandate. As a result, the information output that ORASECOM is generating predominantly deals with hydrological data and issues of institutional structure. This state of affairs provides motivation for considering SADC WS and ORASECOM case studies in this dissertation.

There is a long history of bilateral cooperation in the Orange River that ultimately paved the way for a basin-wide agreement. Since the riparians of the Orange River are signatories of the *SADC Revised Protocol*, this document serves as the starting point as it provides guiding principles for the equitable and sustainable allocation of international waters in the region and forms the overarching framework for the management of international waters in the Orange River basin. ORASECOM was established by the *ORASECOM Agreement* of 2000 (Earle *et al.* 2005: 23-24). This commission serves as a forum for discussion between basin states and advises governments on technical issues related to the basin's conservation, development and utilisation (ORASECOM 2007a: 34). The technical character of the RBO echoes Turton's (2003a: 153) point that it is difficult to create an RBO without "surrendering too much sovereign control over a strategic natural resource". The argument is that it is easier to cooperate around technical matters than political and legal ones; hence a need exists to extend research beyond these technical matters to look more deeply at the potential of regime regimes themselves to foster their desired goals.

Based on the aforesaid overview of relevant literature and related research, it is evident (considering the limitations thereof) that the overarching task of this dissertation is to analyse the role that regional and basin level water regimes play in the promotion of hydrosolidarity in SADC. This literature overview revealed that there is ample literature about transboundary water governance and hydrosolidarity, but this has not been distilled into a framework for analysing the effectiveness of transboundary water governance. Similarly, IR offers numerous insights into understanding the extent and capacity of regimes, but this has not been synthesised into a framework for analysing whether water regimes can deliver on the indicators of hydrosolidarity. The applied part of this literature overview has indicated that multilateral water regimes are emerging in SADC, evident at both regional and basin level. Hence, within the context of, and considering the aforesaid literature and related treaties, it is evident that the analysis of these water regimes and an assessment of whether or not they achieve hydrosolidarity in SADC is a justifiable and viable research concern.

1.3 Identification and demarcation of the research problem

The literature overview has indicated that water regimes are perceived to be an effective way to implement 'good' water governance or hydrosolidarity in transboundary rivers. The

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problem is that the practical capabilities and limitations of these regimes are seldom clearly articulated or understood. Thus, given this context, the primary research question of the dissertation is: *Do regional and basin level multilateral water regimes foster hydrosolidarity in the Southern African Development Community (SADC), and if so, how and why do they do this?* The assumption and therefore the thesis statement is that water regimes in SADC offer a partial promotion of hydrosolidarity by developing cooperative institutional structures that allow for the development of norms and standards of behaviour, but are not able to create enhanced integration and linkages beyond the water sector or to deal with issues relating to holistic stakeholder participation.

This question and assumption give rise to subsidiary research questions and related assumptions. Firstly, *what contribution does hydrosolidarity make to water governance in a transboundary context?* The subsidiary assumption is: Hydrosolidarity clarifies a vision or goal for good water governance by laying out a set of norms and indicators to work towards.

The second subsidiary question is: *Can multilateral water regimes foster hydrosolidarity?* The subsidiary assumption is: Water regimes offer a partial promotion of hydrosolidarity by developing cooperative institutional structures and allowing for enhanced integration and linkages between water stakeholders, but cannot achieve full hydrosolidarity given the limits of the rationalist paradigm.

The third subsidiary question is: *Do multilateral water regimes exist at regional and basin level in SADC, and if so what form do they take?* The subsidiary assumption is: A regional water regime has manifested as SADC WS and basin level, multilateral regimes manifest in particular basins. These regimes have manifested in a way that the regime is accompanied by an organisational presence. A case in point is, ORASECOM, the RBO that governs the Orange River.

The fourth subsidiary question is: *Can SADC Water Sector (SADC WS) and ORASECOM foster hydrosolidarity?* The subsidiary assumption is that these regimes can partially deliver the norms and indicators of hydrosolidarity and as such partially foster this ideal. However, it is contended that the inflexibility of the regime structure makes it difficult to transcend established notions of territoriality, state authority and reification of scientific knowledge to embrace the more fluid conceptions of territory, authority and knowledge that hydrosolidarity requires.

The study is demarcated as follows. The key conceptual variables are hydrosolidarity and water regimes and the extent to which they manifest at regional and basin level. More specifically, hydrosolidarity is investigated within the specific contexts of SADC WS and the RBO governing the Orange River - ORASECOM.

The geopolitical units under investigation are mainland SADC as a region and the Orange River basin (within this region). The reasons for selecting these case studies are threefold. SADC WS is the only established water regime in Southern Africa and is thus a logical regional example. ORASECOM emerged post-SADC WS and therefore the impact of regional level activity on basin level activity can be analysed. There are sufficient information and data sources available on the case studies to make such a study viable.

The time period under scrutiny is 1995 to 2013. The year 1995 is significant to the extent that it saw the adoption of the *SADC Protocol on Shared Watercourses* which formalised regional water cooperation for this first time. The year 2013 coincides with the completion of this study and in so doing represents a perspective of water regime development to this date. However, in order to gain contextual insight into basin developments, the earlier history of cooperation in the basins and region is considered where relevant.

1.4 Methodological aspects

This is a literature-documentary study that has a descriptive-analytical approach. It involves applying neo-institutional regime theory and theory pertaining to forms of cooperation and international organisations to the analysis of water regimes. A critique of this theoretical stance is offered by drawing on the thinking of constructivist and reflectivist theories. This allows for a more detailed understanding of the capacity of SADC WS and ORASECOM (as examples of water regimes) to deliver on hydrosolidarity. Thus a qualitative and inductive method of description, analysis, explanation and assessment is used.

The theoretical part of the study is based on secondary theoretical literature pertaining to hydrosolidarity, IWRM and IR theory relevant to the analysis of water regimes. The case studies are analysed by drawing on primary sources including treaties, protocols and public domain statistics relating to the respective river basins. Semi-structured interviews were conducted with experts working in the water regimes being studied and also with members of the epistemic community researching these regimes. This is a fairly small group of interviews, given the small group of researchers who work on transboundary water governance in Southern Africa as well as the lean nature of SADC WS and ORASECOM structures. These interviews do not constitute the core data source but supplement it by adding the experience and insight of experts and practitioners whose knowledge is not necessarily captured in the published resources. Where interviews were conducted, the University Ethical Criteria were followed. Public domain, secondary literature pertaining to the case studies is also utilised.

1.5 Structure of the research

The macro structure of this dissertation has two sections. The first is a theoretical section that outlines a framework for analysing whether water regimes can deliver on hydrosolidarity. The second section focuses on case studies and applies the theoretical framework to water governance in SADC. A more detailed breakdown is given below.

Chapter 2 is a theoretical chapter where hydrosolidarity is introduced as an approach to guide transboundary water governance in SADC. The chapter answers subsidiary research question 1 by exploring hydrosolidarity in terms of its historical development and applicability to the discourse of transboundary water governance, and why it is an ideal to strive for in water governance. The norms and indicators of hydrosolidarity are also laid out.

Chapter 3 is also a theoretical chapter where multilateral water regimes and hydrosolidarity are merged. Subsidiary research question 2 is answered by analysing theory relevant to the analysis of multilateral water regimes. As such regime theory, theory on forms of cooperation and international organisation literature are analysed. These partial theories are positioned within the context of the IR 'grand debates' and critiqued through the lenses of these debates to understand their capacity to deliver on hydrosolidarity. Attention is also given to the specific notion of water regimes and how these theories can facilitate the realisation of the norms and indicators of hydrosolidarity. Chapters 2 and 3 thus provide a theoretical framework for the demarcation and analysis of the case studies.

Chapter 4 unpacks the case studies and aims to answer research sub-question 3. It focuses on regional and basin level water regimes with specific emphasis on SADC WS and ORASECOM. This chapter considers the evolution of a global and continental water regime building efforts, introduces SADC WS as an example of a regional water regime, and analyses ORASECOM as an example of a basin level water regime in SADC.

Chapter 5 also focuses on the case studies and answers research sub-question 4. In this chapter the focus shifts to the capacity of SADC WS and ORASECOM to enable hydrosolidarity at regional and basin level. Interviews, primary sources, and secondary sources are key to enabling the analysis of this question.

Chapter 6 is the conclusion and puts into context the role of water regimes in terms of fostering hydrosolidarity. In this chapter the initial propositions of the study are re-assessed and the outcomes of the substantive chapters are synthesised. The shortcomings of existing multilateral water regimes are considered with a view to making recommendations that can

strengthen these structures and further enable hydrosolidarity in the SADC. An indication of a future research agenda is also provided.

1.6 Conclusion

Essentially this dissertation has three broad objectives: Firstly, it aims to develop a vision for balancing the conservation of water and related ecosystems with socio-economic development and hydrosolidarity is used as a tool to express this aim. To make hydrosolidarity practical, a set of norms and indicators for achieving this concept in transboundary rivers is developed.

Secondly, it aims to understand how IR theoretical debates and theories can help to conceptualise how to implement hydrosolidarity. In this regard, water regimes are considered and critiqued as a model to foster hydrosolidarity in practice. Water regimes are chosen as a focal point because of the dominance of this approach to transboundary water governance.

Thirdly, it is acknowledged that IR theory is not just conceptual but also pervasive and influential in practice. Practical case studies at regional and basin level are used to consider how the theoretical debates and conceptualisation are unfolding in practice. Specific attention is given to understanding the capacity of SADC WS and ORASECOM to deliver on hydrosolidarity. The next two chapters address the first and second points and as such constitute the theoretical framework of this dissertation.

CHAPTER 2

THEORETICAL CONSIDERATIONS: HYDROSOLIDARITY AS AN APPROACH TO GUIDE TRANSBOUNDARY WATER GOVERNANCE IN THE SOUTHERN AFRICAN DEVELOPMENT COMMUNITY

2.1 Introduction

The overarching question explored in this dissertation is: *Do regional and basin level multilateral water regimes foster hydrosolidarity in SADC, and if so how and why do they do this?* To answer this question, two theoretical issues need to be clarified: the role that hydrosolidarity plays in water governance in SADC and the role of water regimes. The first issue demands an exploration of the theory and thinking on water governance and management, as developed by water managers and people with technical backgrounds. The second issue requires an overview of IR theory that covers forms of cooperation, regimes and international organisations. Based on the exploration of these theoretical issues, the aim is to construct a theoretical framework for analysis which requires a merging of technical water theory with traditional IR theory.

Accordingly, this chapter focuses on hydrosolidarity and water governance and responds to the first subsidiary research question: *What contribution does hydrosolidarity make to water governance in a transboundary context?* This question is addressed by introducing hydrosolidarity as both an ideal-oriented and a practical way of achieving more optimal use and protection of transboundary water resources. This notion is explained with reference to two aspects. First, ecohydrology is introduced with reference to ecosystem complexity, the link between water and ecosystems, and the link between people and water dependent ecosystems. Ecohydrology is a necessary precursor to understanding hydrosolidarity given that the assumptions of the latter are based on ecohydrological principles. Second, hydrosolidarity is introduced with reference to its development, content and definitional debate. The normative content and practical indicators of hydrosolidarity are also specified. The chapter concludes by considering the close relationship between hydrosolidarity and IWRM and criticisms about hydrosolidarity.

This provides an understanding of what hydrosolidarity is, why it is useful for transboundary water governance and of the norms and indicators of hydrosolidarity in a transboundary context. These indicators form the basis of analysis of the regional and basin level case studies.

2.2 The ecohydrological approach

Ecohydrology is a necessary precursor to understanding hydrosolidarity because hydrosolidarity is based on ecohydrology principles (Gerlak *et al.* 2011: 257). Also, having a basic understanding about water and the environment is necessary to understand why it is important to foster hydrosolidarity in transboundary river basins. In the past the approach has been to focus on the impact of society on the environment and how to protect nature from human impact, thus creating a sense of humans and nature being separate. Ecohydrology, however, suggests that the environment needs to be seen in a social-ecological manner, where land, water and air are understood holistically and human interaction with the environment is seen as part of the environmental management process (Falkenmark & Folke 2011: 127). Thus the goal is to ensure sustainable use of the environment.

In general terms, ecohydrology is "considered by its proponents … to be a new integrative science that seeks solutions to issues surrounding water, people and the environment; it emphasises the hydrological cycle and its effects on ecological processes and human well-being" (Gerlak *et al.* 2011: 257). Thus, water is linked to, rather than isolated from other processes. It is important to recognise that hydrosolidarity and ecohydrology were both heavily influenced by the thinking of Falkenmark and colleagues, which explains the close relationship between the two concepts and why Falkenmark's literature will be heavily drawn on in this section.

Ecohydrology emphasises the need for inter- and transdisciplinary responses to water governance. Whereas interdisciplinarity encourages different disciplinary experts to pool their knowledge to produce well-integrated and multi-faceted results; transdisciplinarity emphasises the need for interdisciplinary knowledge that is co-produced with actors beyond the research domain (such as policy makers and interest groups) to determine socially relevant outcomes. Ecohydrology also emphasises that water management needs to be broadened to include more hydrological issues such as groundwater monitoring, runoff patterns, water supply conditions and the reliability of water resource regimes. Given the multiple roles in environmental impact generation, ecosystem resilience and the link between water and land productivity need to be understood. Furthermore, to understand the implications of ecohydrology fully, it is necessary to understand complex ecosystems and their links to people (Falkenmark 2011a: 410; Jacobs & Nienaber 2011: 670; Falkenmark & Folke 2011).

2.2.1 The concept of ecosystems

Ecosystems refer to "a set of interacting organisms and the solar driven system that they compose, comprising both primary producers, and consumers and decomposers"

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(Falkenmark 2003: 9) and are the essential and dynamic basis for life. They produce resources such as food, water, timber and energy; services such as climate regulation, pollination, cycling of elements, and purifying of rivers through natural processes of filtration; and biodiversity. Having a rich diversity of species is critical to helping ecosystems to absorb shocks such as droughts, storms, climate change, and pollution (Falkenmark & Rockström 2004: 182). Ecosystems are dynamic and interlinked with one another. Aquatic and terrestrial[6] ecosystems do not exist in isolation but are complex and dependent upon each other. These complex systems exhibit emergent properties that arise due to the interactions between the parts (Falkenmark 2003: 9; Audouin *et al.* 2013: 12). Given their life-sustaining importance, ecosystems need to be protected.

There are differences in the interpretation of ecosystems. They may be classified as life support systems on which welfare depends given the ecological services they provide, or they may be defined as specific parts of a biological landscape that have value for the wetland, forest or lake where they are situated. At times there may even be an emphasis on conservation of ecosystems, whilst at other times there will be an emphasis on maintaining ecosystem services (Falkenmark 2003: 10). Policy makers generally see ecosystems as a negotiated environmental concept linking natural resource use to environmental impact issues such as exploitation and ecotourism. This interpretation of ecosystems tends to emphasise balancing conservation with sustainable use, and the equitable sharing of benefits gained from using ecosystem resources and services (Falkenmark 2011b: 457). Thus, on a governance level, ecosystems are part of a socio-economic strategy emphasising integrated management of land, water, forests and other living resources. This political interpretation sees humans as part of the system whilst many scientific or biological definitions regard humans as disturbing the system. Notably, the ecohydrology perspective tries to shift this thinking to a more social-ecological one, as previously mentioned. Ecosystems are therefore complex and dynamic phenomena. Scientists, civil society and government all play a role in defining, shaping and understanding these systems.

Whilst ecohydrology can embrace the plurality of definitions surrounding ecosystems, the approach stresses that ecosystems need to be understood as inseparable from each other. Water links the atmosphere to terrestrial and aquatic ecosystems. This occurs in what is commonly described as the water cycle where water takes on different forms at different phases. Liquid, found in aquifers, lakes and dams, is referred to as blue water. Water vapour,

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[6] An aquatic ecosystem is water-based ecosystem or a blue water habitat. Organisms that are dependent on one another and on their environment live in aquatic ecosystems. A terrestrial ecosystem is a land based ecosystem. It interacts with the water cycle through absorption of runoff and consuming green water (Falkenmark & Rockström 2006: 131).

found in the soil and plants, is referred to as green water. Blue water constitutes only one third of global freshwater. The rest is in vapour form and primarily consumed by vegetation (Jewitt 2006: 753). Given the interlinkages between water, land and air, any changes, impacts or degradations experienced in one area will have an impact on other areas. This interlinked reality makes the ecosystem approach to water management important where hydrological-ecological linkages and dependencies, and the relationship between land coverage, rainwater, surface water runoff and groundwater recharge receive equal attention.

When studying water-related ecosystems they can be considered at different scales. At transboundary scale there is general consensus that the basin level is the logical environmental unit to study water and related land impacts, and this is commonly promoted in IWRM strategies. By viewing water from a basin perspective up- and downstream dependencies can be understood. At smaller scales water can be studied in catchments and sub-catchments (GWP 2009: 9).

A number of challenges impede integrated land-water understanding and practice. Firstly, there are dominant paradigms which impede the incorporation of new ideas. For example, there is an emphasis on blue rather than green water (Simonsen 2010) in mainstream water management. Secondly, to understand the complex linkages between land and water, multiple disciplinary specialists need to work together (Falkenmark & Rockström 2004: 220). This collaboration can be difficult as each discipline is underpinned by different assumptions and speaks a unique language. Thirdly, different government departments and specialists tend to manage land and water use, making collaboration and communication difficult. Fourthly, since the hydrological basin is the primary unit of analysis, it poses geographical complications because rivers do not necessarily align with inter- and intrastate political boundaries, making the issue of who manages and who is impacted difficult to address (Jacobs & Nienaber 2011: 668-668). This has led to the introduction of the idea of a 'problemshed' which is "is based on the premise that whilst water scarcity occurs at the basin level (also known as the watershed), workable solutions are found at a level other than the international river basin, in what is known as the Problemshed" (Jacobs 2009: 82). This is thus a case for broadening the scope of thinking to consider social practices, processes and discourses which exist beyond the boundaries of the basin, but still impact on and define the way the basin is managed or understood. However, many scholars (for example Newson 2004: 440) still suggest that the basin is an appropriate site to promote the activity and understanding of water governance. For example, by focusing on the basin as the unit of analysis, the issue of water governance can be depoliticised and denationalised. It thus shifts the focus from securing national resources to seeing water management as a technical

matter relating to water trade-offs and allocation. Thus, when working at a basin scale, it is necessary to bear in mind the benefits and weaknesses of this focal point.

It is thus clear that ecosystems are intrinsically linked to water. Any land or air related trade-off will have implications for water quality and availability. Similarly, trade-offs around water have direct impacts on land-based ecosystems. This is a fundamental insight of ecohydrology.

2.2.2 People and water-dependent ecosystems

The world's population increases by about 60 million people a year and this is projected to continue. Current water needs are not adequately provided for as illustrated by, amongst others, the slow progress in achieving the UN MDGs. Equally important is the issue of providing adequate food to current and future generations. Significantly, 70 percent more water is needed to produce food for one person on an acceptable nutritional level compared to what is usually indicated as the basic household water need (sanitation and tap water) (Falkenmark & Rockström 2004: 202). Simultaneously, ecosystems are deteriorating as a result of land degradation, water pollution and river depletion. "The present situation is the result of trying to manage the closely interlinked system of our life-support base by taking fragmentary approaches and dealing separately with its different components" (Falkenmark & Rockström 2004: 202). This illustrates that the relationship between ecosystems and water becomes more complex when incorporating a social dimension, but also that it is impossible to understand water-linked ecosystems without involving people. There is a clear link between people, poverty alleviation, food supply and water.

Ultimately, what needs to be achieved is a balance where the needs of present and future generations are met without compromising the integrity of the environment. Ecological and social resilience mechanisms must be advanced to allow ecosystems and society to cope with and adapt to changes in society and associated ecosystems. This implies that trade-offs are unavoidable but must be sensitive to relative levels of power and influence amongst different role players to ensure appropriateness. The 'working rivers' concept is one example of an approach to addressing trade-offs in river managements. This concept allows impacted communities themselves to determine how pristine their rivers should be kept through a process of widespread consultation (Falkenmark & Rockström 2004: 182-205).

When deciding on trade-offs, judgements should be made about manipulations that are avoidable (such as land use changes, waste load impacts, and use of toxic chemicals that will leak into ecosystems) and unavoidable (such as water use which is part of the photosynthesis process by which biomass is produced). For the latter type of manipulations, trade-offs will have to be negotiated. Also, issues of repairing or avoiding environmental

damage need to be considered (Falkenmark 2007: 68). Ultimately, striking trade-offs depends on having agreed upon ecological criteria in place.

One of the issues pertinent to transboundary river basins is that of open and closed river basins and the criteria that determine this. Open basins have a water surplus that can be allocated for additional consumptive use. Closed basins' consumptive use has been reached from an ecological viewpoint and the only opportunity for further use comes from reallocation or re-use. Closed basins, are thus faced with particularly difficult trade-offs (Falkenmark & Rockström 2004: 198).

This section has introduced the main assumptions of ecohydrology given that this understanding underpins the logic of hydrosolidarity. Ecohydrology is a complex approach to understanding the environment. It emphasises the importance of an ecosystems approach to interpreting environmental issues. This implies that ecosystems are fundamentally linked to each other and the water cycle, and thus should be studied in an integrated manner. Similarly, people are part of the natural environment and thus the study of the environment cannot be separated from human needs. Thus a social-ecological approach must be taken to interpreting ecosystems and people. On the basis of ecohydrology, the notion of hydrosolidarity is introduced.

2.3 The hydrosolidarity approach

Hydrosolidarity and ecohydrology represent strikingly similar approaches as both insist on integrated resource management, and inter- or transdisciplinary responses to solve complex environmental problems. Both ground resource management in ethical practice. Ecohydrology places greater emphasis on research and science, whereas hydrosolidarity builds on this by emphasising socially-oriented norms needed to support ecohydrology (Gerlak *et al.* 2011: 257). Given the complex links between water, ecosystems and people, it is imperative to govern the environment effectively (Audouin *et al.* 2013: 12). Since governance issues are dynamic and context specific, it is necessary to interpret unique situations and to apply 'good practice' in a context specific manner. Hence it is forthwith contended that hydrosolidarity guides the thinking needed to implement 'good' water management practice.

2.3.1 The concept of hydrosolidarity

Hydrosolidarity calls for a conceptual framework to shift from 'water blindness' towards water solidarity (Gerlak, Varady & Haverland 2009: 313). This shift envisages a move from: the narrow view of water as a national strategic resource to seeing water as a fundamentally

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shared resource; the emphasis on blue water to understanding blue, green and virtual[7] water balances in a connected manner; the ruthless development of water to environmentally and socially conscious development; and from being naïve citizens to being proactive and educated hydrocitizens.

There are multiple interpretations of the definition of hydrosolidarity. Gerlak, Varady and Haverland (2009: 312) suggested that "[h]ydrosolidarity originated as a deliberate attempt to inject mutual understanding, common good, and ethics in relation to shared waters. It arose ... as a rejection of ... the ... self-centered notion of 'hydroegoism', the view that satisfying geopolitical self-interests (national, regional, sectoral, political, or other) should be the chief principle guiding water management in general and allocation in particular". Similarly, Kemerink, Ahlers and Van der Zaag (2009: 882) point out that hydrosolidarity is about emphasising trust-building and cooperation by "focusing on public debate, dialogues and leveling of the playing field of all stakeholders". Hydrosolidarity is thus seen as a mechanism to reconcile disputes over water whilst maintaining the integrity of the environment.

Cosgrove (2003: 529) contends that hydrosolidarity refers to solidarity in decision-making surrounding the management of water in a basin between up- and downstream users, between urban and rural users and between human and environmental needs. Respect of human values is a key principle relating to hydrosolidarity. Similarly, Wouters (1999) emphasises that hydrosolidarity is about recognising that extreme claims of water rights based on sovereignty (hydro-sovereignty) are giving way to more pragmatic strategies focussing on equity, reasonableness and accommodation of needs between competing stakeholders. Depending on the level of scale this can occur through interstate agreements, hearings of experts, multilateral conventions, and bilateral and multilateral treaties. Thus, these authors emphasise that hydrosolidarity is about pragmatically and peacefully managing relationships between multiple different users of water.

From the aforesaid it is evident that definitions range from emphasising norms that should underpin hydrosolidarity (such as cooperation and solidarity) to the processes that can promote hydrosolidarity (such as dialogue and dispute reconciliation). All definitions have a general focus, leaving contextual definitions up to the managers of specific river basins. However, in general, hydrosolidarity implies cooperation and the sharing of water resources rather than the selfish securing of interests that can cause conflict. From these broad

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[7] Virtual water is the amount of water that is embedded in and needed for the production of food or other products. For example, to produce one kilogram of wheat about 1,000 litres of water is needed, i.e. the virtual water of this kilogram of wheat is 1 000 litres (Virtual Water 2012).

interpretations, the inference is that hydrosolidarity sets out ideals for water governance that are underpinned by normative criteria. It is also a practical tool that can facilitate water governance.

2.3.2 Hydrosolidarity and Integrated Water Resources Management

Since hydrosolidarity and IWRM are closely related, a brief consideration of IWRM is required. IWRM "promotes the co-ordinated development and management of water, land and related resources, in order to maximise the resultant economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems" (GWP 2009: 18). IWRM is based on the *Dublin Principles* (see Box 1) and discourages top-down management of water. It suggests that coordinated management of water, land and related resources is critical and needs to occur at different levels. It also recognises the need for governance, institutions and education as key components for managing environmental resources. Accordingly, the importance of including stakeholders in the process of governing water to promote the legitimacy of decisions taken, is accepted (GWP 2009). This also implies that IWRM is about balancing cross-sector planning and sustainable development. Successful IWRM is based on creating an enabling legislative and policy environment; developing an appropriate institutional framework (governance arrangement) composed of a mixture of central, local, basin-specific and public-private organisations; and having a set of instruments for gathering data and information, assessing resource levels and needs and allocating resources for use (GWP 2013a).

IWRM is not seen as a universal blueprint and does not avoid the reality of trade-offs but it does establish a framework for the careful consideration of the different uses and users of water (Essaw 2008: 14). As a result, IWRM has been subject to widespread critique. Firstly, critics (such as Jeffrey & Gearey 2006: 4) perceive the gap between IWRM theory and practice as an impediment. Though many governments and other agencies endorse IWRM, there are few ideal examples of IWRM. Secondly, there is a lack of metrics and techniques and inadequate attention is being given to the governance systems and skills needed to implement IWRM. Thirdly, there is a focus on blue water in the IWRM community, with less attention being paid to green water and groundwater (Diekkrüger 2010: 166). Fourthly, IWRM is criticised for failing to recognise that water stress is imminent. Such recognition demands more radical reforms than IWRM calls for. In the face of imminent water stress, 'business as usual' is not an option. Fifthly, in the IWRM paradigm there is tension between holism and complexity. On the one hand, IWRM is promoted as a holistic approach that draws in all facets of the water cycle and the expertise of a host of experts. On the other hand, it remains focused on a 'predict and prepare' paradigm that is quite inflexible. This is partly because there are risks associated with changing the way water is managed (Jeffrey & Gearey 2006:

2-4). Finally, the financial dimensions of IWRM are contentious. The notion of water as an economic good has emerged to cover the cost of IWRM where water is viewed as a priced and sellable commodity. This is meant to facilitate water demand management. In practice, however, this approach has come under scrutiny because water is not an ordinary economic good but a special one (Lamoree & Van Steenbergen 2006: 103-106). It is impossible to choose a 'different' kind of water without tapping the same resource. Also, it is a near impossible task to value, in monetary terms, the cultural, environmental or spiritual value of water. On a practical level, even if commercial farmers and miners, for example, are heavily charged for water, this cost is still likely to be minimal in relation to other costs these businesses carry and thus pricing does not necessarily reduce the use and waste of water. Metering of water in farming systems is also difficult, given the complicated irrigation schemes in place.

Box 1: The *Dublin Principles* of 1992

Principle 1 - Fresh water is a finite and vulnerable resource, essential to sustain life, development and the environment

Since water sustains life, effective management of water resources demands a holistic approach, linking social and economic development with protection of natural ecosystems. Effective management links land and water uses across the whole of a catchment area or groundwater aquifer.

Principle 2 - Water development and management should be based on a participatory approach, involving users, planners and policy makers at all levels

The participatory approach involves raising awareness of the importance of water among policy makers and the general public. It means that decisions are taken at the lowest appropriate level, with full public consultation and involvement of users in the planning and implementation of water projects.

Principle 3 - Women play a central part in the provision, management and safeguarding of water

This pivotal role of women as providers and users of water and guardians of the living environment has seldom been reflected in institutional arrangements for the development and management of water resources. Acceptance and implementation of this principle requires positive policies to address women's specific needs and to equip and empower women to participate at all levels in water resources programmes, including decision-making and implementation, in ways defined by them.

Principle 4 - Water has an economic value in all its competing uses and should be recognized as an economic good

Within this principle, it is vital to recognise first the basic right of all human beings to have access to clean water and sanitation at an affordable price. Past failure to recognise the economic value of water has led to wasteful and environmentally damaging uses of the resource. Managing water as an economic good is an important way of achieving efficient and equitable use, and of encouraging conservation and protection of water resources.

Source: WMO 1992

In light of this brief overview of IWRM, the link between IWRM and hydrosolidarity must be clarified. On the one hand, there is a close relationship between IWRM and hydrosolidarity. Both concepts emerged at a similar time and were strongly influenced by Falkenmark's thinking. Hydrosolidarity and IWRM also have overlaps in their ideas integrating land and water management, stakeholder involvement and the importance of considering governance and social, as well as technical, issues when managing water. In this regard hydrosolidarity

and IWRM are interlinked, resulting in the emergence of a narrower interpretation of hydrosolidarity that relies heavily on notions of participation and coordination (Gerlak *et al.* 2011: 259). Thus IWRM and hydrosolidarity shape and influence each other, with hydrosolidarity in some ways becoming a vehicle to more effectively achieve IWRM.

On the other hand, there is a fundamental difference between IWRM and hydrosolidarity, resting on the tension between developing either a technical tool for achieving effective water governance or an ideational goal to facilitate water governance outcomes. IWRM arguably falls into the former category whilst hydrosolidarity fits into the latter. IWRM is increasingly popular around the world and states are under pressure to operationalise IWRM according to pre-defined guidelines. Therefore IWRM is becoming increasingly technical which results in (Jacobs & Nienaber 2010; Gerlak *et al.* 2011: 259):

- the process of developing IWRM plans at national, basin and regional levels being run by technical experts and engineers. This encourages the hegemony of technical knowledge, bringing into question the actual value of the highly acclaimed stakeholder interaction processes that IWRM emphasises. It is, for example, questionable whether ordinary people can contribute to the development of a technical IWRM plan;
- a bias towards rational and objective knowledge when implementing IWRM which undermines the more integrated, inclusive vision that hydrosolidarity calls for;
- a potential neglect of the normative dimension of water governance. It is unclear if the needs and priorities of all water users are really understood and heard in the quest for technical efficiency.

On the one hand, this practical focus that IWRM has taken was a necessary one. Criteria and guidelines have been an important part of trying to operationalise IWRM but this does result in a certain narrowing and rigidity. Hydrosolidarity, on the other hand, has occupied a different space that emphasises debate around an ideal for water governance. Thus, the pressure to find ways to operationalise the concept is less, especially because IWRM has assumed this space over the last two decades. Therefore, in contrast to IWRM, hydrosolidarity has captured the imagination of people beyond the technical community such as local communities and governments. It also articulates a calling to transdisciplinarity and complexity that IWRM struggles to achieve given its pressure to implement and operationalise. Also, issues of ethical responses to water governance remain at the core of the hydrosolidarity discourse (Gerlak *et al.* 2011: 259). Hydrosolidarity is not about 'ticking boxes' but is rather about a deep self-critical interrogation of water governance practices.

Despite the obvious commonalities between IWRM and hydrosolidarity, it is clear that the two concepts are not the same and are not being developed on the same trajectory. This is emphasised by Gerlak *et al.* (2011: 259) in their comment that "the trend is not that hydrosolidarity is either being adopted wholesale or subsumed by the ... quest for IWRM, but that it is ... a vehicle to achieve IWRM. ... Indeed, effective implementation of IWRM would be well-served to incorporate the precepts of hydrosolidarity around ethics, equity and human welfare". IWRM and hydrosolidarity are distinct from each other, particularly on an analytical level. Hydrosolidarity is the broader framework (underpinned by the ecohydrology approach) whereas IWRM encapsulates a management strategy to achieve the goals of hydrosolidarity.

2.3.3 Hydrosolidarity as an ideal for water governance

In the aforesaid sections, it was mentioned that hydrosolidarity is an ideational tool that articulates a vision for water governance. A brief consideration of visions is required to clarify its advantages and weaknesses. On the one hand, it is necessary to exercise caution about universal visions, principles and norms, and water is no exception as its management is characterised by huge diversity. The pursuit of a globally accepted set of principles and norms for managing water is unrealistic (Kemerink, Ahlers & Van der Zaag 2009: 881). On the other hand, visions, principles and norms can guide decisions. They are thus guidelines that do not detract from the context-specific activities that need to be undertaken to govern water effectively. Also, analysing a vision and the associated set of norms helps to define ends which assist decision makers in determining what policies, programmes, technologies and institutions are necessary to move in a desired direction. Visions provide a foundation for the principles and norms which determine actions. Thus, having an ideal for water governance creates focus and clarity amidst the complexity of managing water. In addition, such an ideal helps to create and inspire a generation of hydrocitizens who are guided by the norms of equity and sharing, rather than norms of historical rights and the selfish capture of resources (Falkenmark & Rockström 2004: 201-214; Claassen *et al.* 2009: 3).

2.3.4 The norms of hydrosolidarity for transboundary water governance

The major contribution of hydrosolidarity is its use as a driver for ethically based behaviour in relation to water governance. As such, it injects a strong normative dimension, rooted in notions of human rights, justice and equity, into water governance debates that were previously predominantly driven by technical, managerial and political variables (Gerlak *et al.* 2011: 260). At the outset it is important to recognise that although hydrosolidarity acknowledges the importance of an ethical approach to water management, there is no

systematic 'unpacking' of the norms of hydrosolidarity and their meanings. Hence the subsequent identification and clarification of these norms.

This dissertation uses the accepted definition of norms developed by Katzenstein (1996: 5) where norms are "collective expectations for the proper behaviour of actors with a given identity." As such, they provide standards of behaviour and prescribe social practices relating to the roles, responsibilities and accountability of both the public and private sector. They may be expressed in the form of laws and policies, but also through behaviour (Dimitrov 2005: 3). Thus, norms can be codified or uncodified. Whilst a codified document has formally established expectations and accountability, it is possible to have cooperation based on less formally established (uncodified) norms. Importantly, codified and uncodified norms require political will and support to ensure that they are upheld and relevant. This is particularly important given that sovereign states have no supranational authority to legislate specific behaviours. Thus, treaties in the international domain depend on softer power influences for implementation, such as good will or peer pressure (Dugard 2005: 27-42). The norms of hydrosolidarity, therefore, establish standards of behaviour in the development and management of water resources.

Early proponents of hydrosolidarity suggested that the normative dimensions of hydrosolidarity should be based upon a more or less universal set of commonly accepted norms and rules (Falkenmark & Lundqvist 1999). This focus has, however, shifted and it is now proposed that the concept should embrace a plurality of norms and value systems to explain the complexities and dynamism related to water, and that "different normative orders …. originate from various sources such as political ideologies, economic dogmas, religions and cultures, and are therefore ... shaped by history and embedded in local realities" (Kemerink, Ahlers & Van der Zaag 2009: 882). They furthermore argue that if hydrosolidarity assumes that a universal set of norms and rules can exist, it is ignoring the local and context-specific manifestations of water sharing practices. It is thus contended that for hydrosolidarity to overcome context-specific conflicts over water, it will have to embrace the reality of a plurality of norms that manifest in different ways at different scales (Kemerink, Ahlers & Van der Zaag 2009: 887).

In general terms, hydrosolidarity (in a transboundary context) is about water sharing between upstream and downstream users which implies sharing water between countries. This needs to be done in an equitable and cooperative manner, which is a significant normative ideal given that transboundary water governance takes place within a context of unequal power relations (Van der Zaag 2007: 2000). For example, upstream riparians have the power to control the resources in a way that a downstream riparian cannot. Some riparian states have more influential economies than others, making it possible to develop infrastructure that

results in more benefit from the resource. Different benefits derived from water give the riparians different opportunities and options. Some riparians have soft power, relating to their history and role in a region, which enables them to wield influence. These factors create a situation of differing power relations along a river, making the challenge of securing equitable and cooperative behaviour around transboundary water resources more challenging.

More specifically, the literature on hydrosolidarity implies five key norms in a re-occurring manner, namely cooperation and solidarity, equity, inclusivity, human well-being and environmental sustainability in water governance. As was previously mentioned these norms are not explicitly articulated in a coherent manner, but are implied in the issues that the literature on hydrosolidarity (and closely related notions of ecohydrology and IWRM) emphasise. Although these terms denote values that have relevance at different levels, they will subsequently be viewed and applied in terms of their relevance to transboundary water governance. Hence the need to consider them both in terms of their meaning and how they relate to broader debates on water governance.

2.3.4.1 The norms of cooperation and solidarity

Hydrosolidarity tries to minimise polarisation and conflict over a resource that everyone is dependent on. Thus, the norm of cooperation, or working together towards the same end, purpose or effect, is encouraged (OED 1989a). In a transboundary water context, various actors work together to overcome disagreements and conflicts in order to maximise the benefits that can be gained from the resource. Upstream users have to pay adequate attention to the ways in which their activities influence downstream users. Downstream users have to consider the way upstream activities may influence their water-dependent activities and will have to be realistic about their water aspirations. They will also have to provide incentives for the upstream users to constrain their activities, with regard to how they pollute the water and how much they use for irrigation and water impacting activities (Falkenmark 1999).

According to Grey *et al.* (2009: 19) "[e]ffective cooperation on an international watercourse is any action or set of actions by riparian states that leads to enhanced management or development of the watercourse to their mutual satisfaction". This approach should be rooted in the ethos of moving away from individualistic and selfish use towards a cooperatively agreed upon and altruistic use of the resource. This requires recognition that states - as the custodians of the water resources within their territories - are key role players in cooperatively determining how they will use and share water resources.

There are different levels of cooperation on transboundary waters depending on four factors, namely, the extent to which riparians have common goals; the extent to which they are

willing to engage in joint action; the actor's intention to contribute to collective action; and the belief that riparians have about whether other actors/riparians will contribute to collective action. In other words, cooperation requires actors to have a collective reason to act. Depending on the mix of these factors, five kinds of cooperation can occur (Mirumachi & Allan 2007: 7):

- Confrontation, where the issue is acknowledged but there is no planned collaborative action or goal identification.

- *Ad hoc* interaction, where there is some collaborative action but no shared goals. Actors thus work together but aspire to different goals.

- Technical cooperation, where there are some shared goals but there is no collaborative action around issues. Policies and actions are not necessarily aligned.

- Risk-averting cooperation, where there is shared action and goals, as well as the confidence that others will do as expected. This is a high intensity type of cooperation.

- Risk-taking cooperation, where costs and risks are taken into account and collaborative action still takes place.

The norm of solidarity, implied in the term hydrosolidarity, is closely related to the notion of cooperation. This means that there needs to be a sense of fellowship of responsibilities and interests (OED 1989d). In the case of transboundary water governance the notion of coexistence is further deepened because different countries have to share the same rivers to survive. Given the unavoidable co-dependence that all actors have on water, it is essential to find a way to foster solidarity and cooperation around the resource in order to avoid conflict.

Cooperation needs to be considered carefully because supporting cooperative efforts that perpetuate inequitable and unsustainable arrangements risks further reducing the chance of dialogue. Cooperative agreements thus need to take account of existing power asymmetry (Zeitoun & Jägerskog 2009: 12). Asymmetry can be addressed by identifying mutually beneficial opportunities that satisfy all parties and thus render asymmetry irrelevant. The Transboundary Water Opportunity Analysis (TWO) is a tool that facilitates a benefit-sharing process. This tool facilitates collaboration with stakeholders in a basin, and allows them to consider different combinations of water sources and uses and how they can be presented as development opportunities for actors in a basin. By identifying mutually beneficial opportunities, actors can determine preferred options for development. Each river basin and regional context is unique, and actors can use TWO analyses to explore and identify different options at different levels (Granit & Claassen 2009: 23). Asymmetry can also be addressed by drawing basin hegemons into cooperative agreements, making it possible to encourage or 'peer-pressure' them into being basin leaders rather than basin bullies (Zeitoun & Warner 2006).

Furthermore, Grey *et al.* (2009: 15) contend that "countries do not cooperate in the management of transboundary water because they are compelled by an ethic of cooperation. They cooperate when the net benefits of cooperation are ... greater than ... non-cooperation, and when the distribution of these benefits is perceived to be fair. In other words, states work together when doing so offers ... economic and political advantages". These benefits can include environmental benefits to the river (such as improved water quality); economic benefits from the river (such as increased food production); the reduction of costs because of the river (such as reduced geopolitical tensions); and benefits beyond the river (such as entrenching wider cooperation and economic integration).

Whether states engage in cooperative behaviour for self-interested or altruistic reasons is open to debate. Not all analysts are as cynical as Grey *et al.,* as will be indicated later with reference to the different debates in IR. The point is that whilst cooperation is a goal of hydrosolidarity, it is important to ensure that the normative pursuit of this goal is associated with tangible benefits in order to encourage actors to uphold the normative ideals.

2.3.4.2 The norm of equity

The literature on hydrosolidarity places a strong emphasis on sharing water resources amongst people and the broader environment and insists that states move away from selfish capture of water resources. Cooperation and sharing, however, is difficult to sustain if those engaged in cooperative action believe that the outcome is inequitable. Equity implies fairness, justice and reasonableness (OED 1989b). In a transboundary water context it is essential to negotiate what constitutes equitable allocation, distribution and use of water, which requires agreement on what constitutes the just, impartial and fair use of water. Additionally, the natural characteristics of a watercourse; social and economic needs of the states concerned; the population dependent on the watercourse; the existing and potential uses of water; the costs of development and protection; alternative water uses and their comparable value; and planned versus existing use of the watercourse need to be considered. Notably, equitable does not necessarily imply equal distribution of water for all actors, but rather fair distribution of water (Van der Zaag 2007: 1997).

When negotiations about equity stall or become difficult, a host of benefit-sharing options can be introduced to shift the focus and potential deadlock away from volumetric allocations to a broader suite of opportunities such as access to adjacent river basins, trade, ports, energy supplies, and markets. By emphasising existing interdependencies between the riparians it is possible to counterbalance and reciprocate the one-sided upstream-downstream relationship in a basin (Van der Zaag 2007: 1998).

2.3.4.3 The norm of inclusivity

If upholding cooperation depends on agreement in terms of equitable allocation, then inclusivity becomes important in these negotiations. Inclusivity implies that all actors are taken into or made part of a process (OED 1989c). In a water governance context, this implies that all impacted players should be included in debates and water governance structures (Jägerskog, Zeitoun & Berntell 2009: 8). To exclude particular actors from debates about equity is to risk that those actors will not agree on the ultimate approach to equity. The literature on hydrosolidarity implies the importance on inclusivity through its emphasis on shifting from hydroegoism to a more shared notion of water management.

Inclusivity in a transboundary context has three dimensions. Firstly, the vertical dimensions are about linking action and dialogue across different political levels ranging from local and provincial to national and cross-national. Thus, any political actor that is involved in a particular water issue should have the opportunity to be represented in the debate. Secondly, the horizontal dimensions involve broadening the types of actors involved in water governance debates. Government representation alone, even from a variety of levels, is not adequate and needs to be supported by other actors and networks with an interest in water. The latter include NGOs, donor funders, and epistemic communities. Thirdly, there needs to be inclusivity across issue areas (Andonova & Mitchell 2010: 255-257). This implies the necessity to think beyond the 'water box' and include actors and issues that depend on water for various reasons such as economic development, poverty alleviation, energy efficiency and availability, and agricultural concerns. Inter- and transdisciplinary responses to water governance forms an important mechanism of facilitating inclusivity across issue areas (Jacobs & Nienaber 2011).

Defining the limits of inclusivity for water governance is a challenge because drawing boundaries of inclusion implies normative choices. This is pertinent when focusing on transboundary rivers, as one river can support the lives of millions of people, and the economic productivity of multiple communities, towns, cities, provinces and countries. It is impossible to include every impacted individual in these debates. When making judgements about these boundaries it is important to have a clear idea of the issues being discussed, who has a stake in the issues and at what level they are being discussed (for example regional, national, and catchment level). With this in mind it is necessary to ensure a sensible representation of key actors interested, involved or affected by the issue at hand (GWP 2009: 61). Having overlapping levels of feedback is often constructive for giving feedback up and down a hierarchy. For example, a national water department representative could

represent feedback from local government and catchment level forums allowing many voices to receive indirect representation in debates.

Two features of inclusivity are particularly relevant to transboundary rivers. First, it is important to get the right people involved in decision-making given the often sensitive and politicised nature of water distribution. It is important to ensure high-level support in strategic water debates and negotiations because without the sovereign government 'buy-in' it is more difficult to implement decisions taken (Simalabwi 2007: 46). Second, all riparian states along a transboundary river must be present at negotiations and sessions pertaining to river use. Thus, fully representative multilateral forums are important (Malzbender & Earle 2009: 98). On a global level there are surprisingly few fully representative multilateral regimes along transboundary rivers. There are many bilateral arrangements (Conca, Wu & Mei 2006: 272) but these arrangements are not conducive to supporting the norm of inclusivity although they may support the norm of solidarity and cooperation to some extent.

2.3.4.4 The norm of human well-being

Social justice, human rights and poverty alleviation are central to hydrosolidarity, which makes human well-being a norm of hydrosolidarity. Although the term 'hydrosolidarity' is not specifically used in the MDGs, the assumption that inclusive, integrated governance of water is critical to achieving these goals has been widely accepted. As a result, the United Nations Development Programme (UNDP), the United Nations Environment Programme (UNEP), the WWC, and the GWP have embraced integrated water governance to facilitate water-related MDG targets (GWP 2013a; UNEP 2013; UNDP 2013; WWC 2013). Furthermore, the link between water and human well-being is already well established (see Section 2.2.2).

Hence, decisions made in relation to water governance need to contend with the tension between providing for human needs and protecting the environment (see next point).

2.3.4.5 The norm of environmental sustainability

Hydrosolidarity is embedded in the "sustainable development ... paradigm ... that promotes social equity and environmental protection, while retaining the necessity of maintaining economic efficiency" (Gerlak *et al.* 2011: 256). Sustainability is about learning, adapting and adjusting to these juxtaposed needs. Choices about water use must mediate the need to keep water and related ecosystems in a state that can sustain current and future generations and also to keep parts of the environment healthy to be enjoyed in a natural state (Meppem & Gill 1998: 130). Thus notions of conserving the environment within the context of human dependence on water related ecosystems is prevalent in hydrosolidarity thinking.

Hydrosolidarity, rests on ecohydrology, and thus sees people and the environment (ecosystems) as fundamentally linked. Significantly, the cost of producing water-dependent goods is higher in water-scarce regions than in water-abundant regions. This cost is often a hidden cost and is a 'hidden flow of water' between regions along trade routes.

By emphasising the norms of cooperation and solidarity, equity, inclusivity, human well-being and environmental protection, the normative components of hydrosolidarity become more explicit. Given the importance and contentiousness of water, these norms are subject to debate. As such, they represent an ongoing dialogue that enables parties to develop an understanding of norms that they can accept, sustain and implement. In order to monitor and operationalise the implementation of these norms, it is necessary, for analytical purposes, to have a set of indicators which will be explained below.

2.3.5 Indicators of hydrosolidarity

Since there are no formal indicators for hydrosolidarity, it is necessary to discern a set of indicators that will enable the realisation of the norms of hydrosolidarity in the context of transboundary water governance. The literature on hydrosolidarity (and closely related literature on water governance) points to five key indicators, namely the development of shared knowledge about transboundary rivers; the enhanced integration and linkages between relevant actors and governance structures; the creation of institutional structures for fostering water governance; stakeholder involvement in water governance processes; and normative frameworks to guide behaviour. These indicators are forthwith described and explained in terms of how they entrench the normative content of hydrosolidarity in a transboundary context.

2.3.5.1 Shared knowledge about transboundary rivers

The existence and exchange of technical data and knowledge about transboundary water is important for entrenching hydrosolidarity because (Gerlak, Varady & Haverland 2009: 320):

- Discussions of a technical nature can help to build trust between actors, especially because it is often technical experts who are involved in negotiations about shared water resources.
- Knowledge of shared risks, threats and problems facing transboundary water governance is often a catalyst for negotiations and cooperation.
- Joint investigation and research can ensure equitable outcomes, as all stakeholders know how the conclusions were developed. One party's (potentially biased) data cannot be used as a deciding factor.

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- Withholding data tends to be viewed as trying to secure strategic advantage over the other actors. In contrast to this, sharing information denotes solidarity, inclusion and a willingness to cooperate (Turton 2003c: 96, 119). Thus water regimes often emerge after years of data sharing have laid the foundations for cooperation.

The development of a shared body of knowledge and sharing existing knowledge about transboundary rivers facilitates the realisation of the norms of hydrosolidarity in the following ways:

- Knowledge production, development and sharing are acts of cooperation. In a climate of uncooperativeness, actors withhold their knowledge and data to secure strategic advantage. In contrast, the co-production of knowledge tends to build trust, which promotes cooperative behaviour (Pyke 2011).
- Knowledge production, development and sharing contributes to equity debates as knowledge gives decision-makers insight about how much water is available and what impact and benefits various riparians experience (Thamae 2011). With this information available it is possible to engage in equity debates with detailed knowledge about the issues.
- Inclusivity is encouraged through knowledge production and sharing, because through sharing knowledge other actors benefit from the advantages of technical knowledge. Also, by producing knowledge collectively, all actors are included and contributing to the process thus creating inclusive, jointly-owned and broadly-trusted knowledge (Pyke 2011).
- Knowledge production, development and sharing can indirectly improve human well-being given that very specific and detailed knowledge is needed to understand the actual state of human well-being and what the most appropriate interventions are to improve it. Given that so many human problems have transboundary dimensions it is important to get support from states and actors across borders in order to negotiate cooperative solutions (Said *et al.* 2011: 559).
- Knowledge production, development and sharing supports environmental protection processes by empowering decision makers and implementers with the knowledge they need to determine what trade-offs are appropriate and what areas can or cannot be compromised (Nell *et al.* 2011).

2.3.5.2 Linkages between and integration of actors and issues

The notion of integration, in the holistic sense of the word, lies at the heart of the hydrosolidarity perspective and is about encouraging integration between the different actors

dealing directly with water and about linking water intentionally to other issue areas such as agriculture and energy. These enhanced linkages and integrations are denoted by:

- Including a multiplicity of different disciplines in problem solving (Max-Neef 2005).
- Building connections across issue areas. This can be achieved by involving a variety of water-related sectors (for example industry, agriculture, energy, transport, tourism), thus moving the water discourse beyond traditional 'silo' approaches to governance (Jacobs & Nienaber 2011: 670).
- Seeing water in a complex, interlinked manner and thus including issues of surface and groundwater, up- and downstream users, blue and green water, and water and land in any water governance learning process (Falkenmark 2011b).
- Building horizontal connections between different types of actors with an interest in water such as NGOs, policy makers, and industry (Funke, Nienaber & Henwood 2011).

There is some debate about the focal point for building these interconnections at transboundary level. On the one hand, the river basin perspective lies at the heart of the hydrosolidarity paradigm. This is the idea that networks are built and decisions are made about water within a basin perspective, bearing in mind that basins transcend existing political jurisdictions and boundaries (Gerlak, Varady & Haverland 2009: 320). The basin is the logical hydrological unit to manage water, and thus draws attention away from political borders. On the other hand, the basin is not always the place where decision-making power lies. Bureaucrats and top-level decision makers often make decisions on behalf of the basin despite being removed from its direct context. Herein lies an argument for shifting the basin focus from the geographic location itself to where decision-making power relating to the river lies (Jacobs 2009: 82).

Enhanced linkages and integration facilitate the realisation of the norms of hydrosolidarity because:

- If diverse linkages exist, cooperation and solidarity are promoted in a holistic manner because linkages enable the forging of cooperation between different disciplines, actors and across issues at different levels (Jacobs & Nienaber 2011: 666).
- A significant part of coming to a compromise in relation to equity is realising the benefits that various actors in a basin gain from the river, as well as the challenges that these actors face. By establishing wide networks it is possible to ensure more holistic inclusion of the 'hidden' or indirect benefits and challenges linked to water (Granit & Claassen 2009: 23).
- Greater inclusivity is built into water governance, not just within the domain of water but also in terms of its interlinkages to other issues. Developing broad networks will

help to determine more accurately who needs to be involved in specific issues. Without these networks in place it is very difficult to include the right stakeholders in the right contexts. This is because different stakeholders will gain from participation in different forums (Thamae 2011). For example, a local community representative may not be at ease in a ministerial meeting but may more easily be able to interact in a grassroots participation workshop.

- Human well-being is promoted by interlinkages. Broad networks offer the benefit of consulting with a variety of different actors. This is an important way of gaining feedback about peoples' needs. Also, the project of improving quality of life depends on the involvement of multiple actors to conceptualise and implement solutions and change. Thus it is important to establish broad networks to link water to other issue areas (such as energy and service delivery) that in combination are able to tackle the issue of human well-being.

- The balancing of environmental usage and protection is achieved if a variety of actors across issues areas are consulted and if a variety of actors in different domains are drawn in to implement trade-offs around the protection and use of water and ecosystems (Nell *et al.* 2011).

2.3.5.3 Organisational structures to foster water governance

The existence of organisational structures to govern transboundary water enhances cooperation around shared waters (Simalabwi 2007: 45). Furthermore, the development of cooperative organisational structures can lead to the desecuritisation of the water discourse (Turton 2001: 4). This makes organisational structures important for entrenching hydrosolidarity.

Given this support for the development of organisational structures, international cooperating partners are propagating for the development organisations at regional level to govern transboundary basins. Organisations are believed to desecuritise the water discourse; foster cooperation; create space for dialogue; have ecological benefits and be resilient over time; and create space for skilled people who have capacity in adaptive planning, and developing multi-objective support systems to work together.

Whilst there is broad consensus about the importance of organisations (Gerlak, Varady & Haverland 2009: 317), there is debate about the form these organisations should take. For example, all riparian states could be represented in an organisation. Alternatively, a more varied organisational form can be adopted that does not necessarily use the basin as its only reference for who can be included, thus allowing scope, for example, for donor and NGO involvement.

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The creation of organisational structures at transboundary level facilitates the realisation of the norms of hydrosolidarity in the following ways (Gerlak, Varady & Haverland 2009: 317-318):

- When actors and in particular states commit resources towards running an organisation that has the express purpose of collaboration and cooperation, it is a clear signal that attempts at cooperation and fostering of solidarity are being made.

- Promoting and negotiating equity in relation to water is an ongoing and fluid process. Standing organisational structures create the space for this ongoing dialogue and also the space for actors to direct their views, opinions, ideas and expectations.

- The issue of organisational structures promoting inclusivity is a complex one. There are two ways of looking at this. On the one hand, organisations that foster transboundary water governance at basin level can be viewed as needing to be inclusive and thus representative of all the major interests in the basin. On the other hand these organisations can be seen as being mechanisms to foster inclusivity in the basin by being a forum where different actors can come together or raise issues (Archer 2001: 73). The membership of the organisation itself does not need to be representative of all actors, but does need to be open to all actors to raise their concerns. This is a significant point in a transboundary context where states are among the primary actors in negotiations. Decisions need to be made about which states will be included, whether or not non-state actors will be part of the organisational structure and what rights and privileges the different participants will have.

- Organisational structures are helpful in promoting human well-being by providing a space to research and plan how to respond to human well-being issues and by involving experts in planning, research and advocacy on these issues (Thamae 2011).

- Organisational structures are helpful in balancing the protection and the use of the environment as they institutionalise a place where research can be commissioned on the use of water resources for the benefit of people and the environment (Thamae 2011). Also, the environmental 'voice' or profile is strengthened by these organisations as they are a concrete reminder of the importance of environmental issues.

2.3.5.4 Stakeholder involvement in water governance processes

Representative stakeholder involvement in transboundary water governance is essential for hydrosolidarity because:

- It is possible to secure acceptance of decisions by including relevant actors in the debates about trade-offs and use of water. Rules that are co-created are more likely to be upheld than those prescribed unilaterally (Falkenmark 2003: 36).

- It is possible to align decisions with the needs of citizens by including stakeholders and hearing their needs and concerns. This prevents water governance decisions from advancing hydroegoism, or promoting the needs of the elite (Gerlak, Varady & Haverland 2009: 318-319).
- Including stakeholders can make a range of actors and citizens more aware of, informed about and willing to be involved in water governance processes (Funke & Nienaber 2012: 111).
- Stakeholder involvement creates checks and balances that prevent corruption, as stakeholders can scrutinise decisions (Gerlak, Varady & Haverland 2009: 318).

Admittedly, it is difficult to achieve stakeholder involvement in a transboundary context given the vast numbers of people that these rivers serve as well as the issue of managing inclusivity. Nevertheless, stakeholder involvement facilitates the realisation of the norms of hydrosolidarity because:

- Transboundary governance encourages cooperation and solidarity by including those who work with, depend on and are impacted by water resources. If people are given the opportunity to be part of a process, to be heard and to express their concerns, provided that this engagement process is supported by implementable action plans, the likelihood increases that cooperation rather than conflict will prevail (Funke & Nienaber 2012: 111).
- Equity cannot be negotiated in a manner that will be functional unless it is the product of widespread debate, negotiations and compromise. Stakeholder engagement allows multiple interpretations of equity to be expressed. Notably, equity cannot be secured in a vacuum but must be the product of a socially consultative process in order for it to be broadly accepted.
- The idea of stakeholder engagement is in many ways underpinned by the norm of inclusivity. The ideal is that people must be made part of debates and decision-making processes in order to come to mutually accepted decisions. However, the running of consultations that are not only representative but also create equal space for different actors to express themselves, is complex (Chonguica 2009).
- The understanding of human well-being will lack relevance if people are not consulted about their needs. Also, the process of improving well-being needs to be collaborative (Gerlak, Varady & Haverland 2009: 318).
- It is difficult to understand and improve the balance between environmental protection and use of resources without the input of various societal groups about their context and challenges. Also, implementation of environmental trade-offs needs to be in

partnership with a variety of actors. Stakeholder engagement is a way of supporting these processes and reaching compromises about the working state of ecosystems (Falkenmark & Rockström 2004: 196).

2.3.5.5 Normative frameworks to guide behaviour

Normative frameworks are an important way of formalising and potentially codifying the norms of hydrosolidarity. The GWP (2009: 29) suggests that normative frameworks can "identify the functions, structure and funding of basin organisations and basin management; [s]pecify management roles and jurisdictions; [e]nsure fairness and accountability in decision making; [a]void fragmentation and overlap of responsibilities; [and] spell out regulatory and enforcement processes for sharing water, abating water pollution, protecting ecosystems or fighting against natural hazards, and determining entitlements to water".

There is, however, no established hierarchy of norms that filters from global through to regional, national and local levels. Norms take root in different contexts, in different ways, and for different reasons (Jacobs 2009). Thus, as was previously mentioned, norms that are included in a framework will be subject to a context specific process of taking route in a specific area and being absorbed into normative frameworks.

Having a normative basis to guide behaviour in transboundary water governance facilitates hydrosolidarity because:

- It encourages cooperation and solidarity. When developing a set of codified, norms; the process of debate, compromise and negotiation about the normative content of an agreement facilitates cooperation and interlinkages between actors. Also, the very act of agreeing on expectations and standards of behaviour and the resultant efforts to adhere to these agreements are indicators of cooperation.
- A codified normative framework promotes equity or enshrines the importance of debates about equity. However, states seldom commit to a very specific notion of equity in formal documents as this constrains future options and flexibility. Nevertheless, in everyday practice, uncodified norms of equity do emerge.
- Normative frameworks can promote inclusivity by, for example, clearly defining who should be involved in negotiations and what their roles and rights should be.
- The issue of human well-being is linked to normative frameworks because these frameworks outline the values and rules actors should adhere to. In addition, norms are also indirectly linked to human well-being given the need to use water in a way that fosters shared development. Normative frameworks can also specify mechanisms to deal with water-related disputes and claims. If water becomes a

contested issue amongst actors (and particularly states), it is ultimately ordinary people who are affected by inhibited water access and limited development options.

- Normative frameworks help to protect the environment by soliciting agreement between actors on a set of principles about how they will share and utilise the environment on which they depend. More specifically, normative frameworks prescribe the use and extraction of water resources.

In summary, the existence of the above-mentioned indicators is not necessarily an indication that hydrosolidarity exists. To operationalise hydrosolidarity, these indicators must be guided by its norms. For example, a treaty to govern a basin is only significant if it has been agreed upon in an inclusive and cooperative manner. Bearing this in mind, these indicators can be used as guides for transitioning to a more optimal hydrosolidarity outcome and can be used as tools to analyse the state of water governance in specific contexts.

2.3.6 A critique of hydrosolidarity

Hydrosolidarity is not without its weaknesses and criticisms. Firstly, hydrosolidarity lacks established benchmarks, boundaries and guidelines. What exactly constitutes hydrosolidarity in practice remains unclear. This challenge is complicated by the fact that attempts to formalise the definition and criteria of the concept also generates criticism. As a result, hydrosolidarity remains an elusive ideal. Nevertheless, it is acknowledged that hydrosolidarity is part of a broader discourse on the indicators of water governance. Although not always labelled as hydrosolidarity, this debate points to indicators that fit into and support the ethos of hydrosolidarity (Gerlak *et al.* 2011: 260-261).

Notably, if water governance solutions were obvious, hydrosolidarity's appeal for a dialogue in the water community would be unnecessary. Thus, whilst a lack of clear indicators of hydrosolidarity has so far made the concept difficult to manage, the fluidity and open-endedness of the concept are indicative of the complex problem it tries to solve.

The identified indicators are a step towards deepening an understanding of the operationalisation of hydrosolidarity in transboundary rivers. The indicators are not 'cast in stone' but represent a flexible approach to hydrosolidarity. This is important, given that the concept is rooted in notions of debate and transformation, and as such hydrosolidarity needs to remain flexible and adaptable.

Secondly, there are no legally binding transboundary water treaties (with associated punitive measure and incentives) that explicitly commit to hydrosolidarity, which makes it difficult to enforce. Thus, upstream users are unlikely to consider downstream interests unless

financial, social or political incentives or set-backs force them to do so (Jägerskog 2002: 73-77). It can however be argued that these treaties are not the only way to achieve hydrosolidarity. Given that states have no higher authority than themselves, if they choose to ignore treaties there are no direct mechanisms to make them conform. Thus, in the international context complex processes of cooperation, commitment building, and negotiation are needed to fill this authority gap and arguably hydrosolidarity can facilitate this.

Also, although no specific mention of hydrosolidarity is made in transboundary treaties, the norms that are part of hydrosolidarity are enshrined in various transboundary treaties. Indeed, the existence of a treaty (normative framework) itself is arguably an indicator of hydrosolidarity as it shows a commitment to the dialogue processes needed to come to such an agreement. Naturally, the extent to which the treaty is upheld and implemented is also important.

Thirdly, hydrosolidarity is difficult to achieve in reality given that water is historically and practically tied to vested interests, institutional inertia, corruption, power struggles, and lack of knowledge. Again, whilst this criticism is valid, there is evidence of cooperation on water as has been extensively documented by authors such as Jacobs (2009) and Turton (2003c).

A fourth criticism that requires consideration is the value system that is implied by the notion of hydrosolidarity. Emphasising the importance of human rights, equity and inclusivity contains a certain, and arguably strong, Western normative content. This view is supported by the fact that the concept was developed in Sweden or, more broadly speaking, in Westernised society. As previously discussed (see Section 2.3.4), norms are not necessarily universally shared and are context specific and localised. Thus a perspective that ignores localised experience of norms is unlikely to take root or be relevant in any practical sense, as it would be unable to deal with the plurality and complexity of water sharing practices (Jacobs 2009: 234; Kemerink, Ahlers & Van der Zaag 2009: 882; Gerlak *et al.* 2011: 261).

This being said, whilst early rhetoric about hydrosolidarity appeared to be leaning towards the idea of a universal set of norms for water governance, this view has declined. Increasingly, hydrosolidarity is being linked to a transdisciplinary understanding of water that acknowledges the inclusion and input of multiple voices. Indeed, the development of hydrosolidarity is attributed to this kind of thinking because the concept has been developed by various disciplinary experts and practitioners, and through conferences, NGOS and water forums. Although seldom explicitly stated, with the exception of Kemerink, Ahlers and Van der Zaag (2009), the call for this multiplicity of actors to be involved in water management processes is an implicit acknowledgement of the diversity of hydrosolidarity.

A fifth point of criticism is the concern that the norms of hydrosolidarity are poorly articulated. On the one hand, it is clear that the norms of the concept are strongly rooted in notions of cooperation rather than conflict, in equality and sharing rather than egotistical notions of national or personal self-interest, and in notions of environmental sustainability and water as a fundamental human right. On the other hand, there has been little interrogation of how these norms actually operate in water-related contexts. In response, this study redresses this weakness by articulating the normative content of hydrosolidarity and by acknowledging the tension between norms for water governance and the context specific interpretation and application of these norms.

A final point of criticism is that hydrosolidarity runs the risk of promoting a water-centric vision rather than an integrated, interlinked view of water in relation to other issues and sectors. On the one hand, the prefix 'hydro' creates the impression of a specific focus on water. As such, the term fails to denote interrelated issues such as agriculture, energy, mining and poverty, and in so doing runs the risk of perpetuating existing silo approaches to the use and management of water. This undermines the transdisciplinary nature of the hydrosolidarity project. On the other hand, hydrosolidarity certainly does promote a holistic view of water. It advocates that water, ecosystems and people need to be seen in an interlinked manner. It also calls for a transdisciplinary response to understanding and governing water which implies that a host of different disciplinary experts, as well as a variety of actors (government, epistemic communities and local communities) need to be involved. This includes the idea that science itself needs to be radically restructured in a less silo-based manner to allow for more integrated and coherent responses to interlinked, water-related problems.

This being said, there is no reason why hydrosolidarity cannot embrace this integrative ideal. It is nevertheless important to be aware of the potential misinterpretation of the term so as to avoid its unconstructive interpretation.

2.4 Conclusion

The aim of this chapter was to answer the first subsidiary research question: W*hat contribution does hydrosolidarity make to water governance in a transboundary context?* This was done in a general and a specific way. In a general sense, the concept of hydrosolidarity was introduced by explaining its broad context and how it is defined. This included an interrogation of its overlap between the closely related perspectives of ecohydrology, IWRM and hydrosolidarity. Finally the critique of hydrosolidarity was considered.

In a more specific sense, the normative content and indicators of hydrosolidarity in a transboundary river context were identified and clarified. In so doing the ideational structure

and content of hydrosolidarity were articulated. The outlined norms and indicators lay out an ambitious vision for transboundary water governance. To achieve this, a robust and flexible water governance response is required that is able to deal with the reality that many locally experienced water problems have transboundary roots. Dealing with this reality will require more flexible approaches to domestic/international divisions of territory and a range of different kinds of knowledge and solutions.

Significantly, this chapter is a fusion of different approaches and theoretical debates about transboundary water governance. These debates have their roots in a range of disciplines and debates amongst practitioners or water managers. Many of these contributors' disciplinary roots lie in the natural, rather than the social sciences. This presents a challenging task of merging thinking about water governance emerging from technical communities, with that of IR theoretical approaches as discussed in the next chapter.

In conclusion, the normative content and indicators of hydrosolidarity provide an analytical framework for exploring the hydrosolidarity component of the water regime case studies that will be subsequently discussed. However, before this is done and based on the aforesaid understanding of hydrosolidarity, it is necessary to clarify selected theoretical considerations concerning multilateral regimes.

CHAPTER 3

THEORETICAL CONSIDERATIONS: MULTILATERAL WATER REGIMES AND HYDROSOLIDARITY

3.1 Introduction

The aim of this chapter is to explore and explain the phenomenon of multilateral water regimes and to consider their role in supporting and advancing the norms and indicators of hydrosolidarity. This requires a critique of IR theory on forms of cooperation, regimes and international organisations to understand the links to and implications for hydrosolidarity.

The focus on multilateral water regimes reflects the ongoing popularity of developing regimes in response to water issues and challenges. More specifically, there is a perception in the water community (particularly in Southern Africa) that representative multilateral (as opposed to bilateral) water regimes are the most appropriate mechanism to govern water effectively (Malzbender & Earle 2009: 98). The reason is that this provides riparian states with a shared platform to address issues relating to a transboundary river basin. Given this emphasis on multilateral water regimes, this chapter addresses the subsidiary research question: *Can multilateral water regimes foster hydrosolidarity?* By answering this question an assessment can be made about whether multilateral water regimes have the theoretical potential to promote hydrosolidarity in a transboundary context.

As a discipline, IR provides a range of theoretical tools to address this issue. Rather than furthering a particular paradigm, the intention is to consider the advantages and disadvantages of a range of theories related to water regimes. This endeavour is therefore guided by pragmatism and eclecticism in its attempt to address the practicalities of the underlying problem(s) associated with transboundary water governance and to close the gap between theory and practice. Accordingly, this chapter provides an overview of the partial theories on multilateral regimes, as positioned within the context of IR theoretical debates. Against this backdrop water regimes, as a special type of environmental regime, will be considered.

3.2 The contextual framing of regimes

The IR discipline has a range of theories that facilitate analysis and understanding of the relatively enduring and constant phenomena of world politics (Baylis, Smith & Owens 1997: 191). These theories about structures and processes belong to clusters of IR theories and as such, are not complete theories, but partial accounts of reality. This study thus refers to them as partial theories.

To understand the role of regimes in promoting hydrosolidarity, it is necessary to uncover the partial theories of IR on multilateral water regimes. This requires focusing on forms of cooperation, regimes and international organisations and positioning these partial theories in relation to the IR theory debates. These partial theories are considered in this particular order because of their manifestation in water governance literature. The first issue is whether or not a regime is bilateral or multilateral, thus the emphasis on forms of cooperation. The second issue is whether water cooperation is formalised to the extent that it can be referred to as a regime, thus the emphasis on regimes. The third issue that is whether the water regime has manifested in a particular manner that emphasises the development of a supportive RBO, thus the emphasis on international organisations.

3.2.1 Forms of cooperation

International cooperation is a central theme of IR theory. As such, the forms and consequences of cooperation indicated below have been theorised to a significant extent. An understanding of multilateralism and regionalism is central to water regime analysis, given the popularity of multilateral water regimes in practice and given that the case studies discussed in Chapter 4 are situated within the regional context of SADC.

3.2.1.1 Multilateralism

Globalisation places pressure on states and other actors to cooperate. In a complex and globalised world, problems are becoming increasingly transboundary and shared in nature, making multilateralism and the need to cooperate around mutual issues more important. The literature overview (see Section 1.2.2) offered a summary of various definitional debates on multilateralism. Ultimately, the MERCURY project team's operational definition of multilateralism is adopted, namely "[t]hree or more actors engaging in voluntary and (essentially) institutionalised international cooperation governed by norms and principles, with rules that apply (by and large) equally to all states" (Bouchard & Peterson 2011: 10).

This definition has several implications (Klein *et al.* 2010: 7-8):

- It includes state and non-state actors in multilateralism.
- It implies that institutionalisation has occurred, considering that institutions point to the persistence of certain behaviour over time, that collectively actors are faced by certain challenges over time, and that these actors operate according to agreed norms which become binding over time.
- It makes provision for the equitable application of rights to all actors, albeit subject to exceptions. For example, non-state actors cannot become party to interstate treaties

even though they can participate in multilateral arrangements. Thus, by definition, some rules that apply to states in multilateral cooperation do not apply to non-state actors.

It should be noted that multilateralism represents a different cooperative approach than that of unilateralism or bilateralism. Unilateralism is about individualist action by an actor. Unilateral actors can choose to cooperate with others, but this is not routine and tends to be limited to requests for support on specific issues (Klein *et al.* 2010: 6). In a globalising world, unilateral action can cause problems given the interlinked nature of challenges through processes such as the global economy, communications networks, and overlapping organisational affiliation.

Bilateralism serves the goals of two actors, irrespective of whether they are state or non-state actors. The relationship between actors within a bilateral agreement and other actors who have an interest in the same issue may be asymmetrical. Furthermore, bilateral and multilateral agreements can coexist in certain contexts (Klein *et al.* 2010: 6; Thamae 2011).

Two principles are important for multilateralism to be effective. The first principle is that of diffuse reciprocity. This implies that participants in a multilateral grouping expect reciprocation and balancing to occur over time. This furthermore implies the expectation that norms will be mutually upheld and maintained by all participants in a multilateral grouping; this is often the perceived benefit of becoming involved and cooperating (Lazarou *et al.* 2010: 10). The second principle is inclusion (Bouchard & Peterson 2011: 10). In its most basic form this involves a debate about how many actors should be involved in multilateralism. Whilst most definitions, as previously discussed, state that technically multilateralism is about three or more actors working together, the ethos of multilateralism is inclusivity. As such, when a grouping of actors decides to cooperate on a specific issue, they should be open to all actors who are willing to support the agreed norms, and have an interest in and clear link to the underlying issue. For example, if in the case of a transboundary river with five riparian states, three of them cooperate on issues relating to the river, they can technically call their relationship multilateral. However, if they are intentionally excluding the two other riparian states of the river even though these two states would be willing to cooperate, the cooperative arrangement cannot fairly be referred to as multilateral. If the invitation to participate has been extended to these two states and they, for whatever reason, choose not to participate, then this arrangement could be referred to as multilateral.

Inclusivity is also crucial to the effectiveness of multilateralism. On the one hand, the involvement of too many actors can make it difficult to reach consensus about any issue, given the possible differences of opinion that may arise. On the other hand, actors may choose not to be involved and, in doing so, derail the cooperative process (Rapnouil 2009:

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183-187). For example, if the state that has the source of a river in its territory refuses to cooperate in a multilateral setting, it can undermine the initiatives of downstream actors collaborating in a multilateral manner. Therefore, given the various challenges that multilateralism faces, there is a heated debate about what constitutes functional or effective multilateralism.

Given the challenges of multilateral cooperation, a sub-debate about minilateralism has arisen. Proponents of minilateralism argue that a small grouping, including only the key decision makers on a given issue, is more effective than a large grouping of decision makers who have only a minimal interest in the issue. Minilateralism can and does occur at times within the context of a broader multilateral grouping, especially where key actors agree on a matter and then garner support amongst the broader grouping. The important point is to take note of this conceptual overlap and its implications (Bouchard & Peterson 2011: 9).

Recognising multilateralism in practice requires an awareness of the various forms it appears in. Institutionalised multilateralism occurs where clear rules and related organisations are established. Crystallising multilateralism occurs where new international rules or organisations are being established. Aspirant multilateralism occurs where norms inform foreign policy behaviour in the absence of any formally codified rules (Bouchard & Peterson 2011: 21). In summary, a clear representation of this partial theory of cooperation has been presented by considering the implications of the definition of multilateralism, its key principles and various forms.

3.2.1.2 Regionalism

Regionalism in the international context implies "the range of special relationships between neighbouring countries which represent more than normal diplomatic relations but in which the component parts retain legal personality under international law" (Best & Christiansen 2008: 436). A regional group can be defined in many different ways and is influenced by geographic proximity, culture, history, political processes and economic issues (Bickerton & Gagnon 2008: 368). Regionalism typically arises to address a specific problem or cluster of problems that transcends national borders but still has a particular geographic scope. Natural resource management provides some of the earliest examples of regionalism given the particular geographic, albeit transboundary scope of certain environmental problems. A prominent example of this is regional cooperation on the Rhine River which was formally established with the Central Commission for the Navigation of the Rhine in 1815 (Fioramonti 2012: 3).

Regional cooperation and integration have subtly different emphases. Cooperation refers to limited arrangements where states agree to work together on specific issues such as transport, health or the environment. The cooperative activity does not necessarily result in

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the streamlining of regional treaties and strategies into national policies but simply implies that actors in the cooperative arrangement agree to work on a set of common issues collaboratively. Integration implies that efforts are made to incorporate regional treaties and strategies into national policy and process. This results in regions that adhere to common sets of processes and approaches to specific issues (Best & Christiansen 2008: 436). Regionalism and multilateralism are closely linked. Multilateralism is essentially a varied form of cooperation that comes with a host of qualifying terms like 'nominal', 'qualitative', 'formal', and 'substantive' (Camroux 2011: 6). Regionalism is a region-specific form of multilateralism. Despite the links between the two concepts, there is a long-standing debate about the relationship between regionalism and multilateralism. Some proponents (see next point for details) see them as complementary whilst others see the one as something that essentially undermines the other. For example, there can be complementarity if the regional platforms allow for the negotiation of regional positions and bloc voting in multilateral settings. However, rivalry between different regional groupings can also undermine decision-making processes in the multilateral setting.

Proponents of regionalism favour it in relation to multilateralism because (Gupta 2008: 263-264; Rapnouil 2009: 188-189):

- Actors from the same region may be able to reach desired outcomes more effectively. This is partly because actors in a region may be more homogeneous in terms of their collective preferences than may be the case in a broader, more diverse multilateral setting.
- Agreements are reached in the regional context and provide foundations for similar agreements on a multilateral level, based on knowledge and experience from the regional context.
- Regional groupings can be forums where government officials and other representatives are groomed to participate in a multilateral setting.
- Regional groupings can reach agreement more quickly than multilateral groupings, so regional cooperation has the potential to offer states 'first mover' advantages. This can allow regional groups to gain better access to particular markets or other benefits. Regional agreements can also be used to facilitate domestic reforms in areas of the environment and investment.
- Regionalism can potentially ease multilateral processes, as regional groupings might vote together or pre-emptively decide how to respond to certain issues in the multilateral setting.

Opponents of regionalism in the context of multilateralism argue that regionalism can undermine multilateral cooperation in various ways (Gupta 2008: 263; Rapnouil 2009: 190):

- Regionalism can reduce global welfare creating spheres of influence resulting in regions competing with non-members but also with other regional groupings. In particular, competing arrangements may disagree on regulatory structures and standards.
- Regionalism can increase the complexity and the management of overlapping regional and multilateral agreements. These agreements have overlapping agendas that affect development policies. Developing countries, in particular, may struggle to manage a complex web of agreements, given their limited negotiating capital and capacity. This is because the management of regional and multilateral agreements requires large human and institutional resources and infrastructure in order to function effectively.

Thus, the link between regionalism and multilateralism is both an opportunity and a challenge. "Effectively managing the interface between regional and multilateral initiatives requires greater synergy between national development objectives and external commitments" (Gupta 2008: 261). This synergy will facilitate a more coherent, supportive and consistent system of governance between states.

In conclusion, there are various forms of cooperation, each with benefits and costs. Actors involved in cooperative activity will often pursue different forms of cooperation to balance their complex relations in the transnational space (Rixen & Rohlfing 2007: 391).

3.2.2 Regimes

This section considers the structures, such as regimes, institutions and organisations that can foster different forms of cooperation. This is a necessary focus, given that the next chapter specifically analyses the extent to and manner in which water regimes have manifested in practice in SADC. Regimes are pervasive in international relations and exist in all major issue areas of IR. Although regimes have been around for a long time they have been particularly influential since the 1970s, entwining states in a complex set of multi-layered regimes (Haas 1982: 246-247; Booth 1994: 12).

3.2.2.1 Definition and features

The most authoritative and widely accepted definition (Louka 2006: 61) is by Krasner (1982: 186) who defines regimes as "sets of implicit or explicit principles, norms, rules and decision-making procedures around which actors' expectations converge in a given area of international relations". Prior to Krasner's definition Keohane and Nye (1977: 19) described regimes as governing arrangements with related sets of rules, norms, and procedures that regularise behaviour and control its effects. This is similar to Krasner's definition, but does

not emphasise the idea that regimes allow a convergence of expectations. Building on this definitional debate, Conca (2006: 11) emphasises that regimes are mechanisms to promote rule-based behaviour in an international environment that has no supranational government. Conca thus emphasises regimes as instruments of governance in the absence of a supranational government.

These definitional debates highlight a number of key regime features. Firstly, they are based on principles that are beliefs of fact, causes, and rectitude (statements about how the world works). Secondly, they develop a set of norms that are standards of behaviour defined in terms of rights and obligations. Principles and norms form the basis for regimes and if they change a fundamental change occurs in a regime. Thirdly, they have a set of rules which are specific prescriptions or proscriptions for action. These rules have a lower generalisability than principles and are designed to reconcile conflicts which may exist between principles and norms. Fourthly, they have decision-making processes that constitute prevailing practice for making and implementing collective choice (specific prescriptions for behaviour). Rules and decision-making processes can change incrementally without fundamentally altering the regime, provided that they stay within the ambits of agreed principles and norms (Krasner 1982: 186-189).

Fifthly, this definition of regimes presupposes a high level of institutionalisation. Indeed, regimes at times have been accused of being a new terminology to describe international organisations (Little 1997: 300). In their broadest sense regimes can be thought of as a loose cluster of principles and norms that need not necessarily be codified, but that a group of actors is committed to. In a narrower sense, specific principles, norms, decision-making processes and rules are adhered to by a group of actors and managed by an international organisation. This latter view (which Krasner is implicitly part of) is increasingly becoming an ideal type for regimes. However, this definition is still broad enough to accommodate the emergence of various types of regimes.

Sixthly, this definition implies that state and non-state actors can technically be involved in regimes. "The relationship between state and non-state actors ... may be instrumental in nature, with the state dominant" or "[p]rivate actors may construct independent international regimes, or play a relatively equal role with states within a regime of mixed parentage" (Haufler 1995: 95-96). It needs to be noted, however, despite intentions to be inclusive of a range of actors, that "regime theory has been firmly linked to the development of hegemonic stability theory, thereby contributing to its state centric bias" (Haufler 1995: 95). These quotes illustrate that regimes have a state-centric bias, given that regime theorists are part of the rationalist tradition which emphasises the pivotal role of the state in IR. As such, regimes are based on the assumptions that states operate in an anarchic international system, are

rational unitary actors, are primarily responsible for establishing regimes and are the sovereign authority in their own territory (Little 1997: 298; Conca 2006: 44). Notably, this state-centric bias does not mean that non-state actors are powerless. For example, they may influence regimes by forming coalitions with other actors in the domestic and transboundary spaces. Also, epistemic communities tend to play influential roles in regimes and are often pivotal to the creation and maintenance of regimes, given that production of knowledge is an important aspect of regime development (Haufler 1995: 95).

In summary, Conca (2006: 7) aptly describes present-day regimes as negotiated settlements that intend to enable cooperation on a specific issue by developing a mutual understanding of the issue. Reaching this consensus requires processes of bargaining and development of agreements to give the area of cooperation more focus and specificity. International secretariats also need to be developed to monitor and manage compliance.

Turton (2003c: 103) suggests that there are four key features that influence the formulation and running of regimes. He draws on the work of Gupta, Junne and Van der Wurff (1993) in these formulations. Firstly, he speaks about issue-specific factors such as growth of knowledge, spread of functional knowledge, increasing understanding of issues that helps to formulate solutions, growth of social learning and domestic growth of knowledge. Scientists play a key role, and NGOs, journalists and policy makers are also crucial. Secondly, there are interest-specific factors, such as the development of common political interests around an issue, breaking down negative and conflicting interests and rational anticipation of future benefits. Here politicians, policy makers, negotiators, NGOs and the media are crucial. Thirdly, there are ideology-specific factors including the spread of specific ideologies, and the disabling of conflicting ideologies. Here politicians, various leaders (social, religions, industrial) and NGOs play a key role. Fourthly, there are organisation-specific factors such as the availability of organisational forums, the growth of international governmental coalitions, the growth of public support, the growth of regimes in neighbouring fields and the growth of domestic institutions. Here politicians, leaders, diplomats, NGOs and the UN play important roles.

Significantly, there is a high degree of overlap in the way that the various authors mentioned in this subsection describe the features of regimes. All emphasise the role of knowledge production, the development of an organisational form and negotiating an agreed agenda or area of cooperation.

3.2.2.2 Types and functions

There are different typologies for regimes. Some focus on scope, ranging from narrow issues to those with global or regional implications. Scope refers to the geographical scale of the

regime and also the number and types of issues the regime tries to respond to. Regime scope can be issue-focused, complex or straddle both options. Issue-focused regimes have a specific and relatively narrow focus. Complex regimes attract the attention of a diversity of actors and interrelated issues and are extended in multiple normative directions. The third type of regime merges these perspectives such that a regime is issue focused but covers enormous complexity relating to one issue (Keohane 1995: 43; Louka 2006: 62). Regime complexity has benefits and costs. Louka (2006: 62-64) points out that on the one hand, a multiplicity of overlapping complex regimes in one issue can render it redundant and can cause competition among various groupings. On the other hand, parallel administrative structures can reduce error, induce healthy bureaucratic rivalry, and implement risk management.

Other typologies focus on the issue of membership and distribution of benefits. Keohane (1995: 39) speaks about restricted, conditional and open membership. He suggests that restricted regimes deliberately limit membership to a relatively small number of states that have common interests or specific domestic arrangements. Conditionally open regimes can be joined by all sovereign states, with the exception of pariah states, with minimal further requirements for membership.

Other typologies consider regime orientation, arguing that they can be market-oriented, state-oriented or internationalist regimes. In state-oriented regimes the implementation of the principles of the regime depends largely on states, and as such is heavily influenced by domestic capacity. Market-oriented regimes restrict the involvement of states to the mere creation of an enabling environment for non-state actors to operate. Internationalist regimes are defined by regulatory and distributary authority being given to strong multinational bodies. These regimes can be influential because they have the institutional hardware (organisations) to implement redistribution policies (Breitmeier & Wolf 1995: 347).

Another way of typologising regimes is to look at their likely impact and strength. This can be done by considering the degree of formality of the regime: the extent to which actors involved in the regime believe that their behaviour will be constrained by agreeing to a set of implicit or explicit principles and norms. If there is no convergence of expectations and no formality, there is no regime. If there is low formality but high expectation that informal rules will be adhered to, then a tacit regime forms. If there is a high degree of formality (a formal agreement) which no one expects to observe, a dead letter or 'scrap of paper' regime forms. The ideal type is seen to be a high degree of formality and high trust that rules will be observed. This results in a full-blown regime (Keohane 1995: 42; Little 1997:234-235).

Whilst different types of regimes will have different scope, membership orientation and impact (as described above) they all converge around the core features of regimes.

3.2.2.3 Role

Regimes have a number of roles to play within the broad context of international cooperation. They create the platform for just and sustainable conflict regulation in specific issue areas of IR. This demands the creation of a platform to cooperatively negotiate just and sustainable responses to specific problems. They contribute to the development of global civilisation and deepening domestic democracy. Global civilisation building is illustrated by the deepening relationships between actors through establishing epistemic communities, building organisations around issue areas, and sharing resources and capabilities to deal with specific issues. In the domestic realm, regimes may change actors' interests or preferences, teach citizens about issues, or affect perceptions. This assists in mobilising and empowering civil society domestically around issues of concern (Breitmeier & Wolf 1995: 342).

Regimes have a knowledge provision role. This knowledge can have a number of impacts. For example, governments may recalculate national interests in light of new knowledge provided by regimes. Their behaviour may change once they have different expectations about what other actors will do or when actions become more transparent through monitoring or reporting requirements. Governments and other actors may be socialised into transnationally diffused norms that are promoted by regimes. Governments may also be pressured into regime compliance for fear of their reputations being tarnished by non-compliance (Conca 2006: 13).

By way of a sub-conclusion, it is evident that there is overlap in the literature on regimes, multilateralism, institutions and organisations. Some authors (for example Krause 2004: 44; Chung 2008: 747) suggest that multilateral conventions, organisations and related instruments can constitute or are synonymous with regimes, and thus refer to multilateral regimes. Most authors, however, allude to the subtle differences between regimes and multilateralism. Ruggie (1992), for example, believes that in international orders, regimes and organisations could be multilateral in form, but need not necessarily be. Bouchard and Petersen (2011: 8) suggest that "for an international organisation to qualify as a case of multilateralism, it coordinates relations among states on the basis of organizing principles. In principle (if not always in practice), the same rules apply to all". Given the diversity of regimes and the variety of options they have about issues of inclusion, membership, scope and focus, it is clear that regimes can be multilateral but are not multilateral by default. Lazarou *et al.* (2010: 14) accept this point, suggesting that regimes only become multilateral once the principles of multilateralism are embedded in the organising principles of the regime.

Regime scholarship offers a host of suggestions for developing governance structures in the international space. There are underpinning notions that are similar in most regimes but

these structures need to be individually and contextually analysed, given the huge amount of diversity and different choices that can be made regarding how regimes are structured and run.

3.2.3 International organisations

There is a trend in both multilateralism and regime thinking to propagate a specific form of multilateral regime that has a formal organisation structure linked to it. Multilateral regimes are perceived to be more developed and secure once an organisation has formed (Conca 2006: 62).

3.2.3.1 Definition and features

As a point of departure, Archer's (2001: 33) definition of international organisations is adopted, namely "a formal, continuous structure established by agreement between members (governmental and/or non-governmental) from two or more sovereign states with the aim of pursuing the common interest of the membership". Such organisations have distinct features. Firstly, international organisations must have at least two states as members, but membership is not limited to state membership. Secondly, the aim of the international organisation is to pursue the common interest of members. Thirdly, the international organisation must have its own formal structure that exists in a continuous manner and that is formally established though an agreement such as a treaty. Importantly, the structure must not be controlled by only one of its members and must have a degree of autonomy.

Many international organisations also include additional features such as plenary gatherings of all the membership in an assembly or conference; more regular meetings of a limited number of members, quite often with executive powers; a permanent secretariat of an international nature, which implies that membership of the secretariat is drawn from several countries and is financed by the members; and institutions with judicial or quasi-judicial powers (Archer 2001: 33-34).

Many definitions or usages of the term institutions exist. However, "most scholars have come to regard international institutions as sets of rules meant to govern international behavior. Rules, in turn, are often conceived as statements that forbid, require or permit particular kinds of actions" (Simmons & Martin 2001: 194). Others, such as Bandaragoda (2000: 2) argue that 'institution' means the same thing as 'organisation'. More broadly, it is suggested (Abbott & Snidal 1998: 6) that the rise to prominence of the study of regimes has in many ways side-lined the study of international organisations. Despite the shifting focus from international organisation to regimes, the "study of international regimes made an important contribution by supplementing the technical aspects of formal IOs with the norms and rules

governing state behavior. This move allowed a more unified framework for the analysis of formal and informal institutions" (Simmons & Martin 2001: 194).

In this study, regimes, institutions and organisations are seen as related but separate concepts. Regimes are seen as the over-arching structure and provide principles, norms, and decision-making processes around specific issue areas. Institutions are subsets of regimes and operate at a more detailed level than regimes, in the sense that they develop specific laws and policies to help articulate the norms of the regimes (Bandaragoda 2000: 5). Organisations are a potential sub-set of regimes and institutions and facilitate the application of rules, policies and norms. They provide a forum to interrogate norms and develop policy. Organisations achieve this using a formal system of rules and a rationalised administrative instrument (for example constitutions, physical equipment, machines, emblem letterhead stationery and administrative hierarchies) (Archer 2001: 2). Thus, organisations physically manifest (give a face to) the more intangible nature of institutions and regimes.

Notably, there is not necessarily a clear division in practice between regime, institution and organisation. Often the same people are involved in all these processes, and maintaining clear separation between the terms is contrived. For analytical purposes however, this distinction remains useful. There is not necessarily a describable hierarchical relationship between regimes, institutions, and international organisations. International organisations, for example, can be instigators for institutional and regime development (Bandaragoda 2000: 6).

Archer's definition of international organisations is broad and thus categorisation of different types of organisations is important. This categorisation typically happens by analysing membership, aims and activities, and structure.

3.2.3.2 Types and functions

Whilst all international organisations are closely associated with sovereign states, a number of types exist. The major distinction in the typology is between Interstate or Intergovernmental Organisations (IGOs) and Transnational Organisations (TNOs) (see Archer 2001: 36-41 for a detailed discussion). Whereas the membership of the former draws on sovereign states or their governmental representatives, the membership of the latter includes at least one non-governmental actor involved in transnational interactions. Although IGOs are sometimes subdivided into interstate and intergovernmental organisations in a narrow sense, these two terms are interchangeable for the purposes of this study. TNOs are subdivided into genuine (international) Non-governmental Organisations (NGOs), hybrid NGOs and Transgovernmental Organisations (TGOs). Since TGOs are of particular significance in this study, the term requires further elaboration. A TGO is formed by an

intergovernmental agreement, but is not controlled by the central foreign policy organs of national governments. For example, in the case of a water-related TGO, the representatives will be the ministers of water affairs or senior policy advisors of the national water departments. Both IGOs and TGOs recognise states as subjects of international law, see states as equal, in legal terms, and maintain that international law cannot interfere with the domestic jurisdiction of the state. This implies that member states have equal voting power, and also that the extent to which a member state adheres to the ruling of the international organisation (and associated regime) is at the discretion of the state and its government itself. Secretariats and Councils can thus not make rulings without the consensus and support of the membership.

International organisations can fulfil a variety of functions that can include (Abbott & Snidal 1998: 10-16; Archer 2001: 95-100):

- Articulation and aggregation of interests – international organisations perform this task in much the same way that a national association or group does in a domestic context. The fundamental difference is that there is a lack of a central government or body to allocate values in the international space. Despite this, interests by various actors and groups can be articulated and expressed through international organisations.
- Norms – international organisations make considerable contributions to the development and implementation of norms through their role as a forum, actor and instrument. Many of these norms exist in treaties and policy and others just in practice. It should be noted, however, that these norms can be conflicting and are often weak, given the dynamic nature of the international arena.
- Recruitment – by portraying the benefits of becoming a member of an international organisation, new members can be recruited to the system. For example, non-self-governing territories often aim to become states so that they can join a particular international organisation.
- Socialisation – in the absence of a world government, international organisations play an important role in socialising various actors in how to behave in the global space. International organisations can be socialising actors within states by directing relevant individuals and countries, or they can socialise internationally between member representatives. In so doing, international organisations teach actors about what is acceptable to the rest of the international community or to adopt a common value system.
- Rule-making – international organisations are often a place where rules are made. Members play a key role in defining the rules. This should ideally interact with the institutional and regime principles and processes.

- Rule application – international organisations can implement or enforce rules (for example, sanctions) using resources available to the organisation.

- Rule adjudication – when rules are not obeyed, disobeying actors should, ideally, be adjudicated. This can be difficult to achieve in practice. It is difficult to control sovereign states as they are not forced to comply with international organisation regulations. Often a political settlement is a suitable way to deal with issues that states find controversial.

- Information – international organisations provide information to member states.

- Operations – international organisations undertake operational functions in much the same way as an international government.

- Reduce uncertainty – international organisations homogenise and reproduce standard expectations amongst members, thereby contributing to a stable international order (Bandaragoda 2000: 7).

- Pooling of resources and joint production of knowledge – international organisations create a space to share and co-create knowledge and share scarce resources.

The ability of international organisations to fulfil their roles and functions is an indication of their effectiveness but it is difficult to measure effectiveness because the roles and functions are so complex. They do, however, serve as criteria to assess organisational effectiveness. In the context of this study there is a need to analyse organisation effectiveness given the focus on the capacity of water regimes (and their potentially associated international organisations) to deliver on hydrosolidarity.

3.2.3.3 Role

International organisations have three main roles. They can act as instruments to fulfil their members' particular needs. This applies particularly to IGOs, where the members are sovereign states with power to limit independent action by the organisation. They can provide an arena for action by creating a neutral space for members to meet, discuss, argue, and debate. International organisations can also be seen as independent actors, although there is debate about their degree of independence. On the one hand, international organisations are dependent on their members for their existence and member states tend to influence these bodies quite strongly. On the other hand, part of the reason that international organisations are formed is because members believe that the benefits of the collectivity will be greater than operating alone. International organisations are able to perform actions that would otherwise have been difficult, and as such, an international organisation is at least a partly independent actor (Archer 2001: 69-80).

A number of factors influence the capacity of international organisations to deliver on their roles. Firstly, the formal competency, or the amount of authority that member states give an international organisation, significantly impacts on the agency of the organisation. For example, an international organisation that can actively monitor regime compliance tends to have greater impact. Secondly, the degree to which an international organisation is embedded in an existing regime is significant. International organisations are often the products of broader regimes and related multilateral treaties. Whilst it is important for the international organisation to be embedded in a broader regime, it also needs some autonomy from the regime to monitor its own effectiveness. Thirdly, the management structure and the degree to which the international organisation actually responds to the problems it is trying to manage or solve is important. Some structures are deeply hierarchical and others are more 'flat' and flexible. Given the dynamics and complexity of environmental problems, a flexible, horizontal structure appears to be important in respect of environmental regimes. Fourthly, the availability of resources is important. This does not necessarily imply that international organisations (or any organisation for that matter) need large budgets to be effective, but they must be able to harness the resources (material and non-material) required to achieve their roles and functions. Fifthly, international organisations that value cooperation with relevant stakeholders seem to be more effective than organisations relying on their own authority. As such, stakeholder involvement tends to encourage organisational effectiveness and legitimacy. Finally, institutional design issues are important. Issues like decision-making procedures, a conflict resolution mechanism, recruitment of human resources and representation of the international organisation in the external domain all play a role in the organisation's effectiveness (Biermann & Bauer 2004: 192).

The structural competencies of international organisations, discussed above, are relatively straight-forward to analyse, whilst contextual competencies are more complex as they are related to a specific place and time in history, and are issue-specific. This includes external factors such as changes in belief systems caused by changing world economies, as well as crisis events that impact on regime effectiveness. Similarly, science and technology innovation influences actors and moulds their responses. Also, the degree to which power is centralised in a region impacts on international organisations. Economic interdependence over a long period of time seems to facilitate the effectiveness of the international organisation and its potentially associated regime. In addition, internal factors such as the heads of the organisations, the professional ethos of the international organisations, and the relationship between members of the organisations all contribute to the capacity of an international organisation to function (Biermann & Bauer 2004: 193; Haftel & Thompson 2006: 270).

Clearly, the capacity of an international organisation to deliver on its roles is linked to a number of enabling factors that need to be monitored.

3.3 Regime theory and International Relations

The aforesaid theories on cooperation, regimes and international organisations are referred to as partial theories as they describe some of the enduring aspects of world politics (Baylis, Smith & Owens 1997: 191). These partial theories are positioned within the context of broader IR theoretical debates referred to as the IR grand debates. IR is an evolving and contested academic subject that "has developed through distinct phases, characterised by specific debates between groups of scholars. At most times during the twentieth century there has been a dominant way of thinking about IR and a major challenge to that way of thinking" (refer to Table 1 for a summary of these debates). Also, the IR discipline is strongly influenced by other disciplines such as philosophy, history, economics and sociology (Jackson & Sørensen 2003: 34).

Theories of cooperation, regimes and international organisations can be viewed in two ways from an IR theoretical perspective. The first view is that these theories are part of the rationalist body of theory (Meissner 2004: 22). They had their roots in earlier IR debates between idealism and realism and were further developed during the behaviouralist versus traditionalist debate. However, with neo-liberalism and neo-realism more productively engaging on a common agenda (known as the neo-neo synthesis) theories of cooperation, regimes and international organisations became part of the rationalist approach. The second view is that they are partial theories that explain different aspects of reality. As partial theories they can be viewed through the lenses of rationalist, constructivist and reflectivist IR theories, leading to the emergence of different perspectives on them.

This study merges both viewpoints. It acknowledges that the partial theories are essentially the product of the debates that resulted in the neo-neo synthesis and that their assumptions have roots in rationalism. However, the literature that debates these partial theories seldom clarifies the assumptions that constitute them: thus it is useful to consider these partial theories through the lenses of the IR grand debates to elucidate assumptions and evaluate their strengths and weaknesses.

Table 1: Summary of the IR grand debates

Debates	Nature	Time-Frame	Scope
First debate	Idealist versus Realist	1920 - 1940	An ontological debate focused on the nature of human beings and whether we are essentially altruistic or egotistical.
Second debate	Methodological issues (Traditionalists versus Behaviouralists)	1950 - 1960	How should knowledge be produced?
Third debate/ Interparadigm debate and the neo-neo synthesis	Realists, liberal-pluralists and radicals	1970 - 1980	These three perspectives offered different readings of how the world works and as such were focused on epistemological issues (theory of knowing).
Fourth debate	Rationalist versus Reflectivist (*or* Positivist versus Postpositivist)	1980 onwards	Rationalism sees identity and interests as pre-contextually determined factors and as such engagement in institutions and processes can at most alter behaviour but does not shape identity and interests. Reflectivism explains identity and interest as being shaped within the context of material processes and engagement with institutions.
Fifth Debate?	Constructivist versus Rationalist	1990 onwards	The emergence of Constructivism as a potential mid-point and negotiator between the rationalist and reflectivist perspectives.

Sources: Waever 1999: 150-151; Jackson & Sørensen 2003: 35; Reus-Smit 2009: 223

3.3.1. Rationalism and the partial theories

"To some extent neo-realist and institutionalist theories are complementary. Students of international regimes need not discount the roles of interests and power in world politics. Nor do sophisticated neo-realists have to deny that ideas can be important or ignore the impact of regimes on domestic politics. Regimes could conceivably have any or all of the effects attributed to them, under different conditions" (Keohane 1995: 30). This observation of Keohane (1995: 30) alludes to a number of general assumptions of neo-realism and neo-liberalism that are collectively referred to as rationalism. Firstly, political actors behave in an individual rather than social capacity in the societal realm, and are able to discern the most effective path to achieve their personal ambitions. Secondly, states or individuals engage in the social realm with a pre-defined identity and set of interests. Social interaction is not considered an important determinant of interests. Thirdly, "society is understood as a strategic realm ... in which individuals or states come together to pursue their pre-defined

interests" (Reus-Smit 2009: 216). Thus, actors are not social but atomistic beings that form relations based on interest rather than social dependency.

There are specific assumptions of rationalism that are particularly pertinent to the study of the partial theories on cooperation, regimes and international organisations (Little 1997: 298):

- States operate in an anarchic international system.
- States are rational, unitary actors and as such regimes and international organisations are the products of rational, self-interested actors.
- States are the units responsible for establishing regimes and will be crucial in choosing whether these will be bilateral, multilateral or regional; they will also play a central role in developing and sustaining related international organisations.
- Regimes are established on the basis of cooperation in the international system.
- Regimes, international organisations and their various 'forms of cooperation' promote international order.

Given these observations associated with multilateral regimes, it is clear that rationalists see regimes as deeply tied to securing strategic interests of individual actors, which are usually states. Regimes are perceived as being pre-defined (and thus somewhat predictable and even static) institutions. Thus, interaction in these regimes is not seen to have a profoundly altering effect on the values and interests of the actors involved.

Despite the commonalities of these rationalist theories, there are also subtly different emphases that derive from the debates between liberals and realists that preceded the neo-neo synthesis (see Table 2). Liberals argue that regimes help to overcome the problems posed by anarchy and globalisation (Little 1997: 305). Thus states "create international institutions that act as focal points for bargaining and help ensure that they keep their commitments to one another" (Bouchard & Peterson 2011: 17). This notion is rooted in microeconomic theory, emphasising that in a marketplace, an absence of centralised institutions is important because it forces rational economic actors to compete for goods and services. This mechanism can, however, cause problems when providing public goods because the latter requires collaboration rather than competition. As such, some regime intervention can be important to distribute benefits in an equitable manner.

Realists argue that regimes serve the individual interests of states. Whilst states have different interests, regimes and international organisations form when competing and uncoordinated strategies produce sub-optimum outcomes, and states see a benefit in coordinating to produce more optimum strategies. This viewpoint, based on Game Theory assumptions, suggests that when considering whether or not to cooperate, states realise that

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there is always the risk that another state may defect. By refusing to cooperate, however, states may be unable to attain a mutually desired goal. A regime and international organisation offer the chance to communicate more effectively and this minimises the risk of not reaching a specific goal (Little 1997: 306).

Thus liberals see regimes as sites for distribution of benefits and collective bargaining and realists see regimes as sites to emphasise existing power dynamics and influence other actors with a specific agenda. They also affect states' calculations of interests by altering patterns of transaction costs, giving information and assigning property rights (refer to Table 2) (Keohane 1995: 29; Little 1997: 306; Simmons & Martin 2001: 195).

Table 2: The view of realists and liberals on the partial theories

Liberals	Realists
Regimes and international organisations enable states to collaborate.	Regimes and international organisations enable states to coordinate.
Regimes and international organisations promote the common good.	Regimes and international organisations generate differential benefits for states.
Regimes and international organisations flourish best when promoted by a benign hegemon.	Power is the central feature of regimes' and international organisations' formation and survival.
Regimes and international organisations promote globalisation and a liberal world order.	The nature of the world order depends on the principles and norms of regimes and international organisations.

Source: Little 1997: 229

Having a clear understanding of rationalism in this study is important because at a theoretical level rationalism remains influential in IR and so it is important to remain aware of its assumptions and how it contributes to the understanding of specific IR issues such as the environment. Rationalism has been highly influential in literature about transboundary water. This influence is found both in literature with an explicit IR focus and in literature from other domains such as law and geography. At times this rationalist bias is made explicit but usually it is implicit (Du Plessis 2000: 11). Also, there is an undeniable influence of rationalist thought in practice, given the hegemony of states in international relations and the preference for bureaucratic and heavily institutionalised styles of management in many international forums.

Water regimes are pervasive in the daily practice of transboundary water management. These regimes are seldom formed by IR specialists but rather by the water epistemic community and practitioners. This means that whilst regimes are common in practice, there is not necessarily a deep understanding of the rationalist thinking to which regimes belong and the underpinning assumptions, strengths and limitations of this structure.

3.3.2 Constructivism and the partial theories

Social constructivism is about the role of ideas in defining structures, the role of structures in defining ideas and the role of actors in reproducing these structures (Barnett 2008: 162). There are a number of differences between the assumptions of rationalism and constructivism. Rationalists see actors as atomistic and even pre-social, in contrast to constructivists, who see actors as being inherently social (Reus-Smit 2009: 223). When relating this to regimes, international organisations and forms of cooperation, it is argued that states and other actors participate in these processes because they are engaged and embedded in the social context that they are influenced by. For example, centuries ago states would not have been able to imagine engaging in multilateral action around issues of communication technology or climate change but because of a changing society, states find themselves deeply defined by and engaged in these issues today.

Also, rationalists see actors as predetermining their interests outside of social interaction whereas constructivists believe that interests are determined within the context of social interaction (Reus-Smit 2009: 223). There is thus a reciprocal relationship between the agent and the structure with each one determining the other. When relating this to regimes, international organisations and forms of cooperation, it is important to recognise that states and other actors engage in regimes because they are constantly reacting to feedback they get from the global system and are trying to respond appropriately. This is not a neutral process of setting out goals and clear objectives in advance, devoid of any global context or reaction. Little (1997: 298) also points out that norms and their related rules are not just pre-determined strategic choices but are also constitutive and influential. Norms shape actors and are not merely the basis for rational choices to further individual aims.

Finally, rationalists see society as a strategic realm where individual interests are pursued; constructivists see society as a 'constitutive realm' where actors develop into knowledgeable, socialised members of a given society (Reus-Smit 2009: 223). This implies that regimes and international organisations are not only places where rational, strategic interests are pursued, but also sites that change the actors engaged in them. By providing the actors with knowledge, developing a set of norms, learning to trust and work together, and engaging in collaborative initiatives, regimes can be a site for the transformation of interests and identities.

This constructivist conception of actors and agency allows scope for hydrosolidarity to be achieved at a greater depth than traditional regime theory alone. With its focus on identity, culture and values, constructivism creates space for culturally-relevant and context-specific institutions to form; allows for shared knowledge to develop, not just around agreed data, but also around values; acknowledges the importance of public participation; and overcomes the

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inflexibility of rationalist thinking to envision hydrosolidarity that is based on shared understandings of water governance. Also, some constructivists like Reus-Smit (2009: 227) believe that "productive engagement is possible between the two approaches .... Constructivism is thus not a rival theoretical perspective to rationalism ... but rather a complementary one".

In summary, constructivists see regime and international organisation development as a process where states and other actors bring the norms, identities and interests that they have developed in society to the negotiating table. Here actors with different norms and interests engage in a flexible process that alters perceptions and makes the identity and interests of a given actor more complex than before. Regimes and international organisations are highly intersubjective phenomena that interact with other processes and structures in the international system. They are not just rational and strategic spaces but mutually constitutive ones for the actors engaged in them (Simmons & Martin 2001: 198). This is because regimes force actors, through their negotiations with each other, to forge new understandings about themselves and other actors.

It is important to note that both rationalists (particularly from the neo-liberal perspective) and constructivists speak about how norms can influence actor behaviour and interests in regimes and international organisations. Rationalists regard this as a strategic process, where actors try to secure their norms on the agenda and ultimately compromise on a mutually agreed set of norms to minimise the risks of not cooperating and working together. Constructivists see that there can be a strategic side to regimes and international organisations, but they go beyond this because the process of developing norms is one that transforms and influences the interests and identity of the actors engaged in the process.

3.3.3 Reflectivism and the partial theories

The reflectivists are a diverse group of theorists, united by some shared assumptions. They reject rationalism and its positivist, foundationalist assumptions about the world (Jacobs 2009: 43). As such they react strongly against the rationalist underpinnings of multilateralism, regimes and international organisations. Being post positivist and critical in nature, they find objectivity and the rational pursuit of a set of shared norms unrealistic because behaviour is always shaped by understanding relative power relations and social construction of reality.

As opposed to rationalists who see knowledge as pre-social or separate from social biases, they see knowledge as socially constructed. This implies that reflectivists try to be aware of the assumptions of their own theories and world views, to acknowledge that all their paradigms and theories have a normative and contextual nature and to suggest that despite

this subjectivity it is possible to make reasonable judgements in the absence of objectivity in a positivist sense (Du Plessis 2000: 23). In this regard, reflectivists are critical of the type of knowledge that is produced by regimes and international organisations and of those who are producing the information. They argue that regimes are often run by elites who produce information that is only relevant to the powerful. As Bouchard and Petersen (2011: 17) point out, reflectivists see regimes and international organisations as mechanisms that exploit weaker actors in the system.

Essentially, reflectivists are critical of the state-centric nature of regimes. Although rationalist conceptions of regimes and international organisations do not exclude non-state actors, states still maintain primary voting power and treaty-making functions. In response, reflectivists believe that holistic cooperation can transcend state politics and that structural issues such as class, gender and wealth are more important than focusing on specific states (Archer 2001: 151-165).

This section summarised the assumptions of the partial theories on cooperation, regimes and international organisations with reference to various IR debates. This clarifies the context of these partial theories but also reveals their strengths and weaknesses. With this understanding of cooperation, regimes and international organisations and their link to mainstream IR, it is possible to consider how these theories can be used to analyse transboundary water governance and multilateral water regimes.

3.3.4 Water regimes and International Relations

Having summarised the partial theories of IR that frame multilateral water regimes, it is necessary to focus on the issue of water by considering the seminal theoretical perspectives of and contributions to water regimes. A qualification at this point is that the relevant literature often reverts to talking only about 'regimes' rather than discriminating between regimes, forms of cooperation, and international organisations. This happens because the environmental discourse has traditionally focused on a narrower type of regime, where having an explicit organisation to facilitate the functioning of the regime is seen as a necessary component. As such, water regimes that do not yet have an explicit organisational form are seen to be in an earlier phase of development and moving towards establishing an organisation. There is also a growing sense that a multilateral regime is preferred. Multilateral, in the case of rivers at least, refers to representation in the regime of all the riparian states along a river (Kistin *et al.* 2009: 98). There are still many bilateral regimes in place and it is important to specify if a regime is bilateral, multilateral or regional.

With this caveat, it is possible to consider the seminal contributions of specific scholars to water regime thinking. Admittedly, these authors are not the only scholars who have

contributed to water regime literature, but most others have done so from a less explicitly IR stance. As such, focused consideration of these scholars is justified.

3.3.4.1 Anders Jägerskog

Dr Anders Jägerskog is the Director of Transboundary Water Management at SIWI. Dr Jägerskog has worked extensively on transboundary water security issues, with a particular focus on the Middle East. He frequently advises international organisations, the media, academic institutions and governments on water conflict and security issues. One of Dr Jägerskog's most seminal contributions is his 2003 PhD dissertation, *Why states cooperate over shared water: The water negotiations in the Jordan River Basin*. He draws strongly on regime analysis in this work.

Of relevance to this study is the way that Jägerskog (2003: 29) sees regimes as normative institutions in respect of specific issues, which states create and subscribe to voluntarily as a way to self-regulate themselves in the international arena. He sees regimes as being useful in the context of water as an international issue because they help actors to see how mutually beneficial solutions can be found, as well as providing a mechanism to analyse cooperation. Significantly, Jägerskog sees water regimes as a specific or unique form of regime.

Jägerskog adopts Haftendorn's (2000) definition of a water regime, suggesting that it exists when "the affected states to a conflict observe a set of rules designed to reduce conflict caused by use, pollution or division of a water resource or the reduction of the standing costs and the observance over time of these rules" (Jägerskog 2003: 49). He also uses Haftendorn's idea of separating water regimes into general and specific structures[8]. More specifically, he attributes the establishment of water regimes to the following (Jägerskog 2003: 49-50):

- They are created by hegemonic or powerful states to secure their interests. A decline in relative power of a hegemon thus weakens the regime (realist argument).
- They are in demand because they allow states to determine the costs and benefits of various actions more accurately. In addition, coordination helps to avoid collective suboptimal outcomes (neo-liberal arguments).
- They are caused by emblematic, crisis or shock events which force actors to take notice of environmental issues.
- They stem from epistemic communities, and as such experts play a key role in regime formation.

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[8] A general water regime example is the 1997 *UN Watercourse Convention*, which intended to establish general principles for the use of transboundary water resources. A specific water regime is the Rhine regime which was established as a result of needing to agree on chemical and chlorine levels in the river (Jägerskog 2003: 49-50).

- They foster the development of technical (data, infrastructure projects etc.) and social ingenuity (negotiation capacity, institutional effectiveness, etc.).

Jägerskog (2003: 53) also addresses the issue of regime assessment by stating that it is essential to consider effectiveness in terms of whether the members abide by norms and rules, robustness in terms of how a regime is able to endure over time in the face of various challenges, and resilience in terms of how effectively the regime can adapt to changing circumstances in the international system.

3.3.4.2 Anthony Turton

Dr Anthony Turton is a self-employed scientist with a particular focus on Water Resource Management. He works with and advises various international organisations, private companies, the media, academic organisations and governments. Dr Turton has an extensive publication record in the water resources domain (Turton 2013). Of particular relevance to this dissertation is his output on issues relating to hydropolitics and transboundary water governance. This dissertation draws on Turton's work, but particularly on his doctoral thesis and associated publications, given their explicitly IR focus and rigorous regime and water security analysis.

Turton (2003c: 97) emphasises that regimes are more likely to be successful when they are focused on clear and well-defined issues. This makes them particularly relevant to the water sector as a specific issue area. He also points out that "regime theory takes for granted that the conditions for regime creation differ from issue-area to issue-area. Consequently, regime analysis is always issue-specific, with one major field in which it is effectively being applied being international environmental policy of which water is a component" (2003c: 99). Thus, there is a clear case for regime development and analysis in relation to water issues. The benefits of water regimes are (Turton 2003c: 118):

- They can turn negative situations into positive ones because they reduce uncertainty and perceptions of insecurity for riparians.
- They institutionalise conflict potential by developing agreed upon rules, procedures and norms for regular and crisis management.
- They generate confidence-building arrangements between riparians by facilitating more positive outcomes.
- They can desecuritise water resources by placing and dealing with water issues on a more open agenda.
- They initiate synergies and institutionalised learning.

- They become central repositories of knowledge that all parties can access. This prevents a sense of insecurity.

Turton also considers the elements that need to be present in a water regime through a wide-ranging review and critique of existing regimes. Like Jägerskog, he draws strongly on Haftendorn's (2000) definitions of a water regime. Combining Haftendorn's insights and his own review of existing water regimes, Turton suggests that a water regime has three critical elements (Turton 2003c: 139):

- There must be a common set of rules and procedures that are mutually acceptable to all riparians and role players. This lays a foundation for future cooperation and positive outcomes.
- There must be an agreed set of hydrological data to form a basis for building trust, fostering cooperation and nurturing confidence.
- There must be a conflict management procedure to address inevitable conflicts and differences that will arise over water. This prevents the conflict escalating to national security proportions.

His overarching conclusions regarding the necessary conditions for regime creation, particularly under conditions of severe water stress such as basin closure are that it is important to reduce uncertainty for all actors as perceptions of insecurity can be a driver for securitisation in this context. As such it is important to institutionalise conflict potential by forming regimes and international organisations according to the criteria mentioned above. It is important to develop coping strategies to deal with the reality that there is a decrease in the availability of water. Mechanisms (such as regimes) need to be created to redefine the perceived problem in a manner that moves away from one of absolute scarcity. Also, second-order resources need to be cultivated. First-order resources are natural resources such as land, minerals and water. These can be renewable and non-renewable. Second-order resources are social resources that may either be scarce or easily available. They are important to water regimes under stressed water conditions because they entrench adaptive capacity in the form of a conflict management structure, technical ability and social capital or ingenuity. Technical or social ingenuity can include the capacity of a state or regime to legitimise hydrological data, the ability to negotiate rules and procedures, the ability to negotiate an agreement in a time of crisis when the issue is not part of the existing norm set, and the ability to make decisions about allocations that riparians deem to be fair (Turton 2003c: 175-177):

3.3.4.3 Ken Conca

Professor Ken Conca is a professor of IR at the School of International Service, American University. He is also the Director of the Global Environmental Politics Programme. Professor Conca's research and teaching focuses on global environmental governance, politics and policy. He has a particular interest in water governance issues. He is a widely published, prize-winning author and is also a member of the UNEP Expert Advisory Group on Conflict and Peace-building. Of particular relevance to this study is Conca's work on environmental regimes and treaties.

Conca points out that "[t]he dominance of the regime approach becomes apparent when new environmental problems are identified. Advocates ... move quickly ... to launching the effort to build a new interstate regulatory regime .... Three decades after the seminal 1972 UN Conference on the Human Environment, it is no exaggeration to say that regime building has become the grand strategy of global environmental protection" (Conca 2006: 12). This is an important point as a reminder that these interrelated partial theories about regimes, international organisations and multilateralism do not just stay in the realm of theory but are also highly influential in practice. Conca's critique of regimes will be covered in greater detail in the next section when considering how effectively regimes can deliver on the norms and indicators of hydrosolidarity.

3.3.4.4 Breitmeier and Wolf

Breitmeier and Wolf (1995: 349) make the point that for an environmental regime in general to be credible, it needs to respond to interrelated issues of justice and sustainability. It is not enough for an environmental regime merely to create ecological security in the sense of lasting negative peace. The regime must go beyond this to contribute to justice and sustainability and in so doing create positive peace[9]. In this regard, Turton's (2003c) notion of second-order resources is crucial for transitioning the regime towards positive peace.

Breitmeier and Wolf (1995: 350) also point out that "[s]everal environmental regimes foster a broad exchange of information, knowledge, and even technical assistance to countries without adequate capabilities at their disposal. These practices may be ... a starting-point for a more just design of environmental regimes". Thus, they emphasise that in order for a water regime to be sustainable it cannot transfer the ecological problems to future generations, but actively needs to consider long-term sustainability in its present time. It also needs to take into account future developments that

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[9] Positive peace is the absence of structural violence and the existence of social justice (as opposed to the mere absence of violence emphasised by the idea of negative peace) (Galtung 1969: 183).

might be detrimental to the state of the environment, such as population growth, expanding industrialisation, and scientific discoveries (Breitmeier & Wolf 1995: 352).

This summary of water regime theorising and research illustrates that water regimes are a unique subset of broader regime literature and warrant the specific study and attention of IR scholars. It has also been established that water regimes have a role to play in fostering more cooperative relations and management of transboundary water resources. The extent to which water regimes have a role to play in facilitating hydrosolidarity will be considered next.

3.4 The role of water regimes in the promotion of hydrosolidarity

Having discussed the generic conceptual and theoretical foundations of regimes and the water regime-specific research that has been done, it is necessary to assess the roles of regimes in the promotion of hydrosolidarity. This is done by considering, at a theoretical level, the roles that water regimes (and associated forms of cooperation and international organisations) can play in the delivery of the norms and indicators of hydrosolidarity.

Hydrosolidarity is underpinned by five norms. These are cooperation and solidarity, equity, inclusivity, human well-being and environmental sustainability (see Section 2.3.4). At face value, regimes seem ideally positioned to secure a set of normative ideas around an ethical practice of water governance or management. This is because regimes develop a set of norms which are standards of behaviour expressed through rights and obligations (Haas 1982: 246-247). Norms, including principles, form the basis for regimes and if they change, fundamental change occurs in the regime. Regimes have a set of norms that are specific prescriptions or proscriptions for action (Krasner 1982: 186-187). In this respect, regimes have a normative role to play in generating support and buy-in for the norms of hydrosolidarity and in creating a platform to debate and discuss these norms; they can also be a platform to more formally codify the norms of hydrosolidarity in the form of a treaty or agreement.

Regimes also have a practical or process-related role to play in terms of implementing hydrosolidarity. There is a range of indicators of hydrosolidarity that should guide implementation approaches. These indicators are knowledge sharing, linkages and integration between actors and governance structures, development of organisational structures, stakeholder engagement and formalising normative frameworks (see Section 2.3.5).

Based on the aforesaid, the next two sections respectively assess the role that regimes play in realising the norms of hydrosolidarity and the role of regimes in realising the indicators of hydrosolidarity.

3.4.1 Water regimes and the norms of hydrosolidarity

The discussion of the different IR theoretical perspectives of regimes provided insights into how norms operate in regimes. The rationalist understanding of regimes views regimes as the product of a rational bargaining process. The agreed set of norms is determined by the actors involved in the negotiation process and is often heavily influenced by the preferences of the stronger coalition in the negotiation process. This understanding of bargaining stems from a rationalist view that states engage in cooperative bargaining to secure or further strategic interests and overcome challenges on distributing goods in the context of anarchy. This is a fairly static understanding of norms given that it is assumed that the normative preferences with which states enter a regime are not fundamentally altered by engagement in a regime.

Constructivism, in contrast, sees the international societal context (with which water interacts) as crucial to shaping the set of norms that will be agreed on in a regime. Similarly, by participating in a regime, the actors' preferences and norms are likely to be transformed or affected. Thus, when developing a water regime states and other actors are influenced by the thinking and guidance of epistemic water communities, international organisations, various other stakeholders and history. Notably, Conca (2006: 69) emphasises that these existent norms are at times contradictory or in conflict with each other, and as such there is a flexible and even contested process to establish norms.

Reflectivists point out that capacity to articulate norms is closely associated with power and position in the international system. Thus, it is particularly important to create space for typically weaker actors to meaningfully participate. In the case of water these are often downstream riparians or local communities. It is within this nuanced context that the roles of regimes in nurturing the norms of hydrosolidarity will be considered.

3.4.1.1 Water regimes and the promotion of cooperation and solidarity

Cooperation is central to bilateralism, multilateralism, regionalism, regimes and international organisations. Literature on multilateralism draws heavily on the notions of altruistic cooperation and inclusion, suggesting that cooperation should be based on a social concern and needs to include relevant actors. The literature on regionalism in particular emphasises that ideally cooperative groupings should aim for integration. This implies that actors do not only agree to cooperate on specific issues, but also commit themselves to removing obstacles to interaction between them and to creating a regional space subject to common rules. National laws and policies should then be aligned to these regional agreements (Best

& Christiansen 2008: 436). This would suggest that a water regime can play a role in fostering cooperation around water.

Conca (2006) does warn that "[a]ttempts to create a broadly cooperative international approach to managing water – to govern water globally, so to speak – seem doomed to founder on more fundamentally contested questions" (Conca 2006: 4). This comment alludes to the fact that even if actors try to cooperate, water will always be a source of contestation and contentious politics. Also, even if regimes can be negotiated in the international space, this does not necessarily stop local or domestic conflict over water resources.

3.4.1.2 Water regimes and the promotion of equity

The equitable allocation and use of water resources is contentious. As such, this norm is necessarily a central bargaining point in the regime creation process and is likely to re-emerge once the regime is established. Turton (2003c: 177) emphasises the importance of regimes having the capacity to negotiate water allocations in a way that is deemed to be fair by all the riparians. It is also necessary to note that actors' understandings of equity will change as new development needs emerge, as political contexts change and as new actors appear on the scene. However, regimes and their related international organisations provide a forum for this negotiation. By being in regular contact with each other, actors may learn to trust each other and in so doing regimes prevent equity conflicts from escalating into a security issue

There is concern, particularly expressed by reflectivists, about the perceived elitism of regimes (Conca 2006: 2, 22). Equity negotiations are perceived to be conducted amongst an elite that is not necessarily representative of the needs of a basin as a whole. As a result, many reflectivists express doubt about the ability of regimes to create space for representative negotiations about equity.

3.4.1.3 Water regimes and the promotion of inclusivity

The importance of vertical, horizontal and issue area inclusivity for achieving hydrosolidarity has been emphasised. The literature on regimes and cooperation responds to this in various ways.

Vertical inclusivity is typically accommodated through representation. Individuals from different member states, for example, would be expected to gather feedback domestically from levels of government and then to represent these issues in the international context. Any issues agreed on in a regional regime are then expected to be filtered back to the domestic context. This filtering down process can, however, be problematic. Conca (2006: 42-43) suggests that international regimes are premised on the ideas of state sovereignty

and authority, where intervention in domestic affairs of individual member states is beyond the jurisdiction of a particular regime. Such regimes depend on government implementation to achieve any measure of success at the local level, but cannot enforce this implementation.

Horizontal inclusivity is theoretically included in the definition of multilateral cooperation and regimes. Both of these definitions emphasise that regimes should be open to state and non-state actors. Conca (2006: 44) does, however, point out that despite the fact that there is room for non-state actors to participate in regimes, they do not necessarily have the same degree of authority and legitimacy that states have in regimes. This reality may limit a regime's capacity to be truly inclusive.

Having inclusivity across issue areas suggests that water regimes should be meaningfully linked to other issues like poverty, economic development and energy security. Jägerskog (2002: 77-78) points out that there is an implicit assumption in regime literature that cooperation in one issue area, such as water, will lead to cooperation in other issue areas. He then notes that in practice this does not necessarily happen as one issue area may be subordinate to others. This affects states' willingness to build regimes in certain issue areas. It is therefore important to bear issue hierarchy in mind before assuming that a water regime will necessarily cascade into regime building in other related issue areas.

3.4.1.4 Water regimes and the promotion of human well-being

At the heart of a hydrosolidarity normative paradigm is an insistence about taking the issues of social justice, human rights and poverty alleviation seriously (Gerlak *et al.* 2011: 10). To analyse whether this is an important consideration in a regime, it would be necessary to look at specific regimes and how they respond to this issue. More generally however, it should be noted that one of the driving forces behind water regime formation is the realisation that water resources are critical for individual states' capacity to develop and provide for the needs of growing populations. Given the shared nature of these critical resources it is necessary to work cooperatively to manage them. This realisation places human needs on a regime's agenda, albeit in an indirect or implicit manner (Gorbachev 2002: 8; Kasrils 2002: 9).

A few cautionary points should be kept in mind when considering human well-being. Firstly, regimes tend to concentrate on what has been agreed upon rather than what is being achieved. This makes it important to re-evaluate periodically whether or not regimes actually deliver on what they are committed to. Secondly, they tend to emphasise the static (that which was agreed on) rather than the dynamic (that which is changing). Thus, it is important to monitor regime effectiveness over time as regimes are not always good at responding to changing human well-being problems. Thirdly, regimes tend to reflect rules and norms rather

than power and interests (Turton 2003c: 101). As such one needs to remain alert to underlying power and interests that will affect the human well-being agenda and how it is interpreted.

3.4.1.5 Water regimes and the promotion of environmental sustainability

Hydrosolidarity is about balancing the use and conservation of water. In a theoretical sense it is difficult to judge whether a regime can uphold the norm of sustainability (balancing protection and use of freshwater). This requires regime specific analysis, but there are a few points worth considering. First, since states and other actors choose more or less freely whether or not to participate in a regime, there must be a degree of concern about protecting freshwater if they participate in a water regime. There may be many other reasons why states participate, but water sustainability is likely to be one of them (Breitmeier & Wolf 1995: 349). Second, the notion of sustainability has been influential in the last four decades and most environmentally related regimes are influenced by these ideas (Meppem & Gill 1998: 130).

Significantly, regimes have quite rigid assumptions about territory. By implicitly viewing states as the authoritative agents of regimes, regimes also internalise assumptions about nature being territorialised along arbitrary state boundaries. Nature does not adhere to these boundaries and so international regimes are formed to deal with the cross territory flows of nature. However, given the assumptions about respect for state sovereignty that regimes uphold, there is no authoritative space for these regimes to act in the domestic space where most environmental problems find their source and expression. This limits the capacity of international regimes to deal with water-related problems authoritatively, given that many environmental problems have local roots (Conca 2006: 10).

3.4.2 The indicators of hydrosolidarity and water regimes

Hydrosolidarity is not only a set of norms for water governance, but also a practical tool that can facilitate a move towards fostering effective water governance (Gerlak *et al.* 2011: 260) in transboundary river basins. These implementable processes can be monitored in terms of indicators of hydrosolidarity. In the context of this study, it is important to understand the role that water regimes can play in realising the indicators of hydrosolidarity.

3.4.2.1 Shared knowledge about transboundary rivers

Exchanges of technical data and knowledge about transboundary water are key indicators of entrenched hydrosolidarity, and literature about regimes is particularly articulate about this. In general, regimes and their related international organisations are seen to be repositories for the development of shared knowledge. Turton (2003c: 103), looking more specifically at the requirements of a water regime, suggests that the development of a set of hydrological data

is a key component to the development of any water regime. Indeed, water regimes can be a forum that is a repository for and a producer of knowledge, facilitated by the funding or management of research projects. This knowledge has the potential to contribute to a shared understanding of issues, which is important for building trust and making mutual decisions.

The issue of knowledge and data production can however be contentious. Jägerskog (2002: 77-78) points out that in the water sector there is growing scepticism about scientific expertise, associated with an increasing sense of doubt whether or not scientists can produce knowledge that is able to solve complex water-related problems practically. Also, the assumption that scientific consensus will lead to political consensus is flawed because science can hardly be viewed as an objective account of reality given the constructed nature of knowledge (Jägerskog 2002: 77-78).

Conca (2006: 57) also criticises the knowledge production role of regimes. He suggests that regimes are attempts to deal with inherent threats or problems in the transnational space. One of the ways that regimes try to do this is by developing an 'authoritative statement' of the nature and scope of the problem they are dealing with. Regimes tend to embrace the view that objective science (with its assumptions about universality and rationality) is the most authoritative form of knowledge. They also use this body of knowledge to create a sense of optimism about their capacity to reduce uncertainty.

Having an authoritative body of knowledge is, however, important to regimes because it generates legitimacy for the regime (Turton 2003c: 133-137). This legitimacy stems in part from the regime being perceived as 'getting things done' (i.e. commissioning authoritative and successful basin studies and fact-finding missions). It also stems from the belief that getting actors to agree on a body of knowledge reduces the likelihood of conflict over technical issues around the state of the resource and ways to use it. If all actors in the regime trust the knowledge produced they are more likely to accept the recommendations arising from it. Conca (2006: 52), however, points out that the technical legitimacy that can stem from agreements around facts does not mean that regimes are depoliticised or model functional-rational processes: "[t]he point is not that regimes are permeated with politics (they are), but rather that a functional-rational standard of legitimacy is an important element – sometimes the definitive element – within those political struggles".

The risks associated with this knowledge stabilisation process are multiple. Firstly, by creating a perception that there is one authoritative body of facts relevant to a regime and to how a specific problem is defined, "the central reality of radically different constructions of knowledge – of the facts, causal mechanisms, and larger truths about the world's water problems, their sources, and their solutions" (Conca 2006: 3) is overlooked. Secondly, once

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knowledge is stabilised and institutionalised within regimes, it is difficult to maintain its flexibility, which is crucial to keeping it relevant and responsive to dynamic water challenges. Thirdly, regimes easily overlook the reality that the process of producing a comprehensive body of facts is one made up of debate, conflict and trade-offs. The final body of knowledge or data that is developed may be framed in terms of the dominant group that has participated in the knowledge production process (Conca 2006: 57).

3.4.2.2 Linkages between and integration of actors and issues

Hydrosolidarity emphasises the concept of integration. Thus, it is both about encouraging integration between research and actors dealing directly with water and about intentionally linking water to other issue areas.

Regimes can be sites for integration around water issues. Regimes foster integration by bringing states into formally cooperative structures and by allowing non-state actors to either work within regimes or influence them from the outside. Regimes also aid integration by coordinating the science (epistemic) community to work collaboratively around a specific problem. In this regard, there is growing recognition among the research community of the need for multidisciplinary solutions to complex environmental problems and this brings scientists from different disciplines and backgrounds in contact with each other (Jacobs & Nienaber 2011: 665). Also, regional groupings will often cluster a host of development issues into a broad umbrella organisation, and this creates a space in which to work across issue areas (SADC 2013).

Having said this, creating enhanced linkages and integration between actors and issues can be a difficult task. Turton (2003c: 100) points out that regimes are issue-specific and are more likely to be successful if they are focused. This calls into question whether regimes that work across issue areas will actually achieve anything. Given that rationalist theory is not very good at understanding movement or change, it offers only limited understanding of why and how regimes might cascade across one issue area to another.

Also, it is difficult to determine what the focal point is to build interconnections at transboundary level. Focal points could be the biophysical basins and actors in this area, or simply actors interested in or concerned with a particular issue. Often states and other actors can acknowledge that the natural environment transcends borders and can thus relate to the need for basin level regimes. The economic, social and political movement of ideas linked (in the case of this discussion) to a river running across political borders, is more complex for actors to conceptualise (Conca 2006: 67).

3.4.2.3 Organisational structures to foster water governance

Cooperative organisational structures are an indicator of hydrosolidarity. They are also critical to the development of multilateral regimes. Conca (2006) points out that in the case of water regime formation there is a likelihood that if a regime forms, an organisation will in time institutionalise that regime. He is of the opinion that this is caused by a general narrowing of the definition of regimes, which leads people to see regimes as highly institutionalised (Conca 2006: 62).

The emergence of an organisational form can be extremely useful for implementing work-plans and monitoring the progress of a regime. However, the mandate of an organisation, and in particular its power of independent decision-making, is also important. Often, given the state-centric notions underpinning regimes, these organisations are often merely weak advisory organs (Nienaber & Claassen 2009).

3.4.2.4 Stakeholder involvement in water governance processes

The inclusion of relevant stakeholders in debates and decision-making in relation to water is another key indicator of hydrosolidarity. Bischoff (2008) argues that in an African context stakeholder engagement is particularly important to develop impactful and useful multilateral regimes. He suggests that "[w]here civil society cannot flourish, multilateral institutions are not anchored sustainably. This means they are unlikely to significantly give effect to any inclusive or transformative agenda. The result ... is the enduring disembodiment and disconnectedness of African multilateralism" (Bischoff 2008: 178).

Technically, there is room in regimes to include stakeholders. On a conceptual level, this is because membership of regimes is not necessarily restricted to states. Regimes are influenced by civil society movements and knowledge trends (Raustiala 1997: 719). There is also a growing consciousness that local societal organisations are often better positioned than the state to mediate the process through which people gain access to nature because they are rooted within communities themselves (Conca 2006: 44).

However, despite their theoretical opportunity to engage stakeholders, water regimes are notoriously technocratic and non-participatory in their decision-making (Conca 2006: 2). One of the major reasons for this is that whilst regimes allow for a degree of rule contestation, they do not really allow for established roles to be contested. In regimes roles are rigidly demarcated. There is a clear difference between donors and recipients, non-members and members, leaders and laggards, sources and sinks, states and non-state members. Whilst rules in regimes dealing with opportunities, capabilities and obligations vary, the matters over

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which actors have authority and legitimacy largely go unchallenged. Regimes tend to replicate the idea that authority and legitimacy rests in the hands of the state. Conversely, non-state actors do not have the same authority as states, but can merely try to influence these more powerful and authoritative actors. Essentially there is a fundamental difference between creating the space for stakeholders to influence regimes and actually conferring authority on them. Influence allows non-state actors to exert political pressure, supply knowledge, and make moral claims. Authority gives states the legitimate right to establish, operationalise, apply, enforce, and interpret regimes. Even when non-state actors are allowed to participate in regimes, they are selected according to credentials that are agreed upon by states, and as such represent elite non-state actors. Also, there is a fundamental difference between participating in the daily running of a regime and being included at high-profile events like conferences and strategic sessions. The latter is where stakeholders would be invited (Conca 2006: 42-44).

3.4.2.5 Normative frameworks to guide behaviour

Conca (2006: 11) points out that the general plan for regimes, in practice, is that states should try to negotiate multilateral agreements on specific problems. These agreements should ideally be signed and ratified by states as a sign of their commitment to the norms that are captured in them. These multilateral agreements capture general principles and norms such as the notions that the polluter must pay, that sovereign rights entail environmental responsibility, and that uncertainty demands caution. These agreements can also negotiate quite specific norms such as where ships may travel, what substances may be burned, extracted and harvested, and how much water should be allocated to whom.

A few cautionary thoughts are important. Firstly, it is important to note that these norms (even when housed within a ratified and signed agreement or treaty) are seldom enforceable given that there is no supranational body to enforce norms on states. As such these norms are meant to shape state behaviour through institutionalising certain principles and in so doing encouraging certain behaviours. In this regard, agreements housed within regimes are seen as "instruments of governance without government; they promote rule-conforming behaviour in an international system marked by the absence of centralized governmental authority" (Conca 2006: 11).

Secondly, Conca (2006: 26) argues that regimes are a particular institutional form that emerges when certain key principles are fixed as constants. The reason is that regimes legitimise scientific rationality and bureaucratic administration. As such "regimes - both conceptually and in practice - ... reproduce these powerful value orientations of the international system, thereby holding constant certain key institutional features that we could

otherwise imagine as variables" (Conca 2006: 26). These critical variables that are made constant are the upholding of states' sovereign rights, the upholding of states' authority, the respect for states' territorial integrity and the reification of scientific knowledge to solve complex problems. Thus, when analysing normative frameworks of water regimes, it is important to be critical of who benefits from specific norms and why this is the case.

This section has considered, on a theoretical level, how the various IR grand and partial theories, used to interpret water regimes, link to the analysis of the norms and indicators of hydrosolidarity. Multilateral water regimes clearly do have a role to play in promoting the norms and indicators of hydrosolidarity. However, from a theoretical perspective there are limitations and issues to be aware of when using water regimes to realise the norms and indicators of hydrosolidarity.

3.5 Conclusion

This chapter provided an overview of IR theory relevant to the analysis of multilateral water regimes. This IR theory and the theoretical framework of norms and indicators for analysing hydrosolidarity (laid out in Chapter 2) were then connected. This was necessary in order to answer the second subsidiary research question: *Can multilateral water regimes foster hydrosolidarity?* Together, Chapters 2 and 3 provide a framework for analysing the two case study chapters that follow.

There are three major conclusions that have emerged from this chapter: Firstly, IR theory offers a rich set of analytical tools for studying multilateral water regimes. Secondly, multilateral water regimes and the partial theories of IR that describe them are strongly influenced by rationalist thinking. Therefore, it is critical to make the assumptions of this paradigm clear to fully understand the implications of rationalism. It is also important to analyse these rationalist ideas through the lenses of other IR theories in order to become clearer about the strengths and weaknesses of multilateral water regimes (on a theoretical level). Thirdly, multilateral water regimes are well positioned on a theoretical level to respond to the norms and indicators of hydrosolidarity and thus clearly have a role to play in promoting it. Regimes do, however, have their limitations, which must be borne in mind when trying to achieve optimal hydrosolidarity in practice.

Chapters 2 and 3 are an eclectic combination of a range of theories from the water management discourse and IR theory, resulting in a framework for analysing the extent to which the case studies (SADC WS and ORASECOM), can deliver on the norms and indicators of hydrosolidarity. This analysis will be done in the next two chapters.

CHAPTER 4

REGIONAL AND BASIN LEVEL WATER REGIMES: THE CASE OF THE SOUTHERN AFRICAN DEVELOPMENT COMMUNITY WATER SECTOR AND THE ORANGE-SENQU COMMISSION

4.1 Introduction

This chapter applies the theoretical framework developed in the previous chapters to case studies at regional and basin level. The aim is to address the third subsidiary research question, which is: *Do multilateral water regimes exist at regional and basin level in SADC, and if so what form do they take?* In response, the assumption is that a regional water regime has manifested in SADC as SADC WS and a basin level regime has manifested in the Orange River as ORASECOM.

To answer this question and investigate the assumption, this chapter places the case studies in global and continental context; demarcates the geographic areas of the case studies; explains the strategic importance of water in these specific contexts; and assesses the extent to which cooperation, regimes and organisational forms manifest in these case studies. This enables an assessment of whether regimes have manifested in the case study areas and if so, what form they have taken.

Whilst there is a degree of overlap between the partial theories on cooperation, regimes and international organisations, they are analysed separately and in this particular order in order to emphasise how the water governance discourse predominantly views and analyses cooperation. The first concern is the form of cooperation that takes place; the second is whether this cooperation has been formalised as a water regime; and the third is whether a supportive RBO has formed as evidence of the regime prevailing over time.

4.2 The macro context of transboundary water governance

As a point of departure, it is important to understand the biophysical and institutional context, at both global and continental level, of these purported regional and basin level regimes. This understanding is necessary to determine overlap between global trends and regional and basin developments.

4.2.1 Water in global context

The condition and importance of freshwater was previously considered (see Chapter 1). It is, however, important to recall that freshwater ecosystems are under stress globally because of

water diversion, industrial discharge, agricultural and urban runoff, overfishing, siltation, eutrophication and acid mine drainage. Damming and water diversion schemes also impact on the health of rivers. Estimates suggest that there are about 800 000 dams along the world's rivers, of which at least 40 000 are large or severe ecosystem impact dams. During the twentieth century the number of waterways altered for navigation purposes increased from less than 9 000 to close on 500 000 (Conca 2006: 15; WCD 2013). This indicates global dependence on water and the impact that the use of water has on aquatic environments.

4.2.1.1 Global initiatives to govern transboundary river basins

The 1970s and 1980s were a time of growing awareness about the need for a more sustainable development paradigm (Heath 2010: 1). Linked to this was a deepening understanding of the importance and complexity of water, particularly in a transboundary context. This resulted in numerous attempts to establish governing arrangements for the environment and, more specifically, global water supplies. The early development of international water law occurred in the first half of the twentieth century and focused mostly on bilateral arrangements. This uncoordinated process of law development led to considerable incongruity in legal principles governing shared water (Eckstein 2002: 82). This resulted in a series of attempts at developing a more harmonised set of global water governance norms which create the principled context for global water governance.

The *Helsinki Rules* of 1966 marked the start of the development of uniform international principles for governing water (see Table 3 for a summary of the Helsinki Rules). This initiative, undertaken by the International Law Association (ILA), was the predecessor to the *UN Watercourses Convention* (ILA 1967; Salman 2007: 630). In 1970, the International Law Commission (ILC) was commissioned by the United Nations General Assembly (UNGA) to draft a set of principles to govern non-navigable transboundary waters. This process took 21 years, and in 1991 a draft text of the *UN Watercourses Convention* was released (Rahaman 2009: 216). This Convention was adopted by the UNGA on 21 May 1997 (UN 1997) (detailed discussion to follow).

In 1989 the UNGA adopted Resolution 44/228 which called for a global meeting to discuss the promotion of sustainable, global economic development. This meeting, known as the United Nations Conference on Environment and Development (UNCED), took place in 1992 in Brazil. The *Declaration of Rio on Environment and Development* (*Rio Declaration*) and *Agenda 21: Programme of Action for Sustainable Development* (*Agenda 21*) were negotiated in preparation for this meeting (Doulman 1995: 83) (see Table 3 for a summary of key principles in the Rio Declaration and Agenda 21).

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Table 3: Key principles of the global water governance discourse

Agreement	Principles
Helsinki Rules (ILA 1967)	• Equitable and reasonable allocation of water and supporting notions such as considering geographic, hydrological, climatic, historical, social and economic issues which affect allocation. • Avoidance of unnecessary waste in the utilisation of the basin. • Consideration of issues of compensation. • Preventing harm to other riparians through the way that water resources are utilised.
The Dublin Statement (ICWE 1992)	• Principle 1: Fresh water is a finite and vulnerable resource, essential to sustain life, development and the environment. • Principle 2: Water development and management should be based on a participatory approach, involving users, planners and policy makers at all levels. • Principle 3: Women play a central part in the provision, management and safeguarding of water. • Principle 4: Water has an economic value in all its competing uses and should be recognised as an economic good.
Rio Statements and Agenda 21 (UN 1992)	• Principle 1: Human beings are at the centre of concerns for sustainable development, and they are entitled to a healthy and productive life in harmony with nature. • Principle 3: States have the right to development, but this must be done in a sustainable way. • Principle 4: Environmental issues must be integrated into the overall development process if that development is to be sustainable over time. • Principle 10: Public participation is important in the decision-making process in all matters affecting the environment. Central to this is the role of information and data in order to make informed decisions. • Principle 13: States are responsible for compensating the victims of environmental damage, and they must give priority to the development of law to codify this liability. • Principle 15: A precautionary approach must be adopted by states, according to their respective capacities, and use must be made of scientific knowledge to mitigate environmental degradation. More specifically, the lack of scientific certainty may not be used as a reason by states to postpone cost-effective measures to prevent environmental degradation. • Principle 27: Indigenous knowledge plays an important role in the management of environmental issues, and states must ensure participation by such people in the attainment of national sustainable development objectives.
The Berlin Rules on Water Resources (ILA 2004)	• General principles emphasis: participation by persons, integrated management, sustainability, minimisation of environmental harm and conjunctive management. • International waters emphasis: participation by basin states, cooperation, equitable utilisation, preference amongst uses and avoidance of harm. • Rights of persons emphasis: right of access, public participation, education, protection of particular communities and water quality standards.

In January 1992, just prior to the June 1992 UNCED conference, the ICWE took place. This conference specifically aimed to create a platform for water-related debate, as activists felt that water was not being given adequate attention in the UNCED process. The result of this was the *Dublin Statement* which presented four principles, commonly referred to as the

Dublin Principles, that form critical foundations of current IWRM thinking. At the closing session of the conference the adopted *Dublin Statement* was commended to the UNCED (ICWE 1992; Turton 2003c: 126) (see Table 3 for a summary of the Dublin Principles).

In June 1992 UNCED, better known as the Earth Summit, took place. The respective officials at the event committed their governments to the 27 principles in the *Rio Declaration* and negotiated *Agenda 21*. The *Dublin Principles* were incorporated into the *Rio Declaration*. These agreements are not legally binding, but place moral obligations on states. The UNCED process furthermore led to the recognition of the importance of linking the provision and use of water to environmental protection. It was agreed that this balancing act was to be the responsibility of governments, and thus environment and development issues need be recognised at the highest political level (UN 1992: 3).

The *Berlin Conference on Water Resources Law* revised and updated the *Helsinki Rules* and related rules during the 71st ILA Conference in August 2004. The previous long title of the rules, *The Revised ILA Rules on Equitable and Sustainable Uses in the Management of Waters*, was changed and replaced by a new title, *The Berlin Rules on Water Resources (Berlin Rules)* (see Table 3 for a summary of the Berlin Rules). These rules go beyond the *Helsinki Rules* and the *UN Watercourses Convention* in that a number of the *Berlin Rules* are applicable to the management of all waters, both national and international. This was a departure from the previous work undertaken by the ILA that dealt exclusively with international rivers, international drainage basins and transboundary groundwater (ILA 2004; Salman 2007: 635).

This process of engagement, at global level, has led to multiple initiatives. For example, the Commission for Sustainable Development, established by the UN and in 1994 to unsure effective follow up of the Earth Summit, urged various international agencies to develop an assessment of global freshwater resources. These agencies included UNEP, the Food and Agriculture Organisation (FAO), the World Health Organisation (WHO), the World Meteorological Organisation (WMO), UNESCO and the UNDP. Also, the GWP was launched in 1996, focusing on the development of IWRM as an implementable management approach. The development of this IWRM implementation and coordination mechanism was mandated at UNCED and is situated in the Swedish International Cooperation Agency. The *Dublin Principles* serve as guidelines to the GWP. The WWC was formed in 1996 with the aim of promoting water awareness around critical water issues. It has strong think-tank capacity and works on strategic projects such as the *World Water Vision* (WWV) (Turton 2003c: 128-129; GWP 2013a). Finally, the WCD emerged and made a contribution to debates on large dams by articulating norms that govern dam decision-making and started dialogue between actors

who oppose or support dam building. This commission is a global multi-stakeholder body and was initiated in 1997 by the World Bank (WB) and World Conservation Union in response to growing resistance to large dam initiatives (WCD 2013).

Amidst this widespread consultation on water and environmental issues, only the *UN Watercourses Convention* (1997)[10] codifies principles for governance of international waters at global level. It requires states to (UN 1997; Loures, Rieu-Clarke & Vercambre 2009: 13):

- enter into watercourse agreements in a manner that includes all states affected by the negotiations (Article 3, 4);
- use shared watercourses in an equitable and reasonable manner and take into account relevant factors that impact on reasonable use, such as climate and socio-economic need (Article 5, 6);
- uphold the obligation not to cause significant harm. Where significant harm nevertheless occurs, require states to act diligently (in partnership with the neighbouring country) to eliminate or mitigate such harm (Article 7);
- follow a procedure of consultation, negotiation and data exchange before implementing any measures that could have a significant effect upon other watercourse states (Articles 9, 11-19);
- protect and preserve the ecosystems of international watercourses and manage them in a manner that safeguards the marine environment, including estuaries (Articles 20);
- prevent, reduce and control pollution in international watercourses, to avoid transboundary harm (Article 20, 21);
- take all necessary measures to prevent the introduction into international watercourses of exotic species that may cause harm to other states (Article 22);
- take measures to prevent, mitigate and eliminate harmful conditions related to an international watercourse, as well as to address emergencies. This includes the immediate notification of states that could be affected and relevant international organisations (Article 27-28);
- consult with relevant actors over the establishment of joint management mechanisms, such as basin organisations, transboundary management plans, joint contingency plans and agreed water quality standards (Articles 21-24);
- seek the peaceful settlement of disputes, following the Convention's procedures in the absence of applicable agreements (Article 33).

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[10] Adopted by the UNGA with 103 yes votes, three no votes, 27 abstentions and 33 absentees (UN 2013).

Conca (2006: 102) is of the opinion that this Convention is tantamount to a weak coalition, given that so many riparians who control the sources of rivers did not support it. At the time of submitting this study, the Convention is not yet in force. Currently, there are 16 signatories and 30 parties to the agreement. The Convention is thus 19 signatories short of entering into force (UN 2013).

Although not yet in force, the Convention confirms general principles of international water law developed by reputable leaders in the fields of water governance and international law that guide transboundary water governance (Rahaman 2009: 216). Furthermore, the Convention defines a watercourse as a single unit of surface and underground waters that includes the main river, its tributaries and distributaries, and any connected lakes, wetlands and aquifers. It also requires states to use international watercourses in an equitable and reasonable manner, consistent with their protection (UN 1997; McCaffrey 1998).

In summary, the primary purpose of the *UN Watercourses Convention* is to inspire future regional or watercourse agreements; support the implementation of regional or watercourse agreements; govern international watercourses in the absence of applicable agreements; supplement environmental conventions; advance international policy goals; and offer a basis for the development of treaty law at global level (Loures, Rieu-Clarke & Vercambre 2009: 15). It is therefore evident that there have been extensive efforts to build a global water regime although whether or not this has been achieved will be considered in the next sub-sections.

4.2.1.2 Forms of cooperation

Despite the *UN Watercourses Convention* not being ratified, it serves as an example of multilateralism focusing on shared waters. In terms of the attributes of multilateralism (see Section 3.2.1), the Convention:

- involves the voluntary cooperation of three or more actors. However, there are still many states which have not acceded to the Convention, and it has not been ratified by enough states to come into force. As such, it falls short of the multilateral vision anticipated;
- includes state and non-state actors. Apart from states being party to the Convention, non-state actors such as the WCD and other civil society groups played an influential role in shaping its content. These ideas are furthermore contained in documents such as the *Rio Declaration, Dublin Statement, and WCD Report*. Conca (2006: 2), however, cautions about over-estimating the role that non-state actors have played as norm entrepreneurs. For example, he points out that at the meeting of the Second World Water Forum (where the WWC was adopted) there was a protest by activists at the opening ceremony. According to him, the activists were protesting against the

"capital-intensive, supply-side measures and technocratic, non-participatory decision-making" of the Forum (Conca 2006: 2). Thus the extent of non-state agency in relation to state agency in these regime building processes is not always equal or balanced;

- makes no provision for formal organisations to manage and implement its expectations. However, it enabled the establishment of other organisations that impact the way states negotiate international waters. For example, the WB, UNEP, FAO and UNDP have developed numerous water governance initiatives. Similarly, the GWP and the WWC were established with, amongst others, the aim of promoting IWRM and general water awareness. Whilst none of these organisations is a formal institution of a global water regime, they all influence transboundary water governance by the global water community – these initiatives are the ongoing product of collaboration between states and civil society on water;

- requires the equal application of rules to all actors, subject to certain exceptions.

Clearly, global water governance initiatives recognise the importance of multilateral collaboration and in many ways illustrate multilateral behaviour. However, given the fact that the *UN Watercourses Convention* is not in force and that there is no international organisation to implement and oversee this treaty, the global water governance initiatives fall short of achieving true multilateral cooperation.

4.2.1.3 Global regime features

In terms of the features of regimes (see Section 3.2.2), the *UN Watercourses Convention*:

- is based on principles of fact, causation and rectitude. The *Convention* specifically mentions the importance of shared watercourses and their vulnerability. In addition, the various global initiatives to govern transboundary river basins have numerous proceedings and publications linked to them that provide statements about and assessments of the state of international watercourses and how they should be managed;

- expresses numerous norms that specify rights and obligations. For example, it emphasises the equitable and reasonable allocation of water, the obligation not to cause significant harm, the obligation to cooperate and the expectation to share information and data (UN 1997);

- stipulates a set of rules, including the need for notification around planned measure with possible adverse effect, the period for reply to notification, procedures in the absence of notification and urgent implementation of planned measures (UN 1997). These rules can, however, only be enforced on signatories to the Convention;

- makes no provision for decision-making processes based on prevailing practices for making and implementing collective decisions. However, the GWP and WB have been influenced by the Convention and to some extent fill this gap. The GWP, for example, generates technical and policy briefs for decision makers about specific aspects that integrate the *Dublin Principles* of water governance (GWP 2013a);

- has not precipitated the development of a specific organisation or secretariat to administer implementation (Conca 2006: 7). However, there are numerous supportive organisations that have formed as a result of related global water governance debates, conferences and processes (such as the GWP) that play an advisory and supportive role;

- does not, in principle, exclude non-state actors. Whilst only states can formally accede to the *UN Watercourses Convention* and other related treaties, the water epistemic community, NGOs and civil society actors are able to influence the decisions that states take.

From the above it is evident that whilst at global level many regime features are apparent in water governance initiatives, there is insufficient evidence to support a conclusion that a global water regime exists or has matured beyond a nascent stage.

4.2.1.4 Institutionalisation

Although it was indicated in the preceding discussions that global transboundary water governance initiatives, in respect of neither cooperation nor regimes, made provision for the institutionalisation thereof, there are numerous organisations that support global water governance. These include GWP, WWC, WB, UNEP and FAO. These international organisations fulfil several roles. They are forums to achieve various water-related aims. NGOs and the epistemic community use these organisations to develop and distribute advice and influence thinking about shared watercourses. State water managers receive technical support and information from these organisations. These organisations also have varying degrees of independence and autonomy in the sense that they are free to publish on, debate and influence water governance. As such, these organisations are in many ways more independent than regime secretariats because they are not constituted by government representatives and are not liable to uphold specific water treaties. They also fulfil a variety of roles such as the articulation and aggregation of water-related interests of various state and non-state actors. In particular, the epistemic water community uses these organisations to promote ideas and governance concepts. They develop and disseminate norms on water governance through instruments such as the *WWV, Rio Declaration, Dublin Statement* and

various project reports and technical briefs. These organisations are also a source of information and knowledge and provide a forum to pool expertise.

From the analysis of cooperation, regimes and international organisations, it is concluded that, at global level, an attempt is being made to develop a multilateral global water regime. The most advanced example of this is the *UN Watercourses Convention*, which is indicative of an attempt made by states to agree on normative imperatives and a related treaty that could form the basis of a global water regime. This is supplemented by various initiatives such as the WWV and *WCD Report* that similarly attempt to influence the normative content and practical direction of a global water regime. However, given the limited ratification of the *UN Watercourses Convention*, it has not yet entered into force. This is indicative of the lack of consensus about and support for unified global water governance. It is thus concluded, in the words of Conca (2006: 102) that "it would be a boldly optimistic interpretation to view an unratified framework convention, marked by fundamental ambiguity on the central normative question of equitable use versus significant harm, as a nascent regime". Thus there is not yet an emergent multilateral water regime at global level, despite efforts to create one (Wirth 1995: 652; Turton 2003c: 124).

4.2.2 Water in continental context

At a continental level, it is necessary to take cognisance of the African context within which SADC WS and ORASECOM operate. Along with the global water context, this facilitates understanding of the broader ideational and operational context of regional and basin regimes.

In 2005 UNEP released a report called *Hydropolitical Vulnerability and Resilience along International Waters: Africa.* According to this report, "the rate of change in the hydrological system, and the institutional capacity to absorb and respond to that change" (UNEP 2005: 19) are the key determinants of hydropolitical vulnerability. Furthermore, it is suggested that, as far as water is concerned, climate, population dynamics and socio-economic conditions are key forces that impact on change and vulnerability.

Water and climate: Africa is divided by the equator which results in diverse sub-continental climates. Close to the equator there is plenty of rainfall but further to the north and south, rainfall becomes highly unpredictable and evaporation increases. As such, transboundary river basins have both wetter and drier regions. Adding to this, most African countries have wetter and drier seasons. Dams have been built to deal with this rainfall variability, along with associated inter-basin transfer (IBT) schemes. These dams and transfer schemes have a variety of social, economic and cultural side-effects on a range of stakeholders. Despite this infrastructure development, parts of Africa are still expected to experience water stress by

2025. This is particularly prevalent in Southern Africa and parts of East and Central Africa. Changes in global temperatures as a result of climate change also influence African water vulnerability. The precise effects of climate change in Africa are not certain, but the Intergovernmental Panel on Climate Change (IPCC) predicts that future warming acts could range from 0.2 to 0.5 degrees per decade. This warming is expected to be worst in the semi-arid regions of the Sahara and central Southern Africa. Also, East Africa is likely to receive increased rainfall whilst South-Western Africa will receive less. Large areas of Southern Africa will become drier by 2050. These changes are likely to affect surface and groundwater, although the exact effects are unknown and will vary from region to region (UNEP 2005: 19-23; TFDD 2005a; TFDD 2005d).

Water and population: Population trends, such as population growth rates, urbanisation and the spread of disease, impact on water management in transboundary basins. Africa has the highest fertility rates in the world, and population densities in several international basins are expected to double in the next 25 years. This is particularly prevalent in parts of East and West Africa. Population growth pressurises the environment by increasing deforestation, pollution and overgrazing and by reducing the quality and quantity of freshwater. Continued high HIV/Aids rates may however affect this growth rate since approximately 70 percent of all adults living with HIV/Aids dwell in Africa. In 2005 vast parts of Eastern, Central and West Africa had HIV/Aids rates of between two and five percent of the population. Southern Africa tends to record HIV/Aids rates between 11 and 30 percent (UNEP 2005: 24-25; TFDD 2005b; TFDD 2005c).

Water and socio-economic conditions: Social resources include factors such as institutional development, economic wealth, systems of government, education levels and laws and legislation. These factors are intrinsic to the way that Africa will adapt to changing water availability. A politically stable state with a diverse economy tends to have a greater range of technology and policy options to deal with water scarcity. Weaker economies struggle to adapt to these changes. In Africa, large numbers of people live in poverty, which is usually associated with ill health and food shortages (UNEP 2005: 28-29).

Law: The capacity to absorb change and deal with hydropolitical vulnerability in Africa depends on a variety of factors. Law and institutions are seen as important drivers to create this adaptive capacity. As far as law is concerned, three stages are apparent in the development of transboundary water governance in Africa: the colonial period, the early independence period and the late independence period. Prior to colonisation there was little evidence or understanding of the nation state in Africa and as such the issue of transboundary water was not relevant in an interstate context. The colonial period of 1885 to

1956 was therefore pivotal in creating transboundary water relations, as this is when dependent political entities were created, often using rivers as boundaries. Not only did post-colonial African states inherit many of their boundaries from the colonial era, but also the legal systems of their previous colonial power, thus creating an array of different legal systems across Africa. This has implications for the capacity to harmonise regional policy decisions in national policy contexts. The colonial powers entered into bilateral agreements around spheres of influence: for example, Great Britain and Portugal signed a bilateral agreement on the Zambezi River as early as the 1890s. These agreements dealt with issues like 'native access' to rivers. None of the agreements dealt with water quality issues, technical cooperation or joint management institutions (UNEP 2005: 31).

The early independence period from 1955-1989 saw a dramatic increase in water agreements because newly independent states were expressing their new-found sovereignty. There was a shift from bilateralism to multilateral agreements. Also, the colonial emphasis on water allocation in treaties shifted towards issues of cooperation, conflict prevention and joint management. The first African RBOs formed during this time in the Niger (1964), Senegal (1972), Chad (1973) and Gambia (1978) basins. This incentive to develop organisations was strongly influenced by international donor organisations and lending agencies at this time (UNEP 2005: 32).

The late independence period from 1989 to the present brought a new emphasis. Whilst agreements still focused on cooperation, conflict prevention and joint management, the aim shifted from economic development to sustainable development. A propensity for bilateral agreements re-emerged during this era (alongside ongoing popularity of multilateral regimes) (UNEP 2005: 32). According to Turton (2004: 251), this in part may be due to Pyke's Law, which suggests that the effort required to reach any agreement increases by the cube of the number of parties involved.

When considering sources of transboundary water law in Africa; the domestic law dimension must not be underestimated or ignored (UNEP 2005: 34). This is because it cannot be assumed that a treaty will be implemented just because it has been signed. The process of incorporating international treaties into domestic law and then implementing them is a complex process which African states have differing degrees of capacity and willingness to prioritise.

Water in Africa is a sensitive and scare resource. It is influenced by numerous climatic factors that are aggravated by population and socio-economic conditions. This necessitates careful governance of transboundary water resources. As such, there are numerous African water governance initiatives to manage these sensitive resources appropriately.

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4.2.2.1 Continental initiatives to govern transboundary river basins

Multilateral cooperation at continental level focuses on a broad range of issues, and not exclusively on water. Key initiatives that have relevance to how transboundary water is governed are considered in this section.

The AU (created in 1995 as the successor of the OAU), is the regional governing body for the continent. It aims to facilitate political integration among African states to increase their ability to compete in the global economy, whilst simultaneously addressing multi-faceted social, economic and political challenges that are compounded by the complex effects of globalisation. It does this by promoting and supporting cooperation among African states. The AU has a governance structure, including bodies such as the Assembly, the Pan-African Parliament (PAP) and specialist technical committees that fulfil its various tasks. The AU has a general focus on regional integration and development and thus only supports water matters in a general sense by providing an enabling forum for states to work together to establish initiatives relating to shared water (Elhance *et al.* 2005: 69; AU 2013).

The New Economic Partnership for Africa's Development (NEPAD) formed in 2001 as an integrated and comprehensive socio-economic development programme to accelerate Africa's renewal. NEPAD is an AU strategic framework for pan-African socio-economic development. It is both a vision and a policy framework for Africa that aims to eradicate poverty; place African countries individually and collectively on a path towards sustainable growth and development; halt the marginalisation of Africa in the globalisation process and enhance its full integration into the global economy; and accelerate the empowerment of women. NEPAD manages a number of programmes and projects in six theme areas. These themes are Agriculture and Food Security, Climate Change and Natural Resource Management, Regional Integration and Infrastructure, Human Development, and Economic and Corporate Governance. It has an organisational structure to manage these programmes (Elhance *et al.* 2005: 69; NEPAD 2013).

Water is implicitly linked to all the strategic aims of NEPAD and as such is acknowledged as crucial to their success. NEPAD proposes to deal with the challenge of water security for Africa through assessment and regulation as well as the application of science and technology which can help to improve Africa's availability of water, quality of water and distribution of water to domestic, industrial and agricultural users. Under the NEPAD Strategic Action Plan all regions have been charged with the task of strengthening their financial mechanisms for the development of their water sectors (Elhance *et al.* 2005: 70). Water is most specifically addressed through the Climate Change and Natural Resource Management theme, which has a specific water programme. This programme focuses on the

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development of national IWRM policies and strategies, meeting basic water needs for African people, addressing the drought and flood aspects of climate change, enhancing irrigation to improve food security and managing transboundary water resources to become a basis for national and regional cooperation and development (NEPAD 2013).

The African Ministers Council on Water (AMCOW) was formed in 2002 in Abuja, Nigeria. Its primary aim is to promote cooperation, security, social and economic development and poverty eradication among member states. This is done through the effective management of the continent's water resources and provision of water supply services. AMCOW is a platform for the water ministers of all 53 states of Africa, acting in the spirit of NEPAD. Like NEPAD and the AU, this body has an extensive organisational structure to support its processes (see Box 2) (Elhance *et al.* 2005: 70; AMCOW 2013b).

Four key documents provide the policy framework in which AMCOW operates. The *African Water Vision* was developed in 2000 to provide input from Africa into the WWV process. The *Africa Water Vision* recognises water as crucial to socio-economic development in Africa and acknowledges the link between poverty and inadequate access to water. The *eThekwini Declaration* (2008) enshrines issues such as African Water Ministers' support for the leadership of AMCOW and willingness to establish, review and update national sanitation and hygiene policies, recognise gender and youth aspects of sanitation, and develop water and sanitation management capacity. The *Tunis Declaration* (2008) marked ministerial agreement on financing infrastructure for water security, achieving water and sanitation MDGs, and prioritising climate change adaptation and innovative agricultural water use (AMCOW 2010: 4-9). Finally, at the 11th ordinary session of the AU Assembly in Sharm el-Sheikh, Heads of State and Government of the AU agreed on commitments to accelerate the achievement of water and sanitation goals in African states committed to the following issues (AU 2008):

- Developing or updating national water management policies, strategies and programmes.
- Creating an environment for effective local and private sector engagement on water.
- Ensuring equitable and sustainable use and management of shared water resources.
- Building institutional and human capacity for water programme implementation.
- Putting in place measures to improve climate change resilience at national level.

AMCOW was mandated to develop and follow up on an implementation strategy for these commitments. AMCOW has also been accorded the status of a Specialised Committee for Water and Sanitation in the AU (Elhance *et al.* 2005: 70; AMCOW 2013b). Finally, the United National Economic Commission for Africa (UNECA) is one of five UN regional commissions and is mandated to support the economic and social development of African states, foster

regional integration and promote international cooperation. Concerning water specifically, the UNECA has been pivotal in promoting political will in AMCOW and in developing the *African Water Vision of 2024*. To implement this vision the ECA aims to build human and institutional capacity to implement IWRM, assist member states and basin organisations with IWRM implementation at basin level, and promote enhanced irrigation development to improve agricultural efficiency and respond to food security challenges (Elhance *et al.* 2005: 71; UNECA 2013).

Box 2: The governance structure of AMCOW

The governance structure of AMCOW includes:

The AMCOW Governing Council: The Council serves as the principal intergovernmental body on water issues and is composed of all 53 African Ministers responsible for water affairs in the region. The Council essentially aims to keep the state of Africa's water resources under review and promote desirable actions of common interest to Africa; to facilitate sub-regional, regional and international cooperation through the coordination of issues relating to water policies and actions among African countries; to encourage mechanisms that promote best practices in water policy reforms, integrated water resources management, food security, water supply and sanitation, and to assist in delivery of national, sub-regional and regional programmes. It also provides a forum for dialogue with UN agencies and other partners on water programmes.

The AMCOW Executive Committee: The Executive Committee comprises the President of the Council and 15 other members – three members elected from each of the five sub-regions of Africa on a rotational basis. The members are selected by the sub-regions. The Committee deliberates on decisions and recommendations, and ensures that these decisions are implemented.

Technical Advisory Committee (AU TAC): The TAC provides technical support to the Executive Committee and the Governing Council for formulation of policies and strategies for the consideration of the Executive Committee, coordination with other institutions and partners, and operational follow-up of issues and decisions of the Council. The Committee comprises 25 technical experts, five from each of the five sub-regions of Africa, on a rotational basis. The sub-regions decide which countries and experts are to be members of the Committee.

The AMCOW Secretariat: The Secretariat is headed by an Executive Secretary and is responsible for day-to-day running of AMCOW, taking follow-up actions on the decisions of the Council, preparing programmes and budgets for consideration by the Executive Committee, providing Secretariat services for the sessions and meetings of the organs of the Council, and reporting to the Executive Committee.

Source: Adapted from (AMCOW 2013b)

It is evident that there are numerous regime building efforts around the issue of water that aim to serve Africa at a continental level. Significant in this regard is the fact that most of these initiatives have the issue of water nested in a structure that is broadly geared towards development issues in Africa. Water is thus just one issue area within the context of these regime building efforts.

4.2.2.2 Forms of cooperation

Various initiatives that aim to foster more effective and sustainable transboundary water governance in Africa have been introduced. Both AMCOW and NEPAD fall within the jurisdiction of the AU, and the UNECA collaborates with these initiatives. These efforts are a clear indication of efforts at regime building at continental level.

Notably, continental water governance is an example of multilateralism, but more specifically of regional cooperation. In terms of the attributes of multilateralism and regionalism (see Section 3.2.1), continental initiatives:

- involve three or more members engaged in voluntary cooperation around water. Arguably, regional water cooperation has had greater success than the global level initiatives because all African states who are members of the AU are also members of AMCOW. Similarly, NEPAD has the endorsement of the AU;

- have a mixed record in terms of including state and non-state actors in regional activity. There is a principled commitment to creating platforms for state and non-state actors to engage. The AU, for example, has the PAP and the Economic, Social and Cultural Council (ECOSOCC) which both create platforms for broad stakeholder interaction. AMCOW arranges the annual Africa Water Week, which is a platform to bring together civil society organisations, governments, the epistemic community and interested individuals in order to discuss water issues of mutual concern (AMCOW 2013b). However Bischoff (2008: 178) insists that, despite rhetoric that endorses broad stakeholder inclusion, African multilateral activity is highly state-centric and not adequately inclusive of non-state voices;

- imply at least a minimal amount of institutionalisation because organisations are indicators that certain behaviours have persisted over time. At continental level, there are organisations to support water-specific multilateral cooperation. Within the AU, the Assembly and the Executive Council and Specialised Technical Committees on industry, science and technology, energy, natural resources and environments are important. The NEPAD Secretariat also commissions project-related work linked to water. AMCOW has an extensive governing structure to support water-related work on the continent. The UNECA head offices are based in Addis Ababa, Ethiopia where various water and climate related projects are managed (UNECA 2013);

- do not have a clearly unifying set of rules in the form of a treaty or international agreement that all states have agreed to. The best summary of African states' commitments to water matters appears in the four policy statements guiding AMCOW (see Section 4.2.2.1). These do not however constitute a unified treaty or set of norms.

There is evidence of regional cooperation at the African continental level. Water is one of the areas of cooperation on the continental agenda. This cooperation has not matured into full regional integration on water as not all African countries have finalised national IWRM policies and strategies and have not all implemented the *Sharm el Sheik Declaration* commitments. This is due partly to diverse legal systems in Africa which makes policy

harmonisation difficult, and also to varied and often insufficient national capacity and political will amongst African states. Also, the AMCOW Executive Committee met in June 2013 and acknowledged that there are ongoing gaps in country reporting and that some countries (not specifically named in the minutes) are not meeting their financial obligations to AMCOW (AMCOW 2013a). This is making it very difficult to monitor the implementation of regional commitments.

4.2.2.3 Continental regime features

At the continental level, features of regimes are less specific as there is no unifying water treaty at an African level. Instead there are a series of organisations that are situated within broader organisational contexts that deal with issues including water. These organisations, such as the AU, NEPAD and UNECA, have broad African development and cooperation goals and water is one of their strategic priorities. In the AU, water falls under the Natural Resources and Environment Technical Committee. In NEPAD, the Strategic Action Plan emphasises African states' obligations on water. In UNECA there is a project-level focus on water. It is only AMCOW that has an overall specific water focus. The *Sharm el Sheikh Declaration on Water and Sanitation* of 2008 guides AMCOW and details specific water-related norms and commitments (AU 2008). Thus, at continental level, the codification of principles, norms and rules is not explicit. Most water-related commitments are entrenched in the regional or global-level water commitments of specific states and are not created in a continental context.

At the continental level, Africa has numerous examples of the institutionalisation of cooperation, as was detailed in the previous section. In addition, there is also recognition that non-state actors are important in African water affairs but this does not always translate into a shared authority and a meaningful inclusion in practice. Strategic actors that are not explicitly state run, such as the African Development Bank (AfDB) and the GWP, are, however, able to exert an influence on these continental organisations (Nienaber & Claassen 2009) by guiding the development of infrastructure projects or assisting in the development of IWRM plans.

It is concluded that at a continental level, Africa exhibits numerous regime features with water as an entrenched issue within the context of broader developmental concerns. There is not a continental attempt at treaty development, but there are initiatives that influence normative thinking amongst states, such as the *Sharm El Sheik Declaration.* There are, however, numerous attempts at institution building and organisation development, as is typified by AMCOW Governing Council and Secretariat, or the NEPAD Secretariat. Significantly, through the vehicle of AMCOW, all states of Africa are represented in this forum that focuses exclusively on water issues: this represents important progress for continental

water governance. However, despite regime building efforts, there is not a fully matured water regime at continental level. At most Africa can be considered to have a nascent water regime.

4.2.2.4 Institutionalisation

There are numerous continental organisations in Africa that support water governance initiatives. The AU, NEPAD, AMCOW and UNECA all draw membership from two or more sovereign states, aim to pursue the common interests of members and have their own formal structure of a continuous nature established by an agreement. As such, they comply with the definition of international organisations.

The AU is an IGO as its members are states, and the primary representatives and decision makers in this forum are heads of state and government (Archer 2001: 28; AU 2013). NEPAD is a specialised programme of the African Union and the NEPAD secretariat has the status of an agency of the AU. NEPAD is thus a programme with agency status that is embedded within the AU structures. It does, however, in certain instances take on a character of being an independent IGO. For example, each head of state may also designate personal representatives to participate in the NEPAD Heads of State and Government Orientation Committee (HSGOC) (Archer 2001: 28; NEPAD 2013).

UNECA is a regional agency of the UN (which is an IGO), but it is also constituted by the 54 African member states. As such, although it is technically an agency of the UN, it takes on the character of an IGO in the African context. AMCOW has been accorded the status of Specialised Committee for Water and Sanitation in the AU. The AU Specialised committees are part of the organs of the AU. However, AMCOW, takes on the character of a trans-governmental organisation, as the primary representatives of AMCOW are not heads of state but rather the ministers of water of their respective member states (Archer 2001: 40; UNECA 2013; AMCOW 2013b).

All of these organisations have secretariats or administrative arms that support the decisions taken by political representatives, manage projects and provide technical advice. These organisations have a general focus on development but also have a specialist water focus at technical committee level. They all play an advisory role to African states who remain the final decision makers around water issues.

These organisations fulfil the main roles attributed to international organisations. They are an instrument for members to pursue their water interests in an African context. They are arenas for water actions to take place in the form of agenda setting and commissioning research. They are also autonomous in the sense that they play a role in influencing the perceptions

and behaviour of the African governments that constitute them. Within the context of these roles they fulfil a variety of functions: they articulate water-related interests in the broad developmental debates of the organisations, and they promote certain norms of behaviour in Africa's transboundary rivers. They help to make, apply and adjudicate rules and agreements that African governments enter into on water. They also produce, pool and share knowledge and information around African waters.

When focusing on specific roles and functions of the above-mentioned organisations, the AU and AMCOW must be considered together. This is because AMCOW has been accorded the status of a Specialised Committee for Water and Sanitation in the AU (AU 2013). Thus the water-related work of the AU is largely managed through AMCOW. AMCOW articulates its roles and functions through a workplan which has seven themes: water infrastructure for economic growth; managing transboundary water resources; meeting the sanitation, hygiene and water MDGs; global changes and risk management with a particular focus on climate variability and change; governance and management; and financing and capacity development.

These workplan themes are implemented at continental, regional and national government level, in partnership with civil society. In addition to the workplan, AMCOW also oversees numerous initiatives. For example, AMCOW produces numerous publications that advise decision makers, such as the *AMCOW Handbook*, *Africa Water Atlas* and *Africa Water Journal* (AMCOW 2013b).

NEPAD fulfils its roles and functions in relation to water through the Climate Change Programme, which has a focus on Water, Environment and Energy. The programme facilitates brainstorming and conferences across the continent; assists where possible with the work of climate change scientists in the region; supports the African Ministerial Conference on the Environment meetings; and prepares policy briefs and provides technical support in building African positions on climate change (NEPAD 2013).

In the case of UNECA, these roles and functions are specifically articulated through its policy reports and briefs which inform and influence decision makers. UNECA has established an African Climate Policy Centre that produces these documents. Notable working papers in this respect are *Climate Change and Water in Africa: Analysis of Knowledge Gaps and Needs* (2011), *Climate Change and Water Resources in Africa: Challenges, Opportunities and Impacts* (2011), and *Management of Groundwater in Africa including Transboundary Aquifers: Implications for Food Security, Livelihood and Climate Change Adaptation* (2011) (UNECA 2011a; UNECA 2011b; UNECA 2011c).

From the analysis of cooperation, regimes and institutionalisation, at continental level, it is evident that there is an emergent water regime. This regime however is a tacit one in the sense that there are no clear water-related treaties at continental level codifying the regime explicitly. Also, the regime exists within the context of a broader African development and cooperation agenda. On the one hand, this is effective as it positions water regimes in the context of a broad suite of linked developmental challenges. On the other hand, the risk is that water will receive less focus and attention when other developmental needs compete for attention.

4.3 The SADC Water Sector: A regional water regime?

Based on the above, the focus shifts to the regional case study, namely SADC WS[11]. This requires consideration of water in Southern Africa, the organisational context of SADC WD, as well as understanding of the structural-functional characteristics of SADC WS itself.

4.3.1 The issue of water: Transboundary features in Southern Africa

Southern Africa has a diverse hydrological climate. This is due to the fact that much of the area is between the Inter-Tropical Convergence Zone and the Southern Ocean, which drive different patterns of weather and precipitation (Turton 2010: 8). The region encompasses 35 degrees of latitude, which also contributes to the diversity in climate. The northern part of the region, including states such as the Democratic Republic of Congo (DRC), is near the equator and typically has high humidity and rainfall. The Namibian coastline, in contrast to this, is a desert area. The climate is also heavily influenced by the warmer and more humid Agulhas current on the east coast and the colder Benguela current in the south-western region that produces a cooler and drier climate. Average precipitation ranges from 285 mm/year in Namibia to 1543 mm/year in the DRC. There is also greater temporal variability of climate in the southern parts of the region, with severe floods and severe droughts being experienced at different times. This variability makes planning difficult and has impact on livelihoods (UNEP 2008: 6; Malzbender & Earle 2009: 86-87).

Water is generally in short supply in Southern Africa in comparison to other parts of the world. This is aggravated by the fact that that only 20 percent of mean annual precipitation actually is converted into mean annual run-off. Thus, vast amounts of rain that fall simply evaporate, giving SADC a very low assurance of water supply. This is in stark contrast to

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[11] SADC WD is embedded within the broader institutional structure of SADC WS. Following on from the signing of the first *SADC Watercourses Protocol* in 1995, the SADC water sector was started in 1996. In 2005 the organisational structure of SADC was revised. This lead to a streamlining of the organisation and at this point SADC WD (the Secretariat of SADC WS) was embedded within the broader secretariat of SADC as a whole.

other parts of the world that convert between 35 and 45 percent of their precipitation into run-off (Heyns 2003: 5; UNEP 2008: 6; Turton 2010: 10-11).

Botswana, Malawi, Namibia, South Africa, Tanzania and Zimbabwe are expected to experience water stress by 2025, particularly because growing populations and economies have increasing water demands. Many of the most developed countries of the region in terms of Gross Domestic Product (GDP) measurements, such as South Africa and Botswana, are also the most water stressed. This spatial and temporary water variability, coupled with unequal distribution of water in SADC, has led to massive development of water storage and transfer infrastructure in the region. For example, South Africa and Zimbabwe are ranked among the top twenty dam builders in the world by the WCD. In these countries most water supplies have been developed and many rivers are being used in excess of environmentally healthy ecological reserves. These countries urgently need to find new water – either by using existing supplies more efficiently or by developing further IBT schemes (Malzbender & Earle 2009: 86-88).

There is also a high reliance on groundwater in the region. Presently there is still much to be understood about these aquifers. Most do not form part of major river basins but are a stock of fossil groundwater. How these aquifers flow and recharge is not completely well understood. Despite lack of understanding of these aquifers, they are crucial to SADC because in several parts of the region groundwater is the only perennial supply of water (Malzbender & Earle 2009: 88). There is ongoing research, managed through SADC WS, looking at the "development of consensus on a SADC regional strategic approach to support and enhance the capacity of its Member States in the definition of drought management policies, specifically in relation to the role, availability and supply potential of groundwater resources" (SADC 2009: 1).

Another significant hydrological feature is the high number of transboundary river basins in the region (see Table 4). These transboundary rivers are partly as a result of colonial partitioning of territory in the nineteenth century. To avoid conflict among themselves, colonial powers divided territory using clear geographic boundaries like mountain peaks and rivers. These demarcations did not take into account the impact these divisions would have on history, culture and economic interests. These arbitrary demarcations complicate basin management in SADC because these rivers need to be managed according to their unique characteristics by multiple countries. "The boundaries of the 12 SADC states in Southern Africa (and of eleven non-SADC countries) lie across 15 major perennial and ephemeral international river basins" (Heyns 2003: 7). These rivers are critical to most of the states of the region. Over and above these fifteen major rivers, there are six other transboundary

rivers in the region of lesser economic importance. Five of the SADC states have a water resource dependency of more than 50 percent. This means that they depend on water coming from outside of their national borders for more than half of their supply. Also, Botswana and Namibia, the two most arid SADC states, have access to four and five international basins respectively, whilst Mozambique has access to nine basins (Heyns 2003: 6-8; Malzbender & Earle 2009: 88).

Table 4: Location of river basins and basin states

River basin	Number of states	Basin States
Kunene	2	Angola, Namibia
Cuvelai	2	Angola, Namibia
Okavango	3	Angola, Botswana, Namibia, Zimbabwe
Orange	4	Botswana, Lesotho, Namibia, South Africa
Maputo	3	Mozambique, South Africa, Swaziland
Umbeluzi	2	Mozambique, Swaziland
Incomati	3	Mozambique, South Africa, Swaziland
Limpopo	4	Botswana, Mozambique, South Africa, Zimbabwe
Save	2	Mozambique, Zimbabwe
Buzi	2	Mozambique, Zimbabwe
Pungué	2	Mozambique, Zimbabwe
Zambezi	8	Angola, Botswana, Malawi, Mozambique, Namibia, Tanzania, Zambia, Zimbabwe
Rovuma	3	Malawi, Mozambique, Tanzania
Congo	9	Angola, Cameroon, Central African Republic, Congo, Democratic Republic of Congo, Burundi, Rwanda, Tanzania, Zambia
Nile	11	Tanzania, Burundi, Egypt, Eritrea, Ethiopia, Kenya, Rwanda, South Sudan, Sudan, Uganda, Democratic Republic of Congo

Source: Adapted from Heyns 2003: 7

Three of the transboundary rivers in Southern Africa, namely the Incomati, Limpopo and Orange, have reached or are about to reach the point of full allocation and are now closed. This means that available water resources have been allocated to productive activities. In these basins, a deterioration of water quality is particularly likely because of the strain being placed on the resource (Turton 2010: 17).

Climate change is another cause of stress in the region. The IPCC suggests that climate change is likely to cause an increase in precipitation in the eastern seaboard and interior of the region. It is likely to cause a decrease in precipitation on the western seaboard and northern interior. It is also likely to cause a shift from winter to summer rainfall in the Cape region (Malzbender & Earle 2009: 91). These changes in the region will have severe

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repercussions on the social, environmental and economic water use activities in the region. It is often the most vulnerable and poor people that suffer the most from these changes, as they have less adaptive capacity to cope with them.

At a more strategic level, water is critical to the economies of the states of Southern Africa as sectors such as agriculture, industry, mining and power generation rely on its availability. Water is also intrinsic to food security and poverty alleviation strategies. Additionally, the environment itself requires water to sustain its biodiversity, natural ecosystems and wetlands as these protect the future security of the resource and form the basis for rural livelihoods and tourism (Malzbender & Earle 2009: 92-93).

At present the agricultural sector is the highest water user in Southern Africa. However, as economies become increasingly diversified, agriculture will have to compete for supplies with other industries such as mining and tourism. The staple foods of the region are maize, sorghum, millet and wheat, which are water-intensive products. In more diversified economies, such as South Africa, there appears to be a gradual shift away from cereal production to more productive agriculture uses that earn more 'crop per drop' of water. This is because there is a shift towards charging market-related prices for water consumed in the agricultural sector in a specific country (UNEP 2008: 9; Malzbender & Earle 2009: 93).

4.3.2 Initiatives to govern transboundary river basins

SADC is the regional regime (that has manifested as an IGO) in Southern Africa. It is comprised of fifteen African states [12] (SADC 2013). This regional grouping serves a population size of 277 million and covers a region with a collective GDP of 575.5 billion US$ (SADC 2013). SADC was formally established through the signing of the *Treaty of the Southern African Development Community* (*SADC Treaty)* on 27 August 1992 in Windhoek, Namibia. The treaty was subsequently modified by the 2001 *Agreement Amending the Treaty of SADC* (SADC 2001). The Treaty is the central focus that outlines the vision, mission and institutional framework of the community. SADC brings its members together with a common goal of achieving regional integration on the basis of balance, equity and mutual benefit for all the peoples of the region (Ramoeli 2002: 105).

SADC was restructured in 2001 with the intention of increasing effectiveness of policy and programmes and implementing a more coherent strategy to eliminate poverty. The Regional

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[12] It is comprised of the twelve mainland African states, namely Angola, Botswana, DRC, Lesotho, Malawi, Mozambique, Namibia, South Africa, Swaziland, Tanzania, Zambia, Zimbabwe; as well as the islands of Mauritius and Seychelles. Madagascar has been suspended following the *coup d'état* led by the former mayor of Antananarivo, Andry Rajoelina. This dissertation specifically focuses on mainland SADC as this is where shared waters are significant.

Indicative Strategic Development Plan (RISDP) was developed to support this process. The RISDP emphasises ideas such as the importance of good political, economic and corporate governance as prerequisites for sustainable socio-economic development, and that the quest for poverty eradication and deeper integration levels will not be realised without good governance (SADC 2005c: 3). The SADC Secretariat (Regional Integration section), which is of particular interest to water governance matters, is made up of four directorates. The Infrastructure and Services Directorate institutionally houses SADC WD and is also responsible for issues relating to transport, communications, energy and tourism. The Food, Agriculture and Natural Resources Directorate focuses on crop production, livestock production and animal disease control; inland fisheries; marine fisheries and resources; and forestry and wildlife. The Social and Human Development and Special Programmes Directorate focuses on the cross-cutting issues of skills development; HIV and AIDS; human resources development; employment and labour; culture, information and sport; health and combating illicit drug trafficking; and science and technology (SADC 2013). Clearly SADC is a regional IGO with a broad development scope and an organisational structure that facilitates collaborative work on a variety of issue areas.

The *SADC Treaty* provides that member states should conclude protocols on the objectives, scope and institutional mechanisms for cooperation and integration in the region. These protocols are to be negotiated and agreed upon within the various areas of cooperation, such as natural resources and environment, identified in Article 21(3) of the Treaty. Once these protocols have been approved by the SADC Summit (on the recommendation of the Council) and have been ratified by two-thirds of the member states, they enter into force. Water is one of the sectoral concerns that needed detailed protocol consideration (SADC 1992).

The importance of water in SADC was affirmed by the development of the *SADC Protocol on Shared Watercourse Systems* (*SADC Watercourses Protocol*) signed in 1995. This was followed by the establishment of a dedicated Water Sector in 1996. The *SADC Watercourse Protocol* was the first protocol to be developed by the SADC community. It had its roots in a 1993 initiative where SADC implemented a basin-wide programme known as the Zambezi River Basin System Action Plan (ZACPLAN), the aim of which was to establish a basin-wide legal and institutional framework to facilitate the management of the Zambezi River basin. In the process of negotiating an agreement to form the Zambezi River Basin Commission (ZAMCOM), it was advised that it might be more efficient to develop a regional-level, single legal instrument for river basin management first (Ramoeli 2002: 105).

As a result, the process of developing the *SADC Watercourses Protocol* began in 1993. The Protocol was adopted and signed by ten member states in 1995. These states included

Botswana, Lesotho, Mozambique, Namibia, South Africa, Swaziland, Tanzania, Zambia and Zimbabwe. Mauritius joined when it became a SADC member in 1996. At the time of signature, some member states, such as Namibia, had reservations about some of the content of the Protocol. For example, the *SADC Watercourses Protocol* stressed the territorial sovereignty of watercourse states. This emphasis was changed in the *Revised Watercourses Protocol* to emphasise the unity and coherence of shared watercourses, thus emphasising a regional cooperative agenda rather than a unilateral one. The SADC Summit insisted that a process of consultation and negotiation be started where states could submit their concerns to make recommendations and amendments to the Protocol. This consultative process was run through a series of national water week workshops where the implementation aspects of the protocol were analysed in detail. This helped states to clarify their understanding of the implications of the Protocol (Ramoeli 2002: 106; Jacobs 2009: 110).

The 1997 *UN Watercourses Convention* also impacted on this revision process. SADC WS commissioned a study about the alignment of and conflict between the *SADC Watercourses Protocol* and the *UN Watercourses Convention*. A summary working paper was then distributed to SADC states to add to their reflection process. This process clarified clauses focusing on environmental protection, planned measures and compensation for harm caused to the resource (Ramoeli 2002: 106-110; Malzbender & Earle 2009: 98).

The *Revised Watercourses Protocol* addressed concerns that were raised by adding the environment as one of the legitimate water users and by further clarifying the rights and obligations of upstream and downstream riparians, particularly in emergency situations. The *Revised Watercourses Protocol* was adopted by the SADC Summit of Heads of State and Government in August 2000. By June 2001 all SADC mainland states had signed this document and it had been ratified by three states. In 2004, the Protocol entered into force in terms of Article 10 of the Protocol which requires ratification by two-thirds of the member states listed in the preamble (SADC 2000; Ramoeli 2002: 106-107; Malzbender & Earle 2009: 98).

The *Revised Watercourses Protocol* codifies principles including (SADC 2000):

- Advancing the sustainable, equitable and reasonable utilisation of the shared watercourses.
- Maintaining the unity and coherence of shared watercourses with a view to achieving sustainable development.
- Respecting the sovereignty of member states in the utilisation of shared watercourses.
- The application of rules of general or customary international law.
- Cooperation in joint projects and studies relevant to shared watercourse systems;
- Commitment to sharing data among riparian states.

- The need for discharge and abstraction permits for all users.
- The obligation to notify all riparians about emergency situations.

As previously mentioned, and in the context of SADC WS, the *Revised Watercourses Protocol* establishes a regional organisational structure, known as SADC WD. It is positioned within the SADC Directorate of Infrastructure and Services, which is a section of the SADC Secretariat (see Figure 2) (SADC Portal 2013). The primary mandate of SADC WD is to monitor the application of the *Revised Watercourses Protocol* and to facilitate the harmonisation of water laws and policies amongst SADC member states. Ultimately, however, it is the mandate of national governments to bring their national policies in line with international agreements (Malzbender & Earle 2009: 101).

SADC WS has a Regional Water Policy (RWP) and Regional Water Strategy (RWS) to provide a coherent water resources governance framework for the region, to reduce poverty and to promote regional integration. The RWP has core policy areas including (SADC 2005b):

- regional cooperation in water resources management;
- water for development and poverty reduction;
- water for environmental sustainability;
- security from water-related disasters;
- water resources information and management;
- water resources;
- development and management;
- regional water resources institutional framework;
- stakeholder participation and capacity building;
- financing IWRM in the region.

The RWS makes provision for a set of strategies for implementing the nine policy areas listed in the RWP (SADC 2006). Whilst the *Revised Watercourses Protocol* is legally binding on states, the RWP and RHS are not. These two documents are meant to support states in their basin level negotiations and national-level policy agreements (Malzbender & Earle 2009: 101).

The various programmes of SADC are implemented through the Regional Strategic Action Plan (RSAP) on IWRM (RSAP). RSAP I (1999 to 2004) aimed to create an environment conducive to implementing infrastructure projects in the region. This is achieved through a focus on seven objectives, namely (SADC 1999):

- Improving the legal and regulatory framework at national and regional level.
- Improving management, planning and coordination at national and transboundary level.

- Strengthening linkages between policies guiding social, economic and environmental issues.
- Enhancing acquisition, management and dissemination of information.
- Encouraging public participation.
- Investing in infrastructure.

RSAP II (2005-2010) focused on providing leadership and coordination of water resources development and management, including infrastructure development at both member state and regional levels. RSAP II organises SADC water projects and programmes into four strategic focal areas (SADC 2005a):

- Regional water resources planning and management, with specific focus on resource assessment and monitoring, development of planning mechanisms and development of operational procedures.
- Infrastructure development support capacity building, with specific emphasis on developing support mechanisms for the development of strategic infrastructure projects that promote regional integration.
- Capacity building, to equip various actors in the water and related sectors with the requisite competencies (technical, managerial and negotiation skills) to be able to deliver the expected goods and services adequately for the benefit of individuals, communities and member states.
- Water governance with specific emphasis on promoting and implementing best practices and maintaining an environment that enables the implementation of the ethos of the *Revised Watercourses Protocol.*

RSAP III (2011 to 2015) aims "to strengthen the enabling environment for regional water resources governance, management and development through the application of integrated water resources management at the regional, river basin, Member State and community levels" (SADC 2011). This plan maintains the same strategic areas as RSAP II and continues the work of the previous plan.

Despite the existence of an increasingly coherent water governance framework at regional level, there are still some serious challenges that face water resources management in the region. These include a lack of groundwater management and governance focus, and a lack of capacity to implement the governance framework due to limited human and financial resources. In addition, capacity gaps can be noted on both the implementation and enforcement front. The RWP recognises the need to build capacity in the region, but this will be a long-term and slow process (Malzbender & Earle 2009: 101). Clearly, there is a complex response to water governance at regional level in Southern Africa. The institutional

response to water is situated within the context of SADC, which has a broad development and integration focus for Southern Africa.

4.3.3 Forms of cooperation

SADC houses and coordinates various governance initiatives geared towards economic integration and development in the region. The *SADC Treaty* enshrines the importance of developing protocols in particular areas of the treaty outlined in section 21(3) (SADC 2001). In this respect the *Revised Watercourses Protocol* has been developed which articulates areas of regional cooperation associated with water. Given the transboundary water focus of this study, it is primarily the specific aspects associated with water cooperation that are studied.

SADC is an example of multilateralism and, more specifically, regionalism that has a general focus on economic integration and development and a more specific focus on water cooperation (amongst other issues). In terms of the attributes of multilateralism and regionalism (see Section 3.2.1) SADC:

- involves three or more member states involved in voluntary cooperation around water. This is most clearly illustrated by all the SADC mainland states signing the *Revised Watercourses Protocol.* These states are all related through their shared regional location;
- includes state actors and makes provision to involve peoples of the region (non-state actors). Article 23 of the *SADC Treaty* emphasises that "SADC shall co-operate with, and support the initiatives of the peoples of the region and non-governmental organisations, contributing to the objectives of this Treaty in the areas of co-operation in order to foster closer relations among the communities, associations and peoples of the region." (SADC 2001). The *Revised Watercourses Protocol* does not specifically make mention of the need to engage with non-state actors in relation to water management. However, given that all states that signed the *Revised Watercourses Protocol* have also signed the *SADC Treaty*, non-state actor inclusion must be applied. This is currently done through the mechanism of the SADC Multi-Stakeholder Dialogues which provide a platform for civil society to engage with SADC WS and each other (SADC 2013);
- is institutionalised. Article 5 of the *Revised Watercourses Protocol* describes an institutional framework for implementation of the Protocol. It details the SADC Water Sector organs, shared watercourse institutions, the Committee of Water Ministers, the Committee of Senior Water Officials and the Water Sector Coordinating Unit (SADC

WD), which all form part of the institutional structure that SADC relies on to implement and manage its water matters (SADC 2001);

- provides for the equitable application of rights to all actors. Article 2(b) of the *Revised Watercourses Protocol* commits to advancing the "sustainable, equitable and reasonable utilization of the shared watercourses". Article 2 emphasises that the "utilization of shared watercourses within the SADC Region shall be open to each Watercourse State". Also, Article 6(6) emphasises that "[e]very Watercourse State is entitled to participate in the negotiation of and to become a party to any watercourse agreement that applies to the entire shared watercourse, as well as to participate in any relevant consultations" (SADC 2000). This is evidence of a principled commitment to equitable application of water-related rights in the SADC region.

In terms of the outlined features of regional and multilateral cooperation, it is clear that there is regional cooperation in Southern Africa on water issues. There is also a strong commitment to regional integration. The *Revised Watercourses Protocol,* for example, insists that signatory states must "promote the harmonisation and monitoring of legislation and policies for planning, development, conservation, protection of shared watercourses, and allocation of the resources thereof". However, despite this commitment in the Protocol, full integration has not yet been achieved as regional and basin level policies have not systematically been accommodated in and aligned with the national policies of states.

4.3.4 Regional regimes

There is a high degree of correlation between the six features of regimes and regional water governance initiatives in SADC. The first four features of regimes (see Section 3.2.2), emphasise the need for principles, norms, rules and decision-making procedures. Evidence of these criteria is embedded in both the *SADC Treaty* and the *Revised Watercourses Protocol*. Also, the development of the RWP and RWS adds further clarity to decision-making procedures and rules in relation to water in Southern Africa.

The general principles and norms of regional water cooperation are defined in Article 3 of the *Revised Watercourses Protocol*. This section highlights the need for (SADC 2000):

- maintaining the unity and coherence of shared waters (Article 3.1);
- utilisation of shared water resources being permissible within sovereign territories (Article 3.2);
- respect for customary and international law relating to shared waters management (Article 3.3);
- balancing conservation and use of shared water resources (Article 3.4);

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- close cooperation on studies related to shared waters (Article 3.5);
- information and data exchange regarding shared waters (Article 3.6);
- equitable and reasonable use of shared waters (Article 3.7);
- planned measures aiming to mitigate impacts on the water resource (Article 3.8).

The more specific rules of the Protocol are highlighted in Article 4, which outlines 'specific provisions'. These rules focus on (SADC 2000):

- Planned measures in shared watercourses, emphasising the importance of notifying impacted parties of potential adverse effects, allowing time for parties to reply to notification, consultation and negotiation about planned measures and procedures if notification does not happen (Article 4.1).
- Environmental protection and preservation, emphasising the need to preserve ecosystems, control pollution, prevent introduction of alien invasive species and protect the aquatic environment (Article 4.2).
- The management of shared watercourses, focusing on joint management mechanisms, the importance of joint flow regulation and good maintenance of installations along shared rivers (Article 4.3).
- The prevention and mitigation of harmful conditions, focusing on individual and joint efforts to avoid impacts to shared rivers that will negatively affect riparians (Article 4.4).
- Emergency situations, emphasising the need to notify SADC Water Sector Coordinating Unit and appropriate international organisations of any emergency situation confronting a shared watercourse (Article 4.5).

Specific decision-making procedures are not laid out in the *Revised Watercourses Protocol.* However, the more general rules, discussed above, act as guidelines for decision makers.

The fifth feature of regimes, expressed in terms of a high level of institutionalisation, often in the form of secretariats and organisations, is also evident in SADC where there is a Secretariat (SADC WD) embedded in the broader SADC Secretariat to give particular attention to water issues.

The sixth feature emphasises actors involved in regimes. The SADC structure is heavily biased towards states. Non-state actors who are involved in the running of the Secretariat are selected by governments and closely tied to these elite structures. Evidence of meaningful non-state interaction requires further analysis in so far as stakeholder involvement is a key indicator of hydrosolidarity (see Chapter 5).

There is evidence of regional regime formation in Southern Africa. Notably, there is not a stand-alone regional water regime emerging but a broad development-geared regime, where water is embedded in this regime, as an interlinked issue within the development agenda.

4.3.5 Institutionalisation

Within the broader SADC context, SADC WS complies with the definition of international organisations in that it has multiple member states, the aim of the collaboration is to pursue the mutual interests of member states in terms of shared waters in the region, and there is a formal, continuous structure that allows the work of the organisation to be managed. Therefore, SADC WS takes on the appearance of being an international organisation both because it is part of SADC which is an IGO, and because SADC WS, in particular, complies with the characteristics of an international organisation and since it was constituted by the development and ratification of the *Revised Watercourses Protocol.*

The institutional structure operates on a policy, programme and project level (see Figure 1 for a diagrammatic summary). At policy level, the SADC Council of Ministers provides oversight in terms of policy and implementation of SADC programmes. The various SADC Water Ministers are particularly important in this respect. They provide linkages to the broader continental context (AMCOW) and their own national contexts. The main role of the Council of Ministers is to (SADC 2011: 40):

- oversee the implementation of the RSAPs;
- assist in resolving potential conflict on shared watercourses;
- advise the Council on policies to be pursued.

These Water Ministers are advised by senior water officials as well as the Water Resources Technical Committee (WRTC), which is made up of national water directors from the SADC states. The WRTC (SADC 2011: 40):

- provides strategic direction to RSAP;
- approves RSAP projects;
- establishes project steering committees;
- supervises RSAP operations.

At programme level, the RSAP documents lay out the programmatic approach for a five-year period. The SADC WD is positioned in the Directorate of Infrastructure and Services, which is a section of the broader SADC Secretariat. SADC WD implements the RSAP programmes by consulting and engaging with stakeholders, coordinating projects, disseminating outputs,

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monitoring and evaluating the programme. The actual water division is divided into various units to do this work. The Management Unit guides the implementation of RSAP and the Technical Unit provides strategic support to Member States on core topics (SADC 2011: 41) (see Figure 2 for a detailed diagram of SADC WD).

At a project level, SADC WD oversees projects, but specific roles and functions are defined on a project-by-project basis. In general the SADC WD ensures that projects achieve desired objectives and that RSAP funds are used to produce desired outputs. The project steering committee oversees the different stages of project implementation. The International Cooperating Partners (ICPs) provide financial and technical support. The RSAP sub-committees provide strategic guidance on hydrology, groundwater, water quality, water supply and sanitation and other relevant areas (SADC 2011: 42).

Thus, SADC Water Sector has three main components, the SADC Council of Ministers, the WRTC and SADC WD.

It is arguably somewhat contentious to classify SADC WS as an (international) organisation. On the one hand, SADC WS is embedded within SADC. As a whole, SADC is an IGO that fulfils a range of general roles in that it has a broad developmental agenda focusing on security, economic development, poverty alleviation, environmental issues and other areas. SADC also has more specific roles in that it focuses on particular issue areas (of which water is one example). In this respect, the SADC WD component of the SADC WS is organisationally housed within SADC Secretariat which is an organ of SADC. The SADC WS also has a platform through the Sectoral and Cluster Ministerial Committees which allows the SADC WS Council of Ministers to report on water issues into the broader regional grouping. In this light SADC WS is classified as a specialised focus area within the context of a broader international organisation, namely SADC.

On the other hand, SADC WS takes on the character of being a semi-autonomous transgovernmental organisation in that it is formed by a treaty *(*the *Revised Watercourses Protocol)* and constituted by government members that are not heads of states (i.e. Ministers of Water). This *Revised Watercourses Protocol,* as a document that is separately developed to supplement the *SADC Treaty*, emphasises the need to form a dedicated Water Sector Coordinating Unit. In this capacity SADC WS, as a semi-autonomous transgovernmental organisation, plays both a political and a technical role in the regional water sector. For example, it engages in the politics of scarcity around water but also commissions technical projects on water to provide technical information. It deals with issues of high and low politics (indeed, part of the reason for regional water cooperation occurring in the first place was the fear that this seeming issue of low politics could escalate into one of high politics if water

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scarcity pressures caused conflict over water). SADC WS is only semi-autonomous, however, because its Secretariat capacity (SADC WD) is embedded within the context of the broader SADC Secretariat and it is obliged to report to SADC as a whole.

Figure 1: Institutional framework of the SADC Water Sector
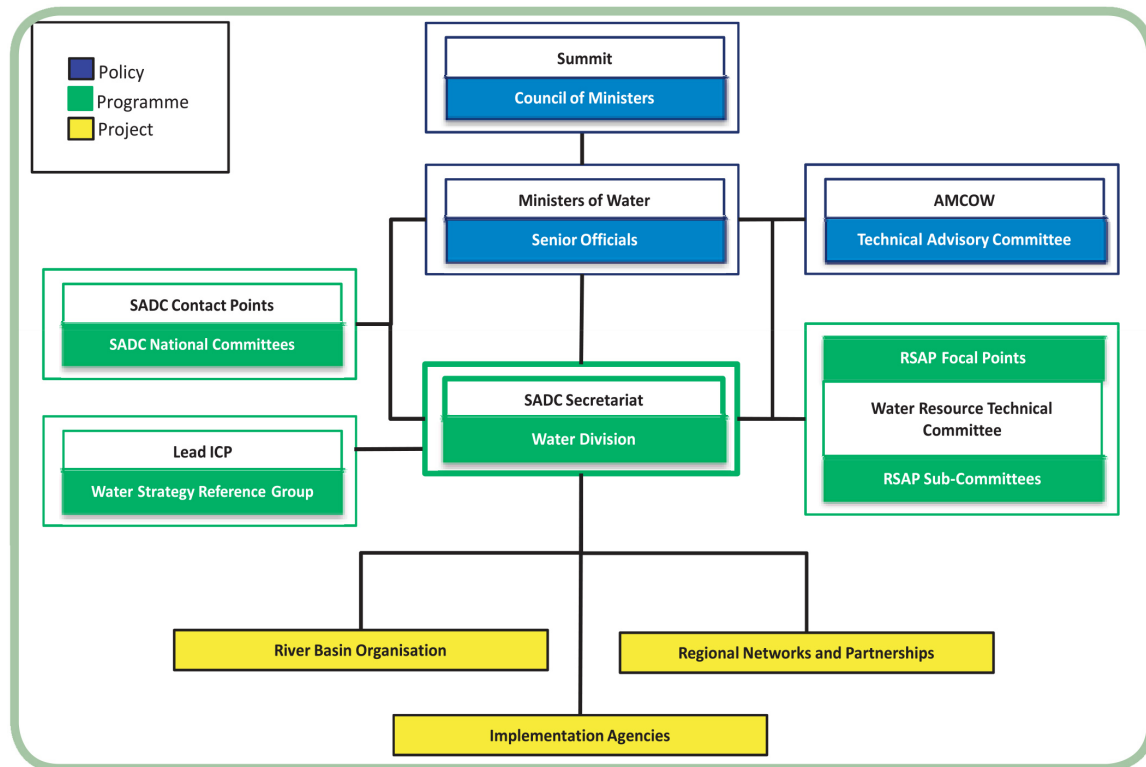
Source: SADC 2013

SADC WS, embedded within the context of SADC as the broader regional organisation, fulfils various organisational roles. It is an instrument for members to pursue their broad development and specific water interests in a Southern African context. In relation to water, for example, the region is notoriously water-scarce and as such member states have a desire to avoid conflict and institutionalise good relationships. SADC WS is an instrument for states to pursue this goal, and also an area for action. The process of revising the *SADC Watercourses Protocol* is a good example of this. SADC WS is also an autonomous actor in its own right. The *Revised Watercourses Protocol,* for example, is lauded as an international example of regional water treaty development. SADC uses this authority to wield influence and affect behaviour.

It is clear from the assessment of forms of cooperation, regimes and institutionalisation that a water regime in the form of SADC WS does exist in SADC. It has manifested through the process of developing the *Revised Watercourses Protocol* and the resultant institutional structure that was mandated by that process.

Figure 2: Organisational structure of the SADC Water Division
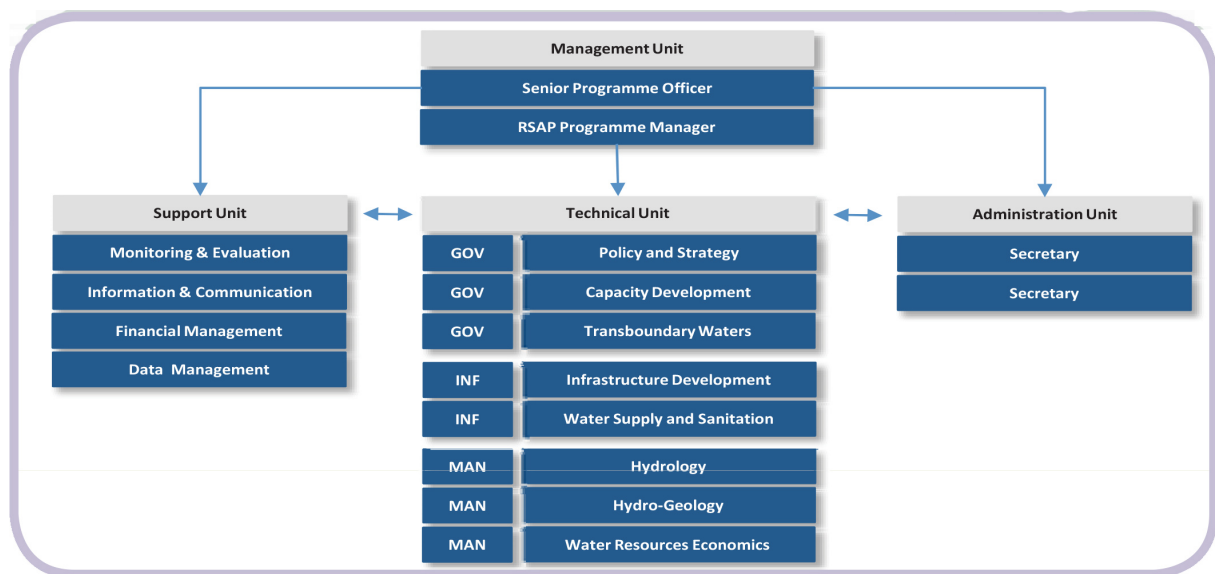
Source: SADC 2013

4.4 ORASECOM: A basin level water regime?

The Orange River, shared by Lesotho, South Africa, Botswana and Namibia, is a transboundary river in SADC. There is a long history of bilateral cooperation in this basin, and subsequent to the signature of the *Revised Watercourses Protocol,* multilateral cooperation has been formalised too. This makes this basin a useful example for water regime analysis at basin level.

4.4.1 The issue of water: Biophysical dimensions of the Orange-Senqu River

From its source in the Lesotho Highlands to its end in the Atlantic Ocean, the river is 2 500 km long. The main tributaries of the river are the Caledon River (on the border between Lesotho and South Africa), the Vaal River (in South Africa), the Fish River (in Namibia), and the Molopo-Nossob River system. The Molopo-Nossob river is referred to as being topographically linked to the Orange River, but it does not directly link in terms of surface flow because about 180 km from the Orange River it seeps into the desert and becomes groundwater. The lower Orange River forms the border between South Africa and Namibia. The Orange River is thus linked to four sovereign states through a complex set of surface and underground water flows (Heyns, Patrick & Turton 2008: 376; ORASECOM 2011: 3) (see Map 2). The mean annual rainfall in the basin is about 400 mm. There is high variability in the rainfall, though, ranging from 2 000 mm in Lesotho to 50 mm at the mouth of the river in Namibia. Evaporation rates in the basin are also highly variable. Similarly, the terrain of the basin is diverse, but the largest part of the basin is semi-arid. Grasslands and scrublands

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dominate land cover. Important natural resources in the basin include the Ramsar Wetland at the mouth of the Orange River, the Kgalagadi Transfrontier Park, Ai-Ais-Richtersveld Transfrontier Park and the Augrabies Falls Nature Reserve. There is a wide variety of fish and bird species, some of which are threatened with extinction (UNEP 2008: 30-32).

The surface waters of the Orange River basin are almost fully allocated (UNEP 2008: 32). Turton (2003c: 32-33) suggests that the Orange River is closed, which implies that any transfer or use of water in upstream areas will mean that there is little left to use downstream. This river is also on the global list of 'at risk' rivers. Significantly, however, absolute closure can be avoided by increasing efficiency in a basin. As such, practitioners are quite uncomfortable with this term, arguing that there is always a creative solution to water scarcity that can be found (Granit 2011; Thamae 2011).

Because of water scarcity and high use, the Orange River has been subjected to extensive artificial modifications. Due to extensive dam development, only about half the runoff of the river reaches the estuary in the west. There are also several water transfer schemes. The Orange River Project transfers water from the Caledon and Orange Rivers to the Modder and Riet rivers (Eastern Cape). The Tugela-Vaal Water Project transfers water from the Tugela River into the Vaal River to meet the high water demands in Gauteng. The Orange-Fish Tunnel Project contributes to the flow of the Fish and Sundays rivers of the Eastern Cape. The Lesotho Highlands Water Scheme transfers water from the source of the river to the Vaal River. Because the water resources of the Orange River are almost fully developed, the Mohale Dam in Lesotho will probably be the last large-scale development along the river (UNEP 2008: 32). South Africa is deriving most of the benefits from the water in this basin and has pioneered extensive infrastructure development to secure supply in the country.

The Orange River is highly vulnerable to climate variability and change which is expected to exacerbate drought and flood events. Although dams help to regulate this, warning systems need to be developed further. The river is used for a variety of different activities, although 64 percent of the water is used for agriculture. Given the extensive water use in this river, pollution is a risk and needs to be managed carefully (Earle *et al.* 2005: 14; UNEP 2008: 35).

Historically there has generally been a lack of information (which is acceptable to all riparians) about the quantity and quality of water in the basin. Part of the reason for this is that different riparians commissioned studies about the river and did not necessarily obtain the same results. This can be a result of technical issues, for example, using different measurement sites, laboratory standards and methodologies, or it can be because of the politicised nature of water, which results in different parties not trusting each other's data (Pyke 2011).

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Map 2: The Orange-Senqu River basin
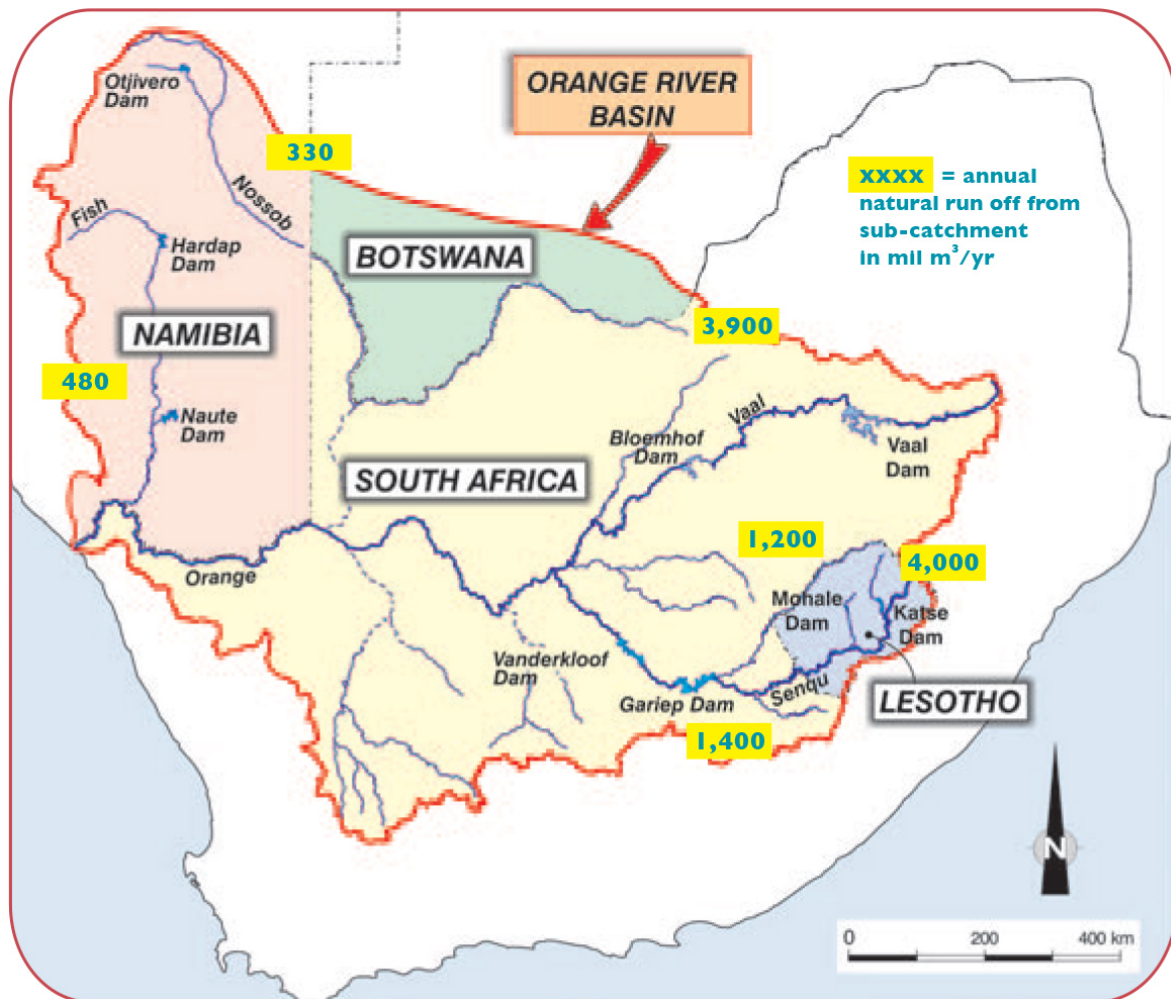
Source: Earle *et al.* 2005: 3

One of the steps forward in this regard is two studies, namely, the *Preliminary Transboundary Diagnostic Analysis of the Orange-Senqu basin*, adopted by ORESECOM in 2008, and the *First Joint Basin Survey: Setting the baseline water resources quality in 2010*, produced by ORASECOM. The former report produced a set of preliminary findings on the water resources and hydrologic regimes, the water quality, the extent of land degradation and the state of alien invasive species in the Orange River basin (ORASECOM 2008). The latter report produced a set of detailed findings about the water quality of the Orange River. This study emphasised that large dams and IBTs have had significant impact on water quality and quantity, which is particularly prevalent in the middle Vaal River. It is significant that the data these studies contain has been produced collaboratively by all the riparian states and as such provides a consolidated set of data about the state of the Orange River. It also provides standard methods for collecting and presenting data about the river (ORASECOM 2011: 1, 33). These studies are ultimately contributing to the development of

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an agreed-upon understanding about the state of the resource. One of the major roles of ORASECOM has been to agree on shared and uniform monitoring sites in various countries in order to generate trust about the data that goes into these reports (Pyke 2011; Thamae 2011).

4.4.2 The strategic importance of the Orange-Senqu River

The Orange River is an important resource to its riparians, given that Namibia, Botswana and South Africa are simultaneously the three driest but also amongst the most economically developed states in the region (Turton 2003a: 137). These riparian states are different from each other in terms of their overall size, their climates, their GDPs, their population sizes and a host of other criteria. Given this diversity, they have differing degrees of dependence on the river and also differing capacity to harness and use this resource. Similarly, there are highly varied national legal frameworks in the respective riparian states that govern the resource. Given this context, each riparian has a unique strategic link to the Orange River.

Lesotho is a small and fully land-locked country that has a large structural dependence on South Africa. This shapes Lesotho's hydro-political position (Jacobs 2009: 125). Lesotho falls entirely within the Senqu basin and contributes 41 percent of the river flow from 3.4 percent of the basin's total area. Lesotho is entirely dependent on the Senqu River for its water supply, which makes it a key strategic resource. One of the most significant strategic benefits of the Senqu River in Lesotho is the payment the country derives from the transfer of water into South Africa through the Lesotho Highlands Water Project (LHWP). Lesotho's royalty income from the water sales has enabled the country to pay off significant foreign debt. There are also hydropower electricity benefits for Lesotho, associated with the LHWP (Earle *et al.* 2005: 16-17; ORASECOM 2011: 3).

There is clearly interdependence between Lesotho and South Africa when it comes to water. This mutual dependence, however, is fraught with contradictions. On the one hand, the countries depend on each other for water exchange, but on the other hand, the states have been highly critical of each other's politics at times. For example, Lesotho openly criticised apartheid and harboured banned ANC members. South Africa felt that this was an infringement of their right to rule within their sovereign territory. These kinds of tensions caused the 1976-78 talks on the LHWP to come to a halt due to worsening relationships. Since 1994, however, South Africa and Lesotho have experienced a relatively peaceful relationship, with the exception of Operation Boleas in 1998[13]. Thus although water sharing

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[13] Operation Boleas was a military intervention by the Republic of South Africa and Botswana, mandated by and under the auspices of SADC, to prevent a military coup or regime change in Lesotho.

relations have been maintained between the two states, they have at times been affected by political issues (Jacobs 2009: 125).

For South Africa the Orange River is of strategic value because it has the largest seasonal runoff of all the rivers in South Africa. Its Mean Annual Runoff (MAR) is about 11 300 million cubic metres annually. Approximately 46 percent of the territory of South Africa is covered by the Orange River basin and 60 percent of the basin's area lies in South Africa. Mining, industrial and agricultural activities, which form the backbone of the country's economy, are heavily dependent on the Orange River. Approximately 800 000 hectares of land are irrigated with its water. Also, the Pretoria-Witwatersrand-Vereeniging Triangle, where much mining takes place, is dependent on this water supply. This is significant because this area contains about 25 percent of the South African population and is a highly economically productive area (Heyns, Patrick & Turton 2008: 376). Also notable is the fact that some of the treated waste water from the Orange River is discharged into the Limpopo basin, shared with Botswana, Zimbabwe and Mozambique. Similarly, water is transferred into the Incomati basin shared with Swaziland and Mozambique (UNEP 2008: 30; ORASECOM 2011: 3). This means that the Orange River also has larger regional implications for South Africa.

This clearly illustrates that the Orange River is central to South Africa's economic productivity and water security, which makes it a sensitive strategic resource. The fact that this river (and many other rivers on which South Africa depends) is a shared watercourse adds to South Africa's vulnerability in this respect. This is related to why South Africa is party to 25 agreements with its neighbours on shared rivers. Since 1910, it has entered into 101 international water-related treaties and agreements, of which 61 specifically deal with water. This long-term commitment to negotiating shared water treaties and having the economic might to develop its water resources arguably makes South Africa the most influential player in the Orange basin. This is however, a fragile hegemony given that South Africa faces a series of national challenges that weaken its capacity to manage the resource and implement its domestic legislation. These challenges include issues such as a struggle to implement the catchment management system and generally weak domestic capacity for implementation (Kistin *et al.* 2009; Jacobs 2010: 34, 127).

Botswana has 13 percent of the area of the Orange River basin but does not have direct access to the perennial flow of the river (UNEP 2008: 30). The Orange River, in this part of the basin, runs underneath the Kalahari Desert and forms part of the Kgalagadi Transfrontier National Park. However, because of its groundwater contribution to the river, Botswana is a legal riparian to the Orange River. There are no perennial water sources in southern Botswana, so this groundwater provides an important and reliable supply of water. The

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groundwater is used to meet the needs of the Transfrontier Park and livestock farming in the area (Earle *et al.* 2005: 21; ORASECOM 2011: 3), and thus the Orange River is a strategic resource in this region.

Namibia is a downstream riparian, contains 25 percent of the basin and makes only a small contribution to the surface flow of the Orange River *via* the Fish River that enters the main-stem of the river about 100 km upstream of the mouth of the river. Development in southern Namibia, in the form of domestic use, irrigation (mostly export table grapes), mining (diamonds and base metals) and future energy production from gas located under the sea, is dependent on the Orange River. In turn this means that there is reliance on South Africa to let enough water through to this section of the river for Namibia to meet its development requirements (Earle *et al.* 2005: 21; Heyns, Patrick & Turton 2008: 377). Clearly, the Orange River is a sensitive and strategic resource in this respect.

4.4.3 Initiatives to govern the basin

The Orange River is of undeniable strategic importance to its riparians. The river, within the territories of these states, is governed by a varied set of national legislations that create a framework for management of the resource. At a transboundary level there are also a host of instruments governing the river. Jacobs (2009: 113) points out that "institutional development on the Orange-Senqu River basin has been fragmented but successful where it has occurred, reaching a level of sophistication and success not found in other river basins in southern Africa. Moreover, institutional arrangements have evolved over time and reflect the changing political, social and economic transformations that have occurred in the region". Six bilateral agreements and one multilateral agreement have been concluded in the basin, of which four are relevant to current transboundary water management. These agreements are listed below and will be briefly considered.

- The *Treaty on the Lesotho Highlands Water Project* (1986) signed between South Africa and Lesotho. This provides a framework for the LHWP and the establishment of the Joint Permanent Technical Commission (JPTC), more recently known as the Lesotho Highlands Water Commission (LHWC) (Treaty 1986).
- The *Agreement on the Establishment of a Permanent Water Commission* (1992) between South Africa and Namibia (Treaty 1992a)
- The *Agreement on the Vioolsdrift and Noordoewer Joint Irrigation Scheme* (1992) between South Africa and Namibia. This agreement has resulted in the creation of the Joint Irrigation Authority (JIA) (Treaty 1992b).

- The Agreement on the Establishment of the Orange-Senqu River Commission (*ORASECOM Agreement*) (2000) (ORASECOM 2000).

4.4.3.1 The Lesotho Highlands Water Project

The LHWP stems from a dual need. The South African government's 1966 Commission of Inquiry into Water Matters predicted the massive water needs that Gauteng would require to continue its development. Also, Lesotho needed to develop its water resources and bargain well with them in order to foster economic development and alleviate poverty (ORASECOM 2007a: 11; Jacobs 2009: 118).

This project is underpinned by extensive bilateral cooperation. In 1978 Lesotho and South Africa established the Joint Technical Committee (JTC), the purpose of which was to establish whether the proposed LHWP was reasonable. By 1983, a more detailed agreement on the project layout was agreed on (LHDA 2013).

Ultimately, in 1986, the *Lesotho Highlands Water Project Treaty* was signed (Treaty 1986). Arising from this agreement the LHWP essentially manages water transfers from Lesotho to South Africa and hydroelectric power generation in Lesotho. The initial funding for the project came from the WB, which increased the credibility and security of the project and, in turn, attracted the attention of other investors (ORASECOM 2007a: 11; LHDA 2013).

The treaty mandates the establishment of two bodies to manage the project. The Lesotho Highlands Development Authority (LHDA) manages dam construction and related issues on the Lesotho side. The Trans-Caledon Tunnel Authority (TCTA) manages the delivery tunnels to South Africa. In addition to this, the JPTC has a monitoring, approval and advisory function in Lesotho. In 1999 the existing treaty was strengthened with Protocol VI of the *Lesotho Highlands Water Project Treaty.* This resulted in the JPTC being renamed the LHWC which essentially has representatives from South Africa and Lesotho who advise on tender processes, technical acceptability and design (LHDA 2013).

The project has several phases. Currently, Phase 1 has been completed; this involved building the 185-metre Katse Dam, the 145-metre Mohale Dam, delivery tunnels to South Africa and the 72-megawatt hydropower plant for supplying power to Lesotho. The first water was delivered from the Katse Dam (Phase IA) in 1998, and provides the Government of Lesotho with approximately 20 million rand per month in royalties. In 2011 the Phase 2 development of the scheme was approved. Although environmental and social impact assessments still need to confirm the final plan of action, it is anticipated that Phase 2 will double the current transfer rate to South Africa through the development of a pump storage

scheme which will generate electricity. It will use the existing Katse reservoir as the lower reservoir and will require the development of an upper reservoir in Kobong Valley (Business Day 2013; TCTA 2013). This project has produced gains such as supplying Lesotho with electricity, supplying Gauteng with adequate water supplies and creating employment opportunities. It has also, however, posed challenges. Some NGOs have complained about the social upheaval that the dam building has caused. There is also increased incidence of water theft, due to increased flow, particularly on the South African side of the border (ORASECOM 2007a: 11-12).

As was previous mentioned, the LHWP has been an essential source of water security for South Africa and has been a valuable source of revenue for Lesotho.

4.4.3.2 The Vioolsdrift and Noordoewer Joint Irrigation Scheme (VNJIS) and the Permanent Water Commission (PWC)

The lower part of the Orange River forms the border between Namibia and South Africa. As a result of these two states sharing the Orange River they have two bilateral arrangements regarding the use of this water.

The PWC grew out of the JTC, which was a working arrangement established between South Africa and Namibia (which was then viewed as a semi-autonomous zone of South Africa). After Namibia gained its independence in 1990, this 1987 working agreement was upgraded to the *Agreement on the Establishment of a Permanent Water Commission* (1992) between South Africa and Namibia (Treaty 1992a). This Commission advises the parties on the development of the lower sections of the Orange River (ORASECOM 2007a: 8).

At the same time as the PWC Agreement was signed, the *Agreement on the Vioolsdrift and Noordoewer Joint Irrigation Scheme* (1992) was also signed between South Africa and Namibia. This agreement has resulted in the creation of the JIA (Treaty 1992b; Turton 2003c: 210). This enabled better implementation and management of the irrigation scheme and also laid out specific volumetric allocations associated with the irrigation scheme (Treaty 1992b).

Soon after these agreements were signed, South Africa launched the Orange River Replanning Study (ORRS) to clarify South Africa's priorities in the basin. Invitations were extended to Namibia and Lesotho to participate, which were declined. In response Namibia and Lesotho commissioned their own studies. Although South African officials were not invited to participate, the results of these studies were shared. This represented a major step towards trust building and information sharing in the basin (Turton 2003c: 211). Based on the

aforesaid, there is extensive evidence of bilateral cooperation in the lower Orange River from the 1980s onwards.

4.4.3.3 The Orange-Senqu Basin Commission

The *Agreement on the Establishment of the Orange-Senqu River Commission* (ORASECOM Agreement) (2000) (ORASECOM 2000) was signed by Lesotho, South Africa, Namibia and Botswana and gave rise to a multilateral commission for the Orange River basin. This is the fourth basin-wide commission to be established in Southern Africa and is the first to form after the adoption of the *Revised Watercourses Protocol*. Significantly, this agreement recognises Botswana as a legal riparian even though it contributes groundwater to the basin but no stream flow. It is to Botswana's strategic advantage to be involved in ORASECOM because by allowing states in ORASECOM to get certain concessions, Botswana can leverage support in basins that are more important to its people, such as the Limpopo and Okavango rivers (Turton & Funke 2008: 60).

Box 3: The mandate of ORASECOM

ORASECOM promotes the equitable and sustainable development of the resources of the Orange River. It provides a forum for consultation and coordination between the riparian states to promote IWRM and development within the basin.

The goals of ORASECOM are to:
- Develop a comprehensive perspective of the basin.
- Study the present and planned future uses of the river system.
- Determine the requirements for flow monitoring and flood management.

ORASECOM is expected to strengthen regional solidarity and enhance socio-economic cooperation within the region.

Source: ORASECOM 2013

The *ORASECOM Agreement* is aligned with the *Revised Watercourses Protocol* and the *UN Watercourses Convention*. As a legal entity ORASECOM can enter into agreements with other parties, has a particular set of institutional arrangements and must act as a technical advisor to member countries on issues of the development, use and conservation of the Orange River (ORASECOM 2000) (see Box 3).

The *ORASECOM Agreement* recognises the right of states to form bilateral agreements in the basin. Significantly, the bilateral arrangements that existed in the basin prior to the adoption of the *ORASECOM Agreement* (for example the LHWC, PWC and VNJIS) are not subordinate to the agreement but their signatories are expected to liaise with ORASECOM. The *ORASECOM Agreement* does specify that bilateral arrangements signed after the signing of the agreement will be subordinate to the Agreement (ORASECOM 2000). This is important, as it implies that ORASECOM does not have the overarching technical mandate in

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the basin, but must work with the bilateral arrangements. Also, the authority and benefits that states, particularly South Africa, gain from the pre-existing bilateral arrangements remain the same as before. There is no significant change of state sovereignty and priorities by signing the *ORASECOM Agreement.*

Box 4: The organisational structure of ORASECOM

Council: The highest body of ORASECOM is the Council, which is supported by a Secretariat and a series of Task Teams who manage projects. The Council serves as technical advisor to the Parties on matters related to development, utilisation and conservation of the water resources of the basin.
The Council consists of delegations from each of the four member states. The delegations are comprised of three representatives from the respective government agencies responsible for water affairs. The respective member states and the delegations are as follows:

- Botswana: Ministry of Minerals, Energy and Water Resources;
- Kingdom of Lesotho: Ministry of Natural Resources;
- Namibia: Ministry of Agriculture, Water and Rural Development;
- South Africa: Department of Water Affairs and Forestry.

Secretariat: The Secretariat's role in programme coordination and management includes the following functions:

- Coordinate ORASECOM activities and implement ORASECOM decisions.
- Serve as a repository of information related to the Orange River basin.
- Act as a focal point for ORASECOM with all external parties.
- Perform ORASECOM administrative functions.
- Conduct communication and promotion for ORASECOM.
- Programme and project development and management.
- Resource mobilisation.

Technical Task Teams: Task teams are established by Council and contain representatives from the member countries. The task teams undertake tasks delegated by the commission, including:

- Communications;
- Financial;
- Legal;
- Technical (including a hydrogeology committee).

Committees report directly to Task Teams, not to Council.

Source: ORASECOM 2013

ORASECOM is guided by a Council and Technical Task Teams. After a detailed joint study by the Commission, the Parties were advised to establish an ORASECOM Secretariat, which happened in 2004. The Secretariat is hosted by South Africa (see Box 4). The Secretariat has four permanent posts: an executive secretary, a water resources specialist, a finance officer and an administrative officer. The Secretariat has developed a number of joint programmes which have attracted funding and support from Germany, France, the EU and the Global Environmental Facility (GEF) (Pule 2011; ORASECOM 2013). This is a clear indication that the creation of RBOs such as ORASECOM attracts donor support.

It is clear that there are numerous water governance initiatives in the Orange River basin, but that only ORASECOM is an example of multilateralism. These initiatives will now be examined in terms of the extent to which they can be classified as a regime.

4.4.4 Forms of cooperation

From the discussion above, it is evident that various initiatives govern the Orange River at national and transboundary level. There is evidence of bilateral cooperation in the upper and lower parts of the river from the 1980s onwards. Notably, the LHWP was negotiated during the apartheid period in South Africa, with the resultant sanctions against and international isolation of South Africa. Considering these limiting factors, it illustrates the strong capacity for cooperation around water that SADC is currently known for. Even in a time when South Africa was politically isolated from its neighbours, bilateral cooperation occurred.

In 2000, the Orange River saw the emergence of ORASECOM. ORASECOM is aligned to many of the definitions and features of multilateral cooperation (see Section 2.3.1). Firstly, the *ORASECOM Agreement* makes provision for signatory states to participate in ORASECOM (ORASECOM 2000). Similar to the *Revised Watercourses Protocol,* the Agreement does not make any particular mention of non-state actor engagement. There is, however, growing acknowledgement of the need for sector and stakeholder engagement around transboundary waters. The numerous challenges associated with this are discussed in the next chapter. In the interim, it is adequate to point out that the members of the ORASECOM Secretariat participate in SADC multi-stakeholder workshops and engage with players in the water sector at a variety of workshops, conferences and events (Thamae 2011; Pule 2011). Secondly, a high degree of institutionalisation is associated with ORASECOM (see Box 3 and Section 4.4.5).

Thirdly, the *ORASECOM Agreement* makes provision for the equitable application of rights to signatory parties. Thus, all states signed onto the Agreement as equals in a legal sense, and are thus all meant to enjoy the same benefits and implications of the agreement. Then, specifically pertaining to water usage, Article 7 lays out the obligations of the parties and emphasises that "(t)he Parties shall, in their respective territories, utilise the resources of the River System in an equitable and reasonable manner with a view to attaining optimal and sustainable utilisation thereof, and benefits therefrom, consistent with adequate protection of the River System. The term 'equitable and reasonable' shall be interpreted in line with the Revised Protocol on Shared Watercourses in the Southern African Development Community (SADC) Region" (ORASECOM 2000). This clarifies the parties' commitment to equitable use of the water resource they share.

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It is thus evident that the *ORASECOM Agreement* and its resultant institutional structure are a clear case of multilateralism at basin level, given that it complies with all the features of multilateralism.

4.4.5 ORASECOM as a basin level regime

ORASECOM illustrates a high degree of compatibility in terms of the regime features described. The first four features emphasise the need for a regime to be based on principles of causation and rectitude, on norms, principles and decision-making procedures. The preamble of the *ORASECOM Agreement* emphasises principles of causation and rectitude by highlighting the sensitivity of the Orange River and the significance of this resource for all riparians. It also emphasises a desire for good neighbourliness in respect of the basin (ORASECOM 2000).

Article 7 of the *ORASECOM Agreement* lays out the norms and principles according to which the parties must operate, emphasising that they have to (ORASECOM 2000):

- cooperate on the implementation of the Agreement;
- avoid significant harm to the resource;
- exchange available information and data and, where possible, to collect and process data in a way that will allow other parties to use the data;
- notify parties about planned measures;
- implement measures to protect the Orange River individually and jointly, such as pollution control and avoiding introduction of alien invasive species.

As is the case with the *Revised Watercourses Protocol*, the *ORASECOM Agreement* does not contain highly specific decision-making procedures. It does however highlight procedures for withdrawal from the Agreement and procedures for notification of planned measures (ORASECOM 2000).

The fifth key feature of regimes is expressed in terms of a high level of institutionalisation. The sixth feature of a regime emphasises that, technically, both state and non-state actors are to be included in the regime. As was previously mentioned, ORASECOM is a state-based commission and is still grappling with how to go about engaging appropriately with stakeholders. There is however a strong state and non-state actor partnership between ORASECOM and the epistemic community, who are integral to their work, mandate and planned projects (Pule 2011; ORASECOM 2013).

From this analysis it can be concluded that ORASECOM illustrates a high degree of correlation with the features of regimes and is thus an example of a basin level water regime. This is supported by Turton and Funke's (2008: 59) comment that "[r]egime creation within

the basin has been fragmented but intense where it has occurred, reaching degrees of sophistication not evident in any of the other basins in Southern Africa."

4.4.6 Institutionalisation

ORASECOM has a high level of correlation with the definition of an international organisation in that it has four member states that are collaborating to pursue their mutual interests in the Orange River basin, and the collaboration has an associated formal structure which is outlined in Article 2 of the *ORASECOM Agreement* (ORASECOM 2000).

The highest body of the commission is the Council, which consists of one delegation per party (made up of no more than three people each). The Council meets at least once a year and operates on consensus decision-making. The Council is essentially the technical advisor to the parties of the Agreement and thus advises on issues such as measures to determine the safe yield of water resources, equitable and reasonable allocation, overseeing the projects of the Commission, and assisting in standardising processes for collecting and processing river related data (ORASECOM 2000).

The Technical Task Teams assist the Council members and Secretariat by providing input on specific areas such as communication, financial, legal and technical issues. The hydrogeology task team has been particularly active in managing and reviewing the various projects that the Commission is involved in (ORASECOM 2013).

The Secretariat keeps the Commission operating on a daily basis and is in many ways the 'face' of the regime. Its functions are to (ORASECOM 2013):

- coordinate ORASECOM activities and implement ORASECOM decisions;
- serve as a repository of information related to the Orange-Senqu River basin;
- act as a focal point for ORASECOM with all external parties;
- perform ORASECOM administrative functions;
- conduct communication and promotion for ORASECOM;
- provide programme and project development and management;
- mobilise resources.

In terms of classification, ORASECOM's organisational structure and main organs are examples of a transgovernmental organisation in that it is formed members of states that are not part of the central foreign policy organs of the government. The ORASECOM was developed by the water departments of the interested parties and signed off by the water ministers. ORASECOM has a very specific technical and advisory role to play in relation to the management of the Orange River basin.

This organisation structure enables a host of productive functions. For example, it is an instrument for its members to communicate planned measures in the basin. It is an arena to meet, to discuss issues of mutual concern and build trusting relationships across borders. Perhaps the most significant contribution to date has been to produce and accept a basin-wide assessment of the Orange River. This required that all parties agree on monitoring sites and processes and mutually participate in the report production (Thamae 2011). Significantly, ORASECOM is a very specific organisation in that it focuses specifically on water issues in the Orange River. To date this organisation has played a largely technical role. It is still a young organisation, as it was only founded in 2000, with a Secretariat officially running from 2006.

Given the above assessment of ORESECOM, it is clear that a multilateral, basin level water regime exists and has a clearly defined organisational component.

4.5 Linkages between regimes: complex relationships and the issue of scale

When regimes form, signatories to the treaty of the regime are expected to harmonise their national policies and other agreements with the content of that treaty. Thus, rationally, a state that signs onto the *UN Watercourses Convention* should align its continental, regional, basin and national water treaties and domestic legislation within this overarching framework to avoid contradictions. The same applies to lower-level frameworks.

In practice, for various reasons, this does not always happen. Firstly, timing is an issue. National legislation or regional cooperation around water may precede the formation of a global-level regime. Thus there is not a top-down cascading effect of regime building, but rather pockets of activity at different scales. Also, the capacity and willingness of states to harmonise their water-related laws and agreements at different scales will be based on a set of highly contextual factors. Do they have the capacity to change their water law? How difficult will it be to re-define existing agreements with riparian partners to bring agreements in line with global trends? Is it in the interests of states to streamline policy alignment? (Nienaber & Claassen 2009: 10-12)

Given these questions and factors, a non-linear rather than a linear process of regime building often occurs in relation to water. The complex, iterative, politicised nature of water regime building in SADC can be schematically represented (see Figure 3). The green circles represent the states that are engaged with SADC WS. These states are all different in terms of their relative power, economic development, social needs and agendas. They cautiously interact with each other, continuously balancing their different agendas, aspirations, interests and needs. The yellow circles illustrate SADC WS and basin level regimes in the region. Ideally the regional and basin level regimes should not contradict each other, although in

practice contradictions do occur. For example, the pre-existing bilateral agreements in the Orange River are not subservient to ORASECOM (Nienaber & Claassen 2009: 12).

Figure 3: A non-hierarchical view of water regimes
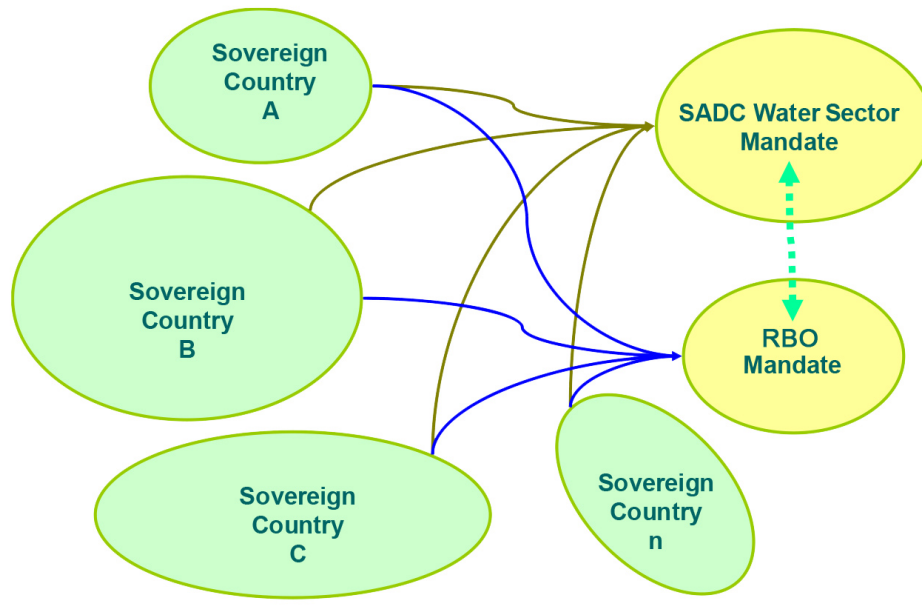
Source: Nienaber & Claassen 2009: 12

The Maryland School [14] has made an extensive contribution to normative literature on transboundary water governance by managing a research project which analysed the principled or normative content of international river basin management with a view to establishing whether a cooperative international approach to water management is occurring. Part of this analysis looked at global principles in basin agreements (Conca, Wu & Mei 2006: 269).

The data sets, from basin-specific interstate agreements for the period 1980–2000, used for this study included: the Systematic Index of International Water Resources Treaties, Declarations, Acts and Cases by Basin (FAO 1978), the Transboundary Freshwater Dispute Database (TFDD 2013) at Oregon State University and the FAOLEX legal database (FAOLEX 2013)

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[14] From 1993 – 2010 Ken Conca worked in the Department of Government and Politics and the University of Maryland. During this time, he and his colleagues engaged in seminal research on the principled or normative content of international river basin management with a view to establishing whether a cooperative international approach to water management is occurring and the extent to which there is normative convergence around key water management principles at different scales. This contribution to water governance literature can be referred to as coming from the Maryland School.

This study investigated three concepts[15]. The first was whether top-down norm dissemination from the international level occurs. Evidence of a global norm diffusion or top-down norm dissemination was assumed to be valid where there was convergence on the norm set of transboundary cooperation in individual basin-specific treaties across highly varied political, economic and ecological landscapes. Eight core principles emerged from the Maryland Data Set, namely equitable use, avoidance of significant harm to other riparian states, sovereign equality and territorial integrity, information exchange, consultation with other riparian states, prior notification, environmental protection and peaceful resolution of disputes. The question is, are these norms prominent because of a global level initiative, such as the *UN Watercourses Convention*, or because of some other influence(s)? There was little evidence that a global regime building process exerted any significant influence on the normative content of regimes. Essentially, these core principles were as well established at the beginning of the study period as they were at the end. The one exception, however, is the importance of consultation. This received increased emphasis, and the predominant mechanism for expressing it was through permanent water organisations (Conca, Wu & Mei 2006: 279-281).

When applying Conca, Wu and Mei's (2006) above-mentioned finding to SADC and the Orange River basin, it can be argued that there is higher than average top-down norm dissemination. This is because the eight core principles of the Maryland Data Set are found in both contexts. Notably, the *SADC Watercourses Protocol* was revised. One of the reasons for this was to align the *Revised Watercourses Protocol* with the *UN Watercourses Convention* that was adopted soon after the development of the *SADC Watercourses Protocol.* Similarly, the *ORASECOM Agreement* is aligned to the *Revised Watercourses Protocol*. This provides clear evidence of the global-level regime building exerting influence in the regional and basin context. It should be noted that harmonisation of principles has not always extended to the national context. In the Orange River basin, Lesotho, Namibia and Botswana have outdated water legislation that has not been properly revised to align to and reflect regional and basin commitments.

The second concept that was investigated was whether bottom-up norm aggregation from the basin-level or national context occurs. This implies that the global framework reflects accumulated practice in the basin-specific treaties and therefore that a bottom-up process of aggregation and lateral diffusion of norms is occurring. The findings, however, were that the rate of development of basin level agreements was not increasing. Where agreements did occur, there was a prior history of cooperation in the basin and few representative multilateral agreements in the

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[15] Jacobs (2009: 74-78) summarises the contribution of the Maryland School and clarifies, in a concise manner. the analysis of top-down norm dissemination, bottom up norm aggregation, and norm contestation. This summary approach is duplicated in this section.

basin (Conca 2006: 118). There is no clear evidence of norm diffusion, but rather evidence that these norms already existed in basins that had experienced long-term cooperation.

In the SADC and Orange River context, there is clear evidence of prior cooperation about water existing in the region. For example, it was the efforts to develop ZAMCOM that led to the formation of the *SADC Water Protocol*. Similarly, in the Orange River, a long history of bilateral cooperation preceded the development of the *ORASECOM Agreement*. In this respect the Maryland School finding is evident in the case studies of this study.

The third concept that was investigated was whether norm contestation occurs, which suggests that there is no clear link between basin-level and global accords and no indication of the process of norm dissemination. The Maryland School findings affirmed this claim. They concluded that norm diffusion happens in a complex and dynamic pattern. Some principles do seems to be subject to a global normative pull such as environmental protection, consultation and peaceful resolution of disputes, but other principles, such as equitable utilization are not pulled in the same way. These and other non-linearities make the term 'norm diffusion' a poor metaphor, according to the Maryland School (Conca, Wu & Mei 2006: 281).

This point is evident in the SADC and Orange River context. Firstly, there was definitely contestation of norms in the development of the *SADC Watercourses Protocol*, which is one of the reasons why the Protocol had to be revised. Similarly, in the Orange River there was clearly also a process of contestation. For example, states insisted that pre-existing bilaterals, which do not fully comply with the ethos of the *UN Watercourses Convention* or the *Revised Watercourses Protocol*, would not be subservient to the *ORASECOM Agreement*. Secondly, principles of what constitutes equitable allocation and no harm, for example, are mentioned but not specifically defined in the regional and basin level agreements.

The reason for summarising these research findings is to rectify the common assumption that, when states accede to global regimes like the *UN Watercourses Convention,* the principles of these agreements will permeate into other agreements at lower levels. This is seldom the case in practice. Norms are not diffused in a linear manner. The process of norm transfer is far more complex and unpredictable than this. Norms are more likely to become entrenched if there is a prior history of cooperation in a basin. A global regime in itself, however, is not an adequate reason for norms to be diffused. Thus, the mutual impact of African and global water regimes should be viewed with caution and should not be seen as part of a linear, hierarchical relationship

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4.6 Conclusion

The aim of this chapter was to introduce the case studies and determine if they are examples of water regimes and if so, what form these regimes take. Both case studies are embedded in a global and continental context. These continental and global contexts interact with the regional and basin level examples in non-linear, non-hierarchical ways. As such, it was important to introduce the African and global water regime building efforts too. In this respect, it is concluded that there is not yet a mature multilateral water regime at global level, despite extensive efforts to create one. At continental level, there is an emergent tacit water regime that is embedded within the broader African development and cooperation agenda. This is most vividly represented by the formation and work of AMCOW. However, there is not a continental-level agreement that unifies and holds African states accountable for a similar set of norms and principles for water governance.

At regional level, however, there is a clearly defined water regime that is embedded within the broad SADC structure. This regime has the support of all states in the region by virtue of them all being signatories to the *Revised Watercourses Protocol.* The work of the regime is given an organisational face through the work of SADC WD, which is positioned in the SADC Secretariat. The challenge at this point is that despite all states having signed the *Revised Watercourses Protocol,* not all states have effectively harmonised their own national water legislation with this Protocol, making implementation a challenge. The actual implementation capacity of the regional regime is also limited as a result of having a small staff component in the Secretariat and only an advisory mandate.

Similarly, in the Orange River basin, there is clear evidence of a basin level regime. Prior to the development of the *Revised Watercourses Protocol,* there had been extensive bilateral engagement in the Orange River basin. Since the entry into force of the *Revised Watercourses Protocol,* however, a multilateral, basin level regime has been established. A significant challenge currently is that the multilateral regime does not have authority over the pre-existing bilateral regimes, and thus ORASECOM has a largely technical and advisory mandate. None the less, it is still an example of a basin level water regime.

Considering these conclusions, it is clear that the subsidiary research question for this chapter: *Do multilateral water regimes exist at regional and basin level in SADC, and if so what form do they take?* has been answered. The subsidiary assumptions have proven to be accurate because a regional water regime in SADC has manifested as SADC WS and a sub-regional or basin level regime (in the Orange River) has developed in the form of ORASECOM. This conclusion provides the foundation for the analysis of how effectively these regimes can promote hydrosolidarity in Southern Africa.

CHAPTER 5

THE ROLE OF SADC WATER SECTOR AND ORANGE-SENQU COMMISSION IN THE PROMOTION OF REGIONAL AND BASIN LEVEL HYDROSOLIDARITY

5.1 Introduction

The aim of this chapter is to analyse the extent to which regional and basin level regimes promote and implement hydrosolidarity. This is a response to the subsidiary research question: *Can SADC Water Sector (SADC WS) and ORASECOM foster hydrosolidarity?* The assumption is that these regimes can partially deliver on the norms and indicators of hydrosolidarity and as such partially realise this ideal. The argument that will be defended is that the inflexibility of regime structures make it difficult to advance beyond established notions of territoriality, state authority and reification of scientific knowledge to embrace the more fluid conceptions of territory, authority and knowledge that hydrosolidarity requires.

To analyse this issue, the emphasis is on the extent that the case studies can support the implementation of the norms and indicators of hydrosolidarity. This includes a consideration of the power and influence of these regimes, their capacity and their positional role in relation to other water governance actors in a regional or basin setting. This chapter draws from a set of qualitative interviews with academics and practitioners involved in transboundary water governance research and management[16]. It is important to recognise that there is only a small community of academics and consultants who specifically work on transboundary water governance research and projects. Similarly, the practitioners who work in the secretariats of these regimes or serve on the various technical committees is also a small group, given the lean organisational structures of these regimes.

5.2 The norms of hydrosolidarity

Hydrosolidarity places a strong emphasis on the ethical issues of social justice and human rights whilst continuing to recognise the needs of the environment and thus has strongly normative underpinnings (Gerlak, Varady & Haverland 2009: 313). The importance of norms (and their application and implementation) is generally well established in regimes. Thus, the extent to which the outlined normative principles of hydrosolidarity have manifested in SADC WS and ORASECOM will now be considered.

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[16] Interviewees are referred to using the in-text reference style of the rest of the document. For interviewee details refer to the Bibliography and Appendix 1.

5.2.1 Cooperation and solidarity in water governance

Cooperation and solidarity in water governance are core norms of hydrosolidarity. The extent to which these norms are evident in the case studies is forthwith considered.

5.2.1.1 The SADC Water Sector context

There is extensive scholarship on transboundary water cooperation. This was triggered by an initial concern that water scarcity may give rise to conflict between states. Notably, however, at the international level it would appear that water is often a catalyst for cooperation given the "hydrological interdependence of the parties" (Jägerskog 2003: 149). Within its context as a water-scarce region, SADC aspires to become as effective as possible. Cooperation around shared water resources is essential for achieving this effectiveness (Granit 2011).

As a result, cooperation is enshrined in various water-related agreements at SADC level. For example, all states in the region have signed the *Revised Watercourses Protocol*, Article 2 of which states that "[t]he overall objective of this Protocol is to foster closer cooperation for judicious, sustainable and co-ordinated management, protection and utilisation of shared watercourses and advance the SADC agenda of regional integration and poverty alleviation" (SADC 2000). This in itself illustrates extensive commitment to water cooperation in SADC.

Additionally, Article 4 (point 3b) of the Protocol specifically emphasises the need for states to cooperate, where appropriate, in responding to needs or opportunities for regulation of the flow of the waters of a shared watercourse. The need for cooperation to mitigate, prevent and eliminate the harmful effects of emergency situations is also enshrined in Article 4(5) (SADC 2000).

Apart from being codified in formal documents, the norm of cooperation and solidarity is also evident in various other ways. Firstly, water, as a specific issue area, is incorporated into the organisational structure of the SADC Secretariat. This creates a platform to manage cooperative relations and also for cooperation between the different issues areas that the SADC Secretariat manages (SADC 2013). Secondly, there is a strong sense of solidarity among SADC states, based on a belief that Africans should work together on African challenges. This attitude also permeates water relations. Thirdly, technical water cooperation occurs through processes such as data sharing and the mutual monitoring of rivers. These technical experts, involved in managing water in different national contexts, have come to know and trust each other over time. Because of these collegial relationships, they exchange ideas and share knowledge. This also fosters transboundary water cooperation in the region (Claassen 2011). Thirdly, engagement in cooperative activities like institution building and treaty development provides a way for more powerful and influential states in the region,

such as South Africa, to build more trusting relationships with their neighbours and in so doing play a more benign hegemonic role in the region. Similarly, less powerful states can increase their security, influence and authority by occupying a moral high ground, engaging in international law-building processes and involving themselves in regional governance regimes. Thus cooperation also has strategic benefits for states in the region (Turton 2011).

There clearly is evidence of a principled and practical commitment to cooperation and solidarity in SADC.

5.2.1.2 The ORASECOM context

Article 7 of the *ORASECOM Agreement* outlines the obligations of parties to the agreement and indicates that "parties shall give their full co-operation and support to the implementation of this Agreement as well as the recommendations of the Council" (ORASECOM 2000). The ORASECOM organisational structure and Secretariat, in particular, helps to monitor the implementation of this Agreement. In this respect, Van Niekerk (2011) contends that basin commissions are "vehicles to make sure that there is good cooperation between countries". He points out that, whilst countries remain sovereign, the commissions are mechanisms to smooth relations and lessen the likelihood of conflict. They also assist states to get to know their various protocols and agreements better, and teach and familiarise states with the principles of international water sharing.

Additionally, a general perception prevails that there is a high level of cooperation in the Orange River basin despite the different distributions of power, influence and resources between the basin states (Pule 2011; Turton 2011). The current amicable coexistence between the bilateral arrangements in the basin and ORASECOM as the multilateral regime is also an expression of this cooperation.

Indeed, there is arguably a higher level of cooperation in this basin than in other basins of the region. This is because two of the four riparians have a national posture based on high levels of cooperation, namely Botswana and Namibia. Given the extreme water scarcity in these countries, they use a clearly articulated cooperative approach to help to secure their water supply that needs to come from the upstream states of South Africa and Lesotho. Lesotho is in many ways compelled to cooperate with South Africa on water, given the land-locked nature of the country and its dependence on the revenue it gets from selling water to South Africa (Turton 2011). Being dependent on the import of water, South Africa has a strategic interest in maintaining cooperative relations to guarantee this water supply.

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There are numerous other indications of states' commitment to cooperation in the basin. States make an annual financial contribution of R500 000 per year to ORASECOM to keep the Secretariat functioning. The host state of the Secretariat (South Africa) additionally covers the rental costs of the Secretariat building (Pule 2011; Thamae 2011). This financial investment in ORASECOM is a clear sign of support and commitment to the cooperative principles of the commission.

States commit their staff members (public servants) to the work of these transboundary organisations. It is usually the more senior technical members of national water departments that are involved in these regimes. It is important to secure the political will and commitment of high level actors in the riparian states as well as to have the support of the technical water managers. In 2011 ORASECOM made important progress in this respect. The ministers of the various member states agreed to meet on an annual basis (from 2011 onwards) to monitor and review ORASECOM's progress. This was an important development because previously ministers had not met regularly. In 2005, five years after the RBO's inception, the water ministers met to update themselves on and give guidance to ORASECOM. The ministers did not meet again until 2011 where it was decided that regular meetings would enable them to be more involved in ORASECOM's programmes (Thamae 2011).

Cooperation is fostered by the close links between the people working in bilateral arrangements along the river, in the ORASECOM Secretariat, on the technical task teams of ORASECOM and in the various water departments of the riparian states. Often there is an overlap of roles, and there are close relationships between the practitioners that manage the Orange River in the different states (Jacobs 2011).

There is clear evidence of a commitment to cooperation and solidarity in the Orange River basin which manifests in a principled and practical manner. Significantly, this basin has had a long history of cooperative relations on water, as is illustrated by the bilateral collaborations that preceded ORASECOM.

5.2.2 Equity in water governance

Cooperation cannot be upheld if those engaged in cooperative action feel that the outcome is inequitable. Thus it is essential to negotiate what constitutes equitable allocation, distribution and use of water.

5.2.2.1 The SADC Water Sector context

Article 3(7) and (8) of the *Revised Watercourses Protocol* (SADC 2000) deal with the issue of equity. These clauses stipulate that within a territory, a watercourse must be used in an

equitable and reasonable manner. This particularly pertains to the fact that the watercourse must be used and developed in a sustainable way that takes account of the other riparians concerned. Essentially this emphasises the right of riparians to utilise the watercourse and their simultaneous duty to cooperate in the protection and development thereof. Equity is determined by (SADC 2000):

- the geographical, hydrographical, hydrological, climatic, ecological and other biophysical factors;
- the social, economic and environmental needs of the riparians;
- the population dependent on the river in each riparian state;
- the effects of the use of a river by one riparian on other riparians;
- the existing and potential uses of the river;
- the conservation, protection, development and economy of use of the water resources of the shared river and the costs of measures taken to that end;
- the availability of alternatives, of comparable value, to a particular planned or existing use.

Pyke (2011) points out that the debates around equity are extremely important because there is no such thing, in legal terms, as a right to a certain allocation on water. Essentially, there is a specific amount of water in a river. A river cannot be equally partitioned between parties. Parties with an interest in this water need to indicate that they want to access the water, why they want to access the water and how this access may impact on other parties. Thus, to use the resource requires some justification of a proven need, a lack of other alternatives to provide for this need and some consideration of how fulfilling this need will impact on others. This process essentially constitutes regularised negotiations around equity, within the framework of the *Revised Watercourses Protocol.*

Notably, whilst the *Revised Watercourses Protocol* enshrines equity, actual debates about equitable allocation usually take place in a basin-specific context. In this respect Article 5(3) of the Protocol encourages the establishment of shared watercourse institutions and insists that SADC WS be provided with agreed updates about progress. Shared watercourse institutions are thus an important vehicle for negotiations relating to equitable allocation. Where there are disputes about allocation and use, matters can be referred, via SADC WS, to the SADC Tribunal, as enshrined in Article 7 of the Protocol (SADC 2000).

There is clearly a principled commitment to equitable use of water resources at regional level. To date, SADC WS has not had to arbitrate over any serious disputes relating to equity. If this were to happen, this would be a real test to see the extent to which the regional grouping can influence and arbitrate such disputes.

5.2.2.2 The ORASECOM context

Article 7 of the *ORASECOM Agreement* outlines the obligations of the member states and requires the equitable and reasonable utilisation of the resources of the river. Member states also need to notify Council of any project, programme or activity related to the river system which may adversely affect other parties (ORASECOM 2000).

The notion of equitable use in the basin is, however, complicated by two main issues. Firstly, the pre-existing bilateral agreements in the basin are not subordinate to ORASECOM. This is clarified in Article 1.4 of the *ORASECOM Agreement*, which states that "[i]n the absence of an agreement to the contrary, nothing in this Agreement shall affect the rights and obligations of a Party arising from other agreements in force prior to the date this Agreement comes into force for such a Party". This can have implications for equity. For example, the LHWP is an agreement between Lesotho and South Africa ensuring South Africa an allocation of water from the transfer project. This does not benefit Namibia and Botswana directly, nor do either of these parties have much influence over the way the LHWP bilateral is managed.

Secondly, the Orange River is already highly developed, to the extent that some scholars, such as Ashton (2011), have referred to this basin as 'closed'. This implies that there is not significantly more water available for abstraction in the basin. Ashton (2011) clarifies the notion of basin closure by adding that it implies that if water resources management continues in a 'business as usual' manner, basins will reach a point of closure where there is no more water available for abstraction. Jacobs (2011) suggests that 'closure' reminds water users that there is not an abundance of water available for use and that actors in a basin need to think differently about water use. Closure does not, however, imply that there are no development options in a basin. For example, more water can be brought into the system through IBTs, and water can be saved through greater efficiency. As a result, this 'new' excess of water can be allocated to 'new' or for 'different' needs (Ashton 2011; Granit 2011; Jacobs 2011). Pyke (2011) contends that the basin has not yet reached closure. According to him, water is still available for low value purposes. It is however becoming more difficult and more expensive to abstract water from the system. For example, larger dams need to be built that will have smaller yields. Furthermore, he points out that efficient water use will be crucial to the future of the basin. This can be achieved by improving irrigation and by investing in higher value crops with lower water demands.

Irrespective of whether the Orange River basin is classified as closed or not, it is important to note that the high levels of abstraction already happening impact on negotiations about equity. Pule (2011) suggests that in this situation of growing scarcity, there tends to be a subtle shift from the idea of equitable allocation to the notion of benefit sharing in the basin.

The former is important where water is still available, whilst the latter is crucial when water allocation opportunities are limited. An increase in benefits through increased efficiency is required.

Both Turton (2011) and Pule (2011) emphasise the pivotal role of ORASECOM to advise on equitable allocation in the context of water scarcity. This regime has to enable actors to comprehend the 'bigger picture' of the basin and to advise role players about more efficient water use options. Notably, ORASECOM only has a mandate to advise parties on how to allocate and use the water, but cannot enforce its recommendations or actively manage equitable allocation.

Judging from the above, there is evidence of an awareness of the importance of equitable use of water resources in the Orange River basin. In years to come, pressure on the basin is likely to increase, which may make negotiations around equity increasingly challenging to manage.

5.2.3 Inclusivity in water governance

Inclusivity in water governance manifests in three ways. Firstly, it has vertical dimensions where state actors at different levels (local to international) need to be represented. Secondly, the type of actors involved in the regimes needs to extend beyond state actors. Thirdly, the issue of water needs to be linked to related issue areas such as energy and agriculture.

5.2.3.1 The SADC Water Sector context

The *Revised Watercourses Protocol* does not make explicit reference to the notion of inclusivity, nor is it specific about basin level agreements needing to be representative of all riparian states (SADC 2000). This is because many states in the region had pre-existing bilateral agreements, focusing on water sharing arrangements amongst other things, in place at the time of signing the *Revised Watercourses Protocol.* As such, states would have been unlikely to support the Protocol if it jeopardised existing water sharing agreements and arrangements in any way.

The Protocol (SADC 2000) does however suggest that 'unity and coherence' of each shared watercourse is important. Linked to this is a commitment to harmonise water use in shared rivers and to ensure that all interventions are consistent with sustainable development and with the SADC objective of regional integration (Article 3). Implicit in this is the fact that exclusivity or the purposeful exclusion of key actors in a watercourse could undermine such endeavours.

SADC WS provides evidence of inclusivity. All mainland states of the region have signed into the *Shared Watercourses Protocol* and no state that wishes to be engaged in such processes is excluded. From a vertical inclusivity perspective (looking from the regional

context into the domestic context), it is noted that this is a high level strategic organisation. Presidents, ministers and senior government officials are involved in this regime. In principle, these office bearers and officials are expected to represent the needs of their domestic constituencies, thus bringing with them the representation of other actors in national or provincial government (Thamae 2011). However, determining whether these individuals are able to represent the needs of local and provincial interests would require a detailed and national-level analysis of water department effectiveness as well as a detailed analysis of the representativeness of the democratic systems in each state. Nonetheless, it is expected of these individuals to represent their constituents. As indicated, several riparian states are still in the process of updating their water legislation with the inclusion of contemporary decentralised views about water management. Even South Africa, that is perceived to be more advanced in terms of its national legislation, is confronted with a series of national challenges such as capacity constraints and implementation challenges associated with the *National Water Act* (Jacobs 2010: 35). All of this undermines the capacity and ability of government representatives at SADC level to represent the various levels of government adequately in a vertical sense and to implement the ideals of the regional water regime in national contexts.

When viewing the regional context within the continental or global context, SADC WS is aligned with the overarching African water governance initiatives and the *UN Watercourses Convention*. Indeed the *Revised Watercourses Protocol* (SADC 2000) implicitly commits all SADC states to the ideals of the *UN Watercourses Convention* by making specific mention of it in its preamble. Thus, even though not all SADC states have acceded to the latter Convention, they are indirectly aligned to it through their regional regime obligations.

In a horizontal sense, SADC in general and SADC WS in particular are state-oriented. This means that SADC WS primarily interacts with and serves the states that constitute SADC's membership. Interaction with states outside of the SADC region mainly takes place with ICPs[17] (SADC Portal 2013). ICPs primarily provide project support by funding or co-funding different research projects. Many of the ICP's are state oriented in the sense that their funds come from states. In terms of non-state actors, SADC WD interacts extensively with the

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[17] Currently, the official ICPs of the SADC WD are: the AfDB, Australian Agency for International Development Aid, Danish International Development Assistance, Department for International Development, Directorate General for International Cooperation of the Netherlands, European Commission, the European Investment Bank, the Federal Ministry for Economic Cooperation and Development, FAO of the UN, the Heinrich Boll Foundation, Institut de Recherche pour le Developpement, International Federation of Red Cross and Red Crescent Societies, Japan International Cooperation Agency. Ministry for Foreign Affairs Finland, Norwegian Agency for Development Cooperation, Swedish International Development Cooperating Agency, Swiss Agency for Development and Cooperation, UNDP, UNESCO, United Nations Agency for International Development, WB, WMO (SADC Portal 2013).

academic community and consultants engaged in transboundary water issues (Hugues 2011). Indeed, many of these people do the project related work for SADC WD. SADC also arranges annual multi-stakeholder dialogues (see Section 5.3.4).

In a 'merging issue areas' sense, SADC WS is well positioned to cooperate across issue areas related to water. This is because SADC WD is embedded in the SADC Secretariat that has a broad commitment to regional development and integration. More specifically, SADC WD is positioned in the Infrastructure and Services Directorate (see Figure 4). This directorate specifically focuses on ICT, Energy, Transport, Meteorology and Transboundary Water Management, meaning that SADC WD works closely with these different issue areas. This is important because water has fundamental links to many aspects of infrastructure development and service delivery. Energy production, for example, cannot be separated from water services delivery as water requires energy for pumping and purification. Similarly energy production often requires water and impacts on water resources in terms of pollution, depending on the selected mode of energy production.

Figure 4: Infrastructure and Services Directorate of the SADC Secretariat
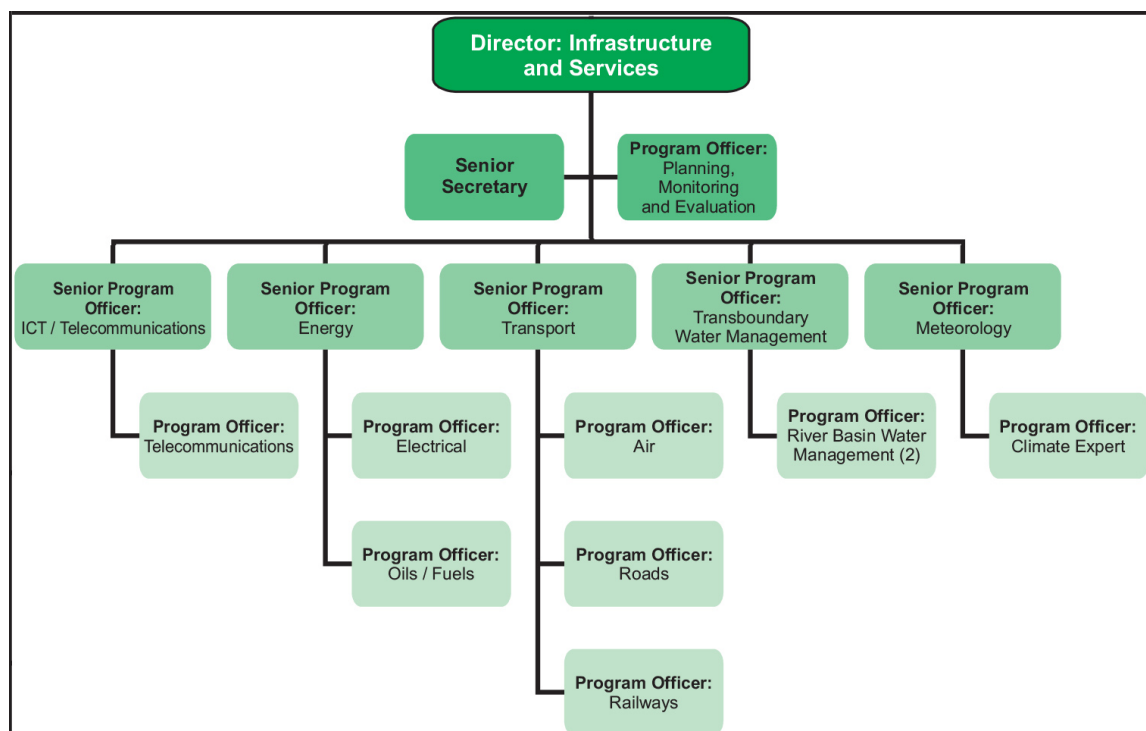
Source: SADC 2013

Whilst SADC WD is organisationally structured in a way that presents opportunity for working across issue areas, the actual extent of integration remains quite limited. One of the clear indicators of this is that, of the dozens of projects listed on the SADC Water Sector ICP

Collaboration Portal (SADC Portal 2013), none demonstrates collaborative work across issues areas, looking, for example, at the water-energy-food nexus or a similarly cross-cutting issue. Jacobs (2011) and Ramoeli (2011) also point out SADC WD itself runs on a small staff component of approximately five people. This makes it difficult to forge partnerships across issue areas when the staff is stretched to capacity just focusing on water specific issues.

Thus, whilst there is evidence of a commitment to inclusivity in water governance in SADC (most clearly articulated by all SADC states being signatory to the *Revised Watercourses Protocol);* the actual application of meaningful vertical, horizontal and issue area inclusivity faces a range of challenges highlighted above. Many of these challenges are linked to the relatively inflexible nature of the regime structure and the hierarchical structure that arises when governments are the main members of the cooperative grouping.

5.2.3.2 The ORASECOM context

ORASECOM is representative of all the riparian states of the Orange River and in this respect is an inclusive and fully representative basin level regime.

From a vertical inclusivity perspective, ORASECOM was the first basin commission to emerge in SADC after the signing of the *Revised Watercourses Protocol* and is thus aligned to the principles of this Protocol. It is also indirectly aligned to the *UN Watercourses Convention* and is supportive of the transboundary water principles promoted at continental level. As is the case with SADC WS, the ministers and technical officials that participate in the various organisation structures of ORASECOM are meant to represent the national, provincial and local concerns of their countries (Van Niekerk 2011). Apart from this indirect form of vertical representation by state officials, ORASECOM also builds local partnerships on an *ad hoc* basis for the purposes of specific projects or of demonstrating specific processes. A recent example of this is the Emfuleni Municipality partnership with *Deutsche Gesellschaft für Internationale Zusammenarbeit* (GIZ), Sasol and ORASECOM. In 2011 ORASECOM launched a project with these partners to reduce water demand and leakage problems on the Vaal River, which is a tributary of the Orange River. This project involved training local technicians in water demand management and conservation, providing new fixtures to local households and public property, doing water awareness educational interventions in schools and working on Water-Wise gardens (Emfuleni Municipality 2012). The purpose is to demonstrate how to reduce water use by up to 15% in a local context. This thinking and learning can then be applied elsewhere in the basin.

From a horizontal engagement perspective, like SADC WS, ORASECOM is also a state-based organisation and primarily exists to support its member states. ORASECOM does, however, engage with a range of ICPs[18] which fund various projects. ORASECOM also participates in the annual SADC multi-stakeholder dialogue and in annual RBO workshops where lessons learned can be shared between state and non-state actors who are invited to participate in the debates and share experiences. There are also close relationships between ORASECOM and the epistemic community.

From an issue area perspective, ORASECOM has a water-specific mandate. Other issues areas such as energy and agriculture are linked through multi-stakeholder dialogues and through the national representatives, who are expected to have a broad understanding of how water is linked to other issue areas in their own countries (Pule 2011). However, the extent to which this is happening or even plausible is questionable. In practice, even at national level, it is a challenge to manage complex problems across issue areas (Jacobs & Nienaber 2011). For example, most states still have separate departments of water, agriculture, energy and tourism despite the fact that these issues are interdependent. The task of cooperative governance is a challenge often resulting in silo based approaches to issues that should actually be managed with a nexus approach. Similar cooperative governance challenges manifest in the transboundary context too.

As is the case with SADC WS, there is evidence of a commitment to inclusivity in the Orange River. However, there are several limiting factors. For example, the issue of meaningful stakeholder representation is not yet resolved and the existing bilaterals (which are not fully inclusive) still have the same authority as before.

5.2.4 Human well-being through water governance

Human well-being needs to be included in the technical and political considerations of water, given the inextricable link between water and society. This also stems from growing recognition that water resources need to be used in a sustainable manner for the benefit of society.

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[18] Currently, the official ICPs of the ORASECOM are: the EU, French Global Environment Facility, Deutsche Gesellschaft für Internationale Zusammenarbeit, United Nations Development Program/Global Environment Fund, Directorate General for International Cooperation of the Netherlands, Institut de Recherche Pour le Developpement, United Kingdom Department for International Development, the International Commission for the Protection of the Danube River (ORASECOM 2013).

5.2.4.1 The SADC Water Sector context

The Preamble of the *Revised Watercourses Protocol* explicitly commits signatories to considering the "existing and emerging socio-economic development programmes in the SADC Region and their impact on the environment" (SADC 2000). This obligation illustrates the need to view water for development in conjunction with conservation. The RWP (SADC 2005b) is much more explicit about states' commitments to human well-being in terms of the way they use water. The whole of Section 4 of this policy is dedicated to water for development and poverty reduction, which has a strong human well-being link. Specific focal points in the policy are: water for socio-economic development; water supply, sanitation and hygiene; water for food security; water for energy development; water for industrial development; and water for sports and recreation. Section 6 of the RWP covers protection from floods and droughts in the basin.

Having noted this policy commitment to human well-being, it is evident that it is difficult to measure whether such ideals are implemented and whether these regional water regimes tangibly impact on improving human well-being. It is difficult to determine this because water is linked implicitly and explicitly to various issues such as food provision, energy provision and industrial development (Hugues 2011; Claassen 2011). Thus, in order to determine the impact that regional water management has on human well-being, numerous issues beyond the direct scope of the water sector must be considered. Also, human well-being is a highly individual, localised and community derived experience. Additionally, as a regional water regime, SADC WS cannot interfere in the domestic affairs of its sovereign members, making it difficult to enforce or monitor human well-being interventions or changes. Given these complexities, SADC WS does not specifically measure the impact that it is having on human well-being but rather tries to influence and support human well-being in an indirect manner.

Despite the challenge of determining the impact of regional water regimes on human well-being, the strategic role of such initiatives should not be underestimated. By providing a platform to develop collective understandings about the state of the resources, to negotiate about use and development of the resources and to engage with other experts dealing with water resources, SADC WS has an indirect impact on human well-being. Also, the experience of human well-being challenges is localised but often the source of the problem has regional scope. As such, it is important to create spaces at regional level to address human well-being issues (Meissner 2011).

On a practical level, there are some useful initiatives to improve human well-being. Firstly, from a project or research perspective, SADC WS has developed a strong relationship with ICPs who have provided revenue for various initiatives (Pyke 2011; Ramoeli 2011). An

example is the River Awareness Kits that are freely available to members and the public and provide information and knowledge management tools for rivers in a region, and capacity development programmes to support the sustainable management of the environment and resources within the basin (Hatfield 2013). Secondly, SADC WS makes recommendations on issues relating to water use which frees water for alternative use (Ashton 2011). Thirdly, there is still enormous potential in the region for infrastructure development along shared rivers. SADC WS, in conjunction with RBOs, is technically well positioned to advise on these developments (Thamae 2011). Infrastructure advice is managed through the SADC Regional Infrastructure Development Master Plan (RIDMP). The main objectives of the RIDMP are to provide infrastructure support for regional integration, to alleviate poverty and to increase access to water supply and sanitation, transport, secure energy resources, communication and ICT facilities in order to enhance economic development (SADC 2012: 5). Muller (2011) does, however, suggest that SADC WS has not been completely successful in promoting and advising on infrastructure development which may be as a result of its dependence on external grant funding for these projects. Whilst there has been limited ICP funding for infrastructure development support, these funders are usually cautious to engage in infrastructure development initiatives. One of the few examples of infrastructure project engagement is GIZ running a project (2005-2015) that considers (amongst other things) how to address more balanced infrastructure development in the SADC Water Sector (GIZ 2013).

Thus, there is a principled commitment to creating an enabling environment for states to deal more effectively with the human well-being challenges that are associated with water-related challenges.

5.2.4.2 The ORASECOM context

The *ORASECOM Agreement* does not make specific mention of human well-being, but does intentionally align with and endorse the *Revised Watercourses Protocol* which commits to viewing water for development in conjunction with conservation (ORASECOM 2000; SADC 2000). As is the case with the regional level, it is difficult to quantify the extent to which ORASECOM improves human well-being at a basin level. It nevertheless aims to provide an enabling environment for shared learning, thereby developing a collective understanding about how to operate in the basin and how to address challenges with sub-regional sources. Pyke (2011) emphasises that the role of the Commission is a strategic one. It thus engages in projects that have local manifestations and regional implications. ORASECOM's role is not to implement changes in the local context but to provide strategic advice by means of timely and appropriate information that will improve decision-making and support member states to deal with water issues and their intersection with other matters such as human well-being. ORASECOM may thus have an indirect impact on human well-being.

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On a more specific level, three activities of ORASECOM are particularly relevant to human well-being challenges. The Secretariat suggests that, by providing advice on water sustainability, they are supporting the promotion of human well-being for present and future generations (Pule 2011). Also, RBOs, in general, and ORASECOM, in particular, are well positioned to provide advice on improved water efficiency, given that they have a basin-wide perspective on these matters (Thamae 2011). By making more water available for use, it may be possible to meet more local user needs. Finally, there are numerous projects that ORASECOM manages that benefit people and human well-being in specific parts of the basin. For example, there is currently a local project funded by Sasol and GIZ that aims to reduce water losses in specific municipalities by fifteen percent which will help to improve service delivery and reliability of water supply. Another project considers how to reduce consumption in the irrigation sector of the Orange River. Other projects look into how to mobilise funds for catchment conservation, which has implications for managing the resource for future generations. All of these issues link to the improvement of human well-being (ORASECOM 2013).

5.2.5 Environmental sustainability

The need to balance the use of the aquatic environment with protection of the environment is a norm of hydrosolidarity. This section assesses how SADC WS and ORASECOM support this process.

5.2.5.1 The SADC Water Sector context

Article 4 of the *Revised Watercourses Protocol* (2000) considers the issue of environmental protection and preservation. Here the focus is on protection and preservation of ecosystems; prevention, reduction and control of pollution; prevention of the introduction of alien species; and protection and preservation of the aquatic environment. These provisions are further articulated in Section 5 of the RWP (SADC 2005b), which focuses on the issue of water and environmental sustainability with specific emphasis on water sustainability, water quality management and alien invasive species.

Ashton (2011) cautions about the difficulty of environmental protection in practice. For example, deciding on the extent to which a river will be utilized for development purposes is a subjective choice. Different stakeholders will have different views on the extent to which the river itself should be preserved, and there is no clearly defined 'correct' approach in this situation. Given the need to use water for development whilst still trying to protect the resource, it is important to realise that pristine rivers may not be attainable.

Given the complex task of maintaining aquatic environments, whilst still utilising their resources, SADC commissions a range of research projects that provide insights into various environmental challenges that different basins in the region are dealing with. There are 111 projects listed on the SADC ICP Portal, all associated with the work of SADC WD and partners (SADC Portal 2013). All of these projects have contributed to the understanding of different aspects of transboundary water resources and management. In so doing, these projects provide knowledge and tools about how to manage conservation and make use of the region's water resources.

Although all projects will not be listed here, a few should be discussed to give a sense of the kind of environmental research that is being done. Firstly, AQUASTAT (running from 2012-2016) is a programme that collects, analyses and distributes information on water resources, water uses and agriculture. It provides users with important information and constitutes an information system on water-linked agricultural issues. Secondly, there was a project referred to as 'Mainstreaming Environmental Sustainability into Planning and Management of Infrastructure' which ran from 2009-2012. This project considered the impact of infrastructure and agriculture initiatives on biodiversity and ecosystem health. In particular, it provides training manuals that assist in the sustainable development of large infrastructure initiatives in SADC. Thirdly, there is a project studying 'Prediction of Climate Variations and its Application in the Southern African Region' (running from 2010-2013). This project assesses seasonal and ocean-atmospheric trends and changes in climate. The intention is to use this information to assess regional risks associated with water and the environment and to contribute to more sustainable livelihood planning (SADC Portal 2013). These projects illustrate that there is relevant research being managed through SADC WD and its ICPs which contributes to the sustainability of transboundary waters in SADC.

5.2.5.2 The ORASECOM context

Article 4 of the *ORASECOM Agreement* (2000) states that the objective of the ORASECOM Council is to serve as a technical advisor to the member countries and perform other functions assigned by the member countries on matters pertaining to the development, utilisation and conservation of water resources in the Orange River. This clearly indicates that water conservation, amongst others, is an important focus in ORASECOM. Similarly, Muller (2011b: 160) has pointed out that, since the Rio Earth Summit, RBOs have been prescribed as part of a broader effort that seeks to secure environmental and conservation interests and provide a platform to promote "Washington Consensus" type approaches to water resource management. . This viewpoint is affirmed by Pule (2011) who suggests that

ORASECOM is well positioned to articulate environmental protection concerns because it has a full-basin perspective of the river (which is an important premise of the ecosystems approach).

Similarly to SADC WD, ORASECOM oversees a range of research initiatives that contribute to an improved understanding of the Orange River basin and how to manage this resource more sustainably. One of the most powerful influences that ORASECOM-based data collection and projects have is the power to get this research accepted and trusted by all the riparian states of the river. This is because ORASECOM is there to facilitate the interests of the entire basin rather than one state in the basin. It is thus ideally positioned to generate baseline studies about the basin that all states can work from (Pyke 2011). The two most significant baseline studies available at this point are the *Preliminary Transboundary Diagnostic Analysis of the Orange-Senqu basin* adopted by ORESECOM in 2008 and the *First Joint Basin Survey: Setting the baseline water resources quality in 2010* (refer to section 4.4.1).

Evidently, the major contribution ORASECOM can make to environmental sustainability in the basin is to generate broadly accepted baseline studies, from which different riparians and water users can plan.

5.2.6 Conclusions about the norms of hydrosolidarity

The preceding discussion considered the extent to which SADC WS and ORASECOM can promote the norms of hydrosolidarity. At SADC level, cooperation and solidarity, equity, human well-being and environmental sustainability are enshrined in the *Revised Watercourses Protocol.* Inclusivity is more indirectly implied in the Protocol. At basin level, cooperation and solidarity, equity and environmental sustainability are enshrined in the *ORASECOM Agreement*. Human well-being is more indirectly included through the *ORASECOM Agreement's* alignment to the *Revised Watercourses Protocol.* Inclusivity is also enshrined in a more indirect manner. Clearly, the norms of hydrosolidarity are mostly enshrined in documented agreements at regional and basin level, which is an important way of entrenching these norms in the region. Thus, the intention to promote water-related ethics by promoting the norms of hydrosolidarity is well established in the water regimes under observation. Significantly, these norms are not explicitly expressed as being the 'norms of hydrosolidarity'. Rather they are individually enshrined in treaties, policy and practice.

The extent to which these norms are entrenched in practice in regional and sub-regional water governance settings is, however, more difficult to ascertain. Hence there is a need to consider the implementation capacity of these regimes in more detail. The preliminary assessment is that the regime structure is limited and too inflexible to realise the implementation of these norms fully. This is particularly the case with the norm of inclusivity

but also manifests, to some extent, with all the other norms discussed. This is largely linked to the fact that regimes do not have the mandate to implement anything in the domestic sphere where the experience of equity, cooperation, environmental degradation and human well-being manifests. Regimes can only advise sovereign states on how to behave in their domestic jurisdiction. Also, regimes struggle to meaningfully include non-state actors in a manner that gives them equal authority, given that the regimes are developed by states and are thus primarily responsible to these signatories.

5.3 The indicators of hydrosolidarity

Over and above providing a normative framework for water governance, hydrosolidarity is also a practical tool to facilitate the fostering of water governance (Gerlak *et al.* 2011: 260). Regimes are one of the sites where the indicators of hydrosolidarity can be implemented.

5.3.1 Shared knowledge about transboundary rivers

Exchanging technical data and knowledge about transboundary water is important for entrenching hydrosolidarity. The extent to which the regional and sub-regional regimes are implementing this indicator will be considered.

5.3.1.1 The SADC Water Sector context

There are various ways through which SADC WS is promoting the development of shared knowledge in the region. It commissions research that provides an understanding of the different water resources in the region. There are a number of ongoing projects that are being managed by SADC WD and their ICPs (see Appendix 3 for a complete list of current and completed projects by river basin in the region) (SADC Portal 2013). The benefit of this research being managed within a regional regime is that the knowledge is produced in a shared context rather than by individual states that may manipulate or use results to their own benefit.

Regional water governance mechanisms attract the interest of donors because donors prefer to channel their financial assistance through regional forums over which they have influence, as primary funders rather than through individual states over which they have weaker influence (Muller 2011a). As a result, SADC WS has managed to secure funding to manage a broad portfolio of projects that align with its specific programme areas. These projects are predominantly executed by consultants who are commissioned by the WD and the ICPs. Although previously there was a strong international consultant presence in the region linked to donor funding, there has been recognition in recent years that it is important for local consultants to work in the region as they are more able to produce contextually relevant information (Hugues 2011; Jacobs 2011).

There are risks associated with such knowledge production. Research takes time to produce results and thus often cannot advise on problems in real time. Sometimes the research lacks relevance to people involved in the daily management of water in national contexts. This can be for a number of reasons, such as the research being developed by foreign consultants who are not necessarily aware of region-specific complexities, or the end users of the research not being properly consulted and included in the research process itself; the results themselves might simply not be practical or useful to implementers (Claassen 2011; Ashton 2011). Also, as pointed out by Conca (2006), this knowledge is produced by elites. Consultants are chosen by state actors, the research is reviewed and accepted by state actors and the research agenda is determined by these same actors. In other words, that which is considered useful knowledge is controlled by a small group of bureaucratic elites. Also, the type of knowledge being authorised is heavily influenced by natural science thinking and methodologies. Other types of social and cultural knowledge are less prevalent. Often the research process is also closed, meaning that only selected players participate in and influence the research process.

SADC WD also produces knowledge by organising learning events and participating in water-related conferences in the region. Two of the more prominent events are the Annual Multi-stakeholder Dialogues and the Annual RBO Workshops (SADC WS 2013). Learning also takes place in a co-learning sense when SADC works with ICPs, with other units in the SADC Secretariat and with RBOs and experts based within national governments. Through these engagements relationships are built and knowledge and experience are shared.

5.3.1.2 The ORASECOM context

The interviews conducted with water experts in the field made it clear that the major task that ORASECOM has pursued to date is that of knowledge sharing and production. This has been done in two ways. Firstly, member states make their existing knowledge, studies and statistics available to each other. This is an important way of getting to know the state of the river better and have a sense of what is known and what still needs to be researched. The problem is that initially member states did not trust other's data (Turton 2011). For example, Pyke (2011) points out that during the LHWP negotiations, South Africa commissioned a group of consultants to analyse the project and the various yields and benefits it would derive. Lesotho then responded by paying its own set of consultants to verify the South African findings. When the team of consultants paid by Lesotho derived the same conclusions as the South African team, Lesotho paid a second group of consultants to re-verify the findings. This anecdote illustrates the mistrust that data from country-specific

projects can generate. This situation is aggravated when some states have the technical capacity to generate data and research and others states have fewer resources to do so.

Given this mistrust, the second way that ORASECOM has dealt with knowledge production has been to source funding for basin-wide studies and other research projects (see Appendix 4 for a list of research projects). Such studies produce shared, rather than nationally owned, knowledge about the Orange River. In order to produce knowledge acceptable to all parties, the riparians of the river needed mutual agreement on a range of technical aspects such as where the testing sites would be for the study, how often samples would be taken from these sites, and what laboratory standards would be used to test the samples. Also, an ORASECOM monitoring team (rather than a state-specific monitoring team) was tasked to do this study. The result has been an agreed upon data set about the state of water quality in the Orange River. This is seen as a major achievement and advancement for ORASECOM (Pule 2011; Pyke 2011; Thamae 2011).

A critical factor when it comes to knowledge production is the issue of the individual personalities working on the Orange River and with ORASECOM. It helps if these individuals come to know and trust each other. Data is less likely to be disputed if officials trust those from other states who are providing them with information. As a result, challenges such as high institutional staff turnover become more important, as these trust relationships take a long time to develop (Claassen 2011; Pyke 2011).

Despite the above mentioned progress that has been made in terms of knowledge production, Muller (2011a) cautions that it is not adequate to simply produce research reports. The value of this information needs to be assessed by the relevant actors before it is likely to be actively used. Only if it is applied in the daily work of relevant officials and technicians will it influence the national contexts where implementation takes place. Since the assimilation of the knowledge is greatly facilitated when such parties are co-producers, Muller (2011a) thus questions the utility of such knowledge being developed primarily at regional or basin-level and argues that the locus of this work should be at a national level.

Whilst this is a valid point, the importance of generating shared data and knowledge about the state of a river has been emphasised and it is not clear whether a mechanism has been developed to generate this shared understanding of the watercourse in the absence of ORASECOM.

5.3.2 Linkages between and integration of actors and issues

Integration and linkages between relevant actors and governance structures can be promoted by including different disciplines in problem solving, by managing water in a

holistic, full water cycle sense, by building connections across issue areas to link water to related issue areas, and by building connections between different types of actors beyond government representatives.

5.3.2.1 The SADC Water Sector context

SADC WS is promoting enhanced integration and linkages in a variety of ways. Firstly, the research projects commissioned by the region (see Appendix 3) involve a wide range of experts from diverse disciplinary backgrounds. Conca (2006), however, warns that there is a bias towards the production of a certain kind of scientific knowledge in such regimes that excludes more local forms of knowledge. Similarly, technical knowledge is seldom representative of social science perspectives and insights (Jacobs & Nienaber 2011). Secondly, SADC WS promotes the holistic and integrated management of water by providing support to basins and national governments in the development of IWRM plans. It also commissions research on groundwater, floods and surface flows that empowers managers to manage water more effectively in an integrated and full-water cycle perspective. IWRM is about linking different aspects of the water cycle to human interaction with water in order to ensure more effective management of the resource (Ramoeli 2011; SADC Portal 2013).

Thirdly, SADC WS links water to other issue areas in a variety of ways. SADC WD is institutionally embedded in a Secretariat that has a broad development mandate. More specifically, SADC WD is embedded in the Infrastructure and Services Directorate, placing it in close proximity to energy, meteorology and ICT issues. Thus it is relatively easy for staff of the Secretariat, working on different issues, to share knowledge and ideas and harmonise thinking (Ramoeli 2011). Unfortunately, SADC WD does have limited capacity. This means that often staff members become pressured to do routine tasks resulting in there being less opportunity for strategic engagement. Linkages are also promoted through multi-stakeholder dialogues (see Section 5.3.4.1).

Apart from engagement with the SADC Secretariat itself, SADC WS is well positioned to build linkages with other governments, regional economic groupings and basin level RBOs. All of these structures are dealing with diverse sets of developmental issues and are interlinked by rivers, overlapping institutional membership and shared challenges. The overlapping membership between regional organisations in Africa (such as SADC) and transboundary rivers that have RBOs on them present an enormous opportunity for building and enhancing linkages to other basins and issue areas to which water is implicitly linked, such as regional economic development (Jacobs 2012: 191) (see Figure 5).

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Figure 5: Linkages between African regional groupings and RBOs
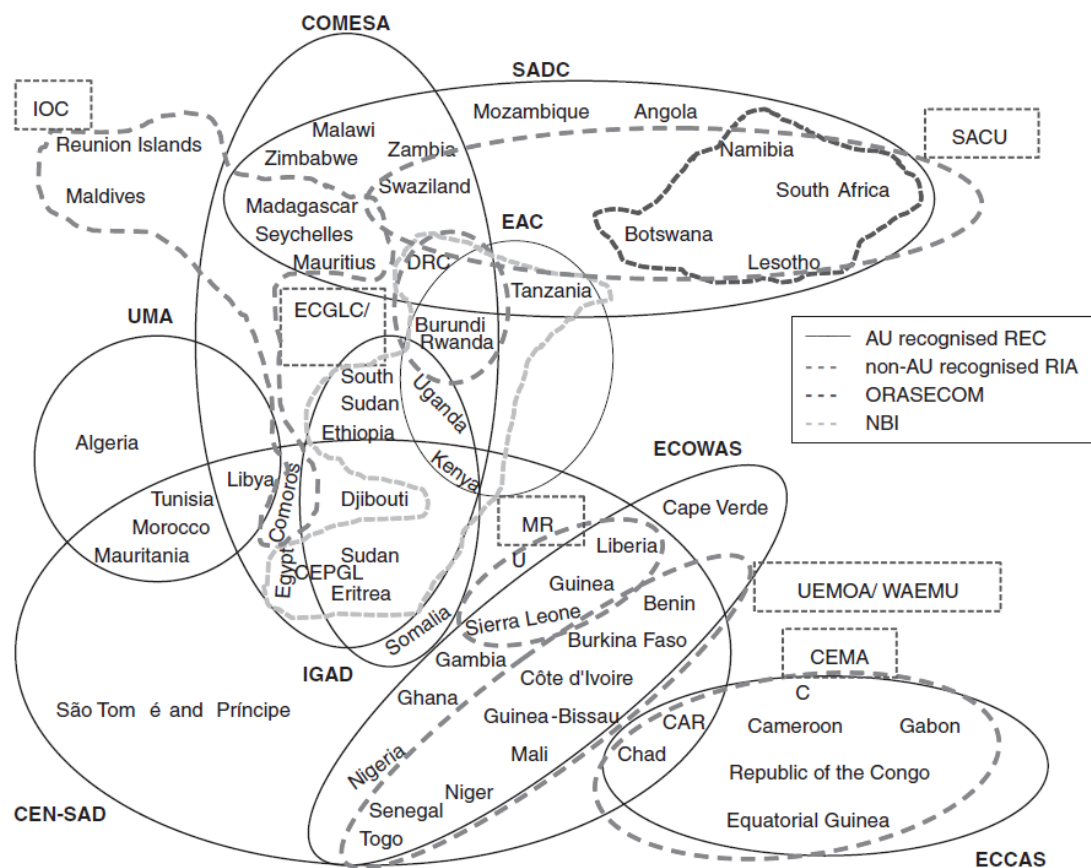
Source: Jacobs 2012: 191

Fourthly, SADC is building linkages with other states outside Africa. These partners are referred to as ICPs (see Footnote 17 for a list of ICPs). ICPs have been instrumental in supporting and funding a range of projects and development initiatives managed through SADC WD. Finally, SADC WS has numerous partnerships with non-state actors. This is primarily maintained through the annual multi-stakeholder dialogues, which are a useful platform for states, NGOs and industry to meet and discuss matters of common concern in the region. There are however, ongoing challenges with non-state inclusion. SADC WS remains profoundly state-centric and upholds the sovereign authority of states. Thus it can do very little to affect implementation at local level, for example, of IWRM plans (Claassen 2011). Also, although non-state actors are interacted with, they are not seen to have equal authority and certainly do not have the same decision-making power as states. Also, although there is an acknowledgement of the need to see water in a complex and interlinked manner, the dominant practice at national and regional level continues to be silo-based. In

other words, forging interlinkages and working together across issue areas remains superficial in many instances (Jacobs & Nienaber 2011).

5.3.2.2 The ORASECOM context

ORASECOM is a water focused organisation with a very specific mandate to advise on water management to its members. Thus, unlike SADC WS, ORASECOM is not embedded within the context of an organisation that focuses on a cluster of development issues other than water, making it more difficult for ORASECOM to build linkages to other issue areas. Granit (2011) contends that it is acceptable for basin level regimes to have a very specific and even narrow role to play. What is, however, important is that these specific organisations are aware of the bigger context that they fit into and the broader development goals that they serve. At present, the RBO depends on its national representatives to represent the views of other sectors such as agriculture and energy (Pule 2011; Thamae 2011). As previously pointed out, it is debatable how effective such representation is (see Section 5.2.3.2).

Despite this water-specific focus, there are also a number of other linkages that ORASECOM fosters with different actors. It is in the process of developing an IWRM plan for the basin. Phase I (2004-2007) focused on data collection to provide an assessment of: hydrology and water resource availability; economics and current use of economic tools in water resource management and allocation; demographics, water demand and water resources development in the basin; water infrastructure in the basin; policy, legal and institutional frameworks related to water resources management in the basin; water quality and pollution; groundwater availability and use; and environmental considerations. Phase II (2009-2011) focused on addressing the gaps identified in Phase I with a specific emphasis on assessment of: the Integrated Orange-Senqu River Basin Model; the development of an Integrated Water Resources Quality Management Plan; the impact of global climate change on the hydro-climatology, water resources, vulnerabilities and adaptation requirements; the environmental flow requirements; and the potential for water demand management in the irrigation sector. Currently Phase III is under development (2012-); it focuses on short- and long-term interventions to implement the IWRM plan (ORASECOM 2013). If adopted, this will allow for more integrated management of the water in the basin to occur and for better water management in relation to socio-ecological systems, and is thus an example of enhanced linkages and integration in the way that water is managed in relation to other aspects of the environment and people.

Also, ORASECOM has a range of linkages with different disciplinary experts that it draws on for the projects it commissions. Similar to SADC WS, there is a strong technical and scientific bias to these

teams of experts. This epistemic community is an influential non-state actor in ORASECOM. ORASECOM also operates with a range of ICPs (see Footnote 18 for a list of ICPs).

Finally, ORASECOM has had success in terms of its linkages with the bilateral regimes in the Orange River basin. Although ORASECOM does not have a superior mandate to the pre-existing bilaterals in the basin, there is the expectation that these different cooperative structures need to communicate with each other. An example, from 2011, of the cooperative linkages between the bilaterals and multilateral in the Orange River is the way that the LHWP requested permission from other riparian states in the Orange River (via ORASECOM) to develop Phase II of the LHWP (Thamae 2011).

A currently underexploited linkage is the potential that ORASECOM has to engage with other regional economic groupings and RBOs by virtue of overlapping membership (see Figure 5). RBOs in the region are likely to face similar challenges and could certainly work more closely together. Indeed, the Executive Secretary of the ORASECOM Secretariat, Lenka Thamae, acknowledges the importance of ORASECOM building more cooperative relationships with other RBOs. Although SADC WD holds annual RBO workshops, which is a good start, much more can be done to deepen this linkage (Thamae 2011).

5.3.3 Organisational structures to foster water governance

There is widespread acceptance that the existence of organisational structures to govern transboundary water can support cooperation around shared waters. The extent to which SADC WS and ORASECOM are achieving this is considered below.

5.3.3.1 The SADC Water Sector context

To a large extent, the point of institutionalisation has already been discussed. Suffice it to say, SADC WD is the organisational manifestation of the regional water regime. The Institutional Framework for Implementation of this regime is enshrined in Article 5 of the *Revised Watercourses Protocol* which clarifies the "Institutional Framework for Implementation". There are four arms to the institutional mechanism of SADC: the Committee of Water Ministers, the Committee of Water Senior Officials, the Water Sector Coordinating Unit (referred to as SADC WD) and the WRTC (SADC 2000).

Of the above mentioned 'arms', it is only SADC WD that has staff permanently dedicated to the daily management of SADC WS. The rest of the committees are made up of Ministers or high-level state bureaucrats who have additional responsibilities within their own national water departments. SADC WD is the 'organisational face' of the water regime in that it has a physical presence in Gaborone, at the SADC Secretariat offices, where it has five permanent

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staff (Ramoeli 2011). There is some debate about whether this is an adequate staff contingent for the WD. Granit (2011) contends that 'lean' RBOs can be highly effective. Jacobs (2011) and Ashton (2011), however, suggest that this small staff results in SADC WD being somewhat over-stretched and under-capacitated.

SADC WD is a particularly important component to the overall functioning of the regional water regime. Chonguica (2009), for example, points out that having a Secretariat that is engaged with managing regime processes on a daily basis is important as it ensures that things happen between meetings. This is helpful because the ministers and bureaucrats that are involved in regional regimes do not necessarily work exclusively on issues relating to SADC WS, but will have a range of additional responsibilities within their national contexts. Regional regimes are only one part of a complex portfolio of tasks that these individuals need to monitor. Thus it is important to have Secretariat staff dedicated to these processes on a full-time basis to prevent stagnation and lack of momentum on agreed issues and plans.

Additionally, the Secretariat is a repository of institutional knowledge. Thus ministers who engage with SADC WS may come and go with electoral terms but the national representatives (appointed officials) that participate in the technical committees as well as the Secretariat staff, serve longer terms. This means that these officials have an important role to play in sharing experience and knowledge but also need to formally capture information to ensure that the institutional knowledge does not disappear when they leave. Muller (2011a) does caution, however, that regimes may be too quick to develop an organisational 'face'.

It is clear that SADC has an institutional and organisational presence for water management at regional level. The organisational structure, in the form of SADC WD, is a small team of people who keep regime programmes running on a daily basis.

5.3.3.2 The ORASECOM context

ORASECOM has an institutional structure in place. The highest body is the Council who advise the Secretariat and Technical Task Teams. The Technical Task Team is made up of expert government employees from the various countries. The Secretariat is the organisational face of the regime and keeps processes operating on a daily basis (ORASECOM 2013).

Peter Pyke, a member of the ORASECOM Technical Task Team, contends that the Secretariat has been an important step forward for ORASECOM. Previously members of the technical task team were expected to manage and oversee projects, arrange meetings, scout funding for projects, take minutes, and confirm that all the councillors were receiving updates

and information. This was a time-consuming task in conjunction with other national departmental responsibilities. The Secretariat has now taken over these tasks. Chonguica (2009) adds that over time RBOs need to play a more stringent monitoring role. He suggests that such a role takes time to develop and requires organisational maturity that is not yet achieved in Southern Africa.

Ashton (2011) agrees that RBO secretariats do enable regional water regimes, in the Orange River in particular, to mature by creating an ongoing organisational presence to develop, monitor and implement programmes. He points out that getting the right people to work in these organisations is crucial. He is of the opinion that the success of the current Executive Secretary of ORASECOM, depends on his leadership qualities, management skills and the respect of his peers. Ashton cautions that these skilled individuals in regional and basin organisations are somewhat hamstrung because there is not enough capacity and support for them, as these secretariats are small. Ashton also points out that it is important to get succession plans and mentoring programmes into place in these secretariats so that skilled individuals with understanding about these secretariats are emerging to take over when the time is right. This view is supported by Muller (2011a), who points out that knowledge cannot simply lie in reports but needs to be in the minds of individuals who actively engage and apply it. For this to happen, effective sustainable knowledge transfer is crucial.

A conclusion that emerged from the interviews is the fact that achieving organisational maturity and development is a long-term process (Ashton 2011; Van Niekerk 2011). The concern in the Orange River is that its water resources are already almost fully allocated, but will need to continue to provide for the needs of new users. As such, ORASECOM will need to mature rather quickly to deal with the pressing challenges in the basin. Notably, Muller (2011a) emphasises that ORASECOM is constrained by its purely advisory and facilitative mandate. As a result it can only mature to the extent that the national governments of the *ORASECOM Agreement* allow it to.

Whilst the above provides a positive account of the importance of water regimes it is important to note that not all interviewees see them as an ideal. Muller (2011a) contends that what is important is to have institutional structures (formal or informal) in place where government officials of different states can meet when water issues of concern need to be addressed. He argues that an organisation that has a full time staff and an autonomous existence in its own right is not essential in a basin setting. Indeed, he believes that these organisations can be problematic as they drain skilled technicians from national contexts and also weaken the links between technicians and national political decision makers. He also suggests that the role that these organisations play tends to be duplicative as well-

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functioning, national government departments should be able to fulfil many of these functions. He also suggests that resources and knowledge actually need to be housed in national state departments as it is still ultimately in this context that real accountability lies and implementation happens. Ultimately, against this background, Muller (2011a) argues that there is evidence to show that inter-state cooperation in Southern Africa has been achieved without formal RBOs. Even where there are weak national administrations, the outsourcing of regional interaction is unlikely to be of assistance since national governments still need trusted information to guide their decisions and capacity to implement them.

5.3.4 Stakeholder involvement in water governance processes

Stakeholder engagement is seen a key indicator of hydrosolidarity. The extent to which the case studies respond to this indicator will be considered.

5.3.4.1 The SADC Water Sector context

The importance of stakeholder participation in regional water governance is recognised in SADC. Section 10 of the RWP details the SADC WS stance towards stakeholder participation. It covers participation and capacity development. This section emphasises that all water resource development and management should be based on a participatory approach, with effective involvement of all stakeholders including the private sector, NGOs and civil society organisations. It also emphasises that this needs to happen at international, regional, river basin, national and community levels. In particular, the positive role that NGOs can play in water resource management at community level needs to be acknowledged and thus NGOs need to be included in regional water management processes (SADC 2005b).

The RWP deals with issues of gender mainstreaming, recognising the central role of women in the provision, management and safeguarding of water and thus the need to involve women fully in the development and implementation of policies, processes and activities at all levels (SADC 2005b).

SADC WS implements these priorities in a variety of ways. It supports RBOs in improving their stakeholder engagement strategies. In 2010, for example, the SADC *Guidelines for Strengthening River Basin Organisations: Stakeholder Participation* was published. This document establishes a set of procedures to assist RBOs to engage more effectively with stakeholders. It focuses on guiding practitioners on how to define a participation framework, how to structure communication and outreach, how to run the actual consultations and how to deepen collaboration with a variety of stakeholders (SADC WS 2010: 1-2). Also, SADC WD holds annual multi-stakeholder dialogues where a range of stakeholders meet and share

knowledge. These annual multi-stakeholder dialogues originated in 2007 through the IWRM Awareness Creation Component of the SADC–DANIDA Regional Water Sector (OKACOM 2012) and focus on water development in SADC with specific focus areas such as groundwater (2009), climate change resilience through benefit sharing (2010), financing water for climate resilience to ensure regional security (2011) and the water-energy-food nexus (2013). No dialogue took place in 2012 (GWP 2013b).

Despite the commitment to stakeholder engagement, numerous challenges still remain. For example, as Chonguica (2009) points out, when a regime and a related organisation are formed by states, the organisation serves the states. It is very difficult for SADC WS to include all stakeholders meaningfully in its engagement process. This is partly because there are so many diverse stakeholders, but also because many of these stakeholders exist in domestic contexts where the regime has no real authority. Van Niekerk (2011) also points out that states like South Africa have their own stakeholder engagement process nationally. It is awkward for states to be given stakeholder feedback from an RBO or SADC WS that is not a democratically elected organ.

5.3.4.2 The ORASECOM context

ORASECOM also recognises the importance of stakeholder engagement. Article 5 of the *ORASECOM Agreement* states that the Council can make recommendations on the form and extent of stakeholder participation required in the territory of the riparian states. The Agreement is not specific about how stakeholders should engage (ORASECOM 2000).

In 2005 ORASECOM began to incorporate stakeholders actively into the management of the basin. This was started by developing a roadmap for stakeholder engagement. This roadmap is guided by the expertise of regional and international experts. The emphasis, however, remains on the fact that stakeholders themselves need to develop mechanisms for engagement that work for them. ORASECOM is there to support and facilitate this process (ORASECOM 2007b: 4). ORASECOM has also made efforts to identify different groups of stakeholders in the basin (Thamae 2011).

Despite a clear acknowledgement of the importance of such initiatives, the ORASECOM Secretariat acknowledges that it is struggling to deal with stakeholder participation. One of the lauded models for stakeholder engagement is from the Okavango River with the 'Every River Has Its People' project (ORASECOM 2007b: 4). This initiative has brought stakeholders together from all three riparian states of the basin (Angola, Botswana and Namibia) (OKACOM 2012). Thamae (2011) points out that part of the reason for the success of this project is that the stakeholder groupings along the river are relatively homogenous.

For example, it is possible to bring together community leaders from the various member states and discuss matters of common concern, given the relatively homogenous circumstances they experience. A similar stakeholder engagement process is not feasible in the Orange River, given the diversity of stakeholders in the basin. For example, in the South African part of the basin, stakeholders are highly organised, generally wealthy and highly influential. In the Botswana, Namibia and Lesotho parts of the basin, the stakeholders are less organised. In Lesotho many of the farmers are poorer and less organised than in South Africa. Thus grouping them all together does not provide an equitable platform where all will be able to express their opinions and be heard in an equal manner.

Currently, Thamae (2011) confirms that there are two models that ORASECOM is considering to improve stakeholder engagement. The first model is a national representation model where ORASECOM would work with key groups in the riparian states who are well positioned to represent stakeholder interests in the Orange River basin. In Lesotho the GWP country partnership has been identified as potentially being positioned to gather stakeholder feedback and represent this input to ORASECOM. Similarly, the GWP country partnership in Botswana could fulfil this role for its stakeholders. In Namibia the Fish River Catchment Management Agency is best positioned to provide input from the Fish and Molopo-Nossob Parts of the catchment. It is not yet clear how to accommodate the South African stakeholders. Diverse actors have to be taken into consideration such as farmer groups, power utilities, water utilities, municipalities, the mining sector and the manufacturing sector. Currently the Catchment Management Agencies are not established in a widespread manner in South Africa so it is unclear who can represent these stakeholders. Van Niekerk (2011) warns however that stakeholder engagement needs to be done in careful consultation with riparian states as they will not willingly accept stakeholder advice from an RBO unless they fully support the processes and stakeholder representation groups.

The second model is a basin level representation model, inspired by the 'Every River Has Its People' project in the Okavango. Given the diversity of stakeholders in the basin, this second model does not seem viable in the Orange River in the near future.

Muller (2011a) cautions however, that stakeholder engagement should not be taken for granted as a 'good thing'. He points out that it tends to be environmentalists who disproportionally try to secure and monopolise this kind of engagement, which is one reason that they support the establishment of RBOs. Similarly, other NGOs and civil society groups often represent particular groups and interests or are used to promote their funders positions. While governments have mechanisms through which to balance these voices and be sensitive to less influential voices that are not being heard, RBOs have no democratic

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underpinnings and are vulnerable to manipulation since they tend be dependent on funding from external sources. Indeed, the absence of substantive funding from their member countries is often a good indication of their limited accountability to them.

5.3.5 Normative frameworks to guide behaviour

The development of normative frameworks is seen as a key indicator of hydrosolidarity. SADC WS and ORASECOM have both codified their core norms.

5.3.5.1 The SADC Water Sector context

As previously indicated, there is a codified normative framework for water governance in SADC. The regional normative frameworks of particular relevance are evident in the *SADC Treaty* (1992) and the RISDP (SADC 2005c). Of more specific relevance to water governance is the *Revised Watercourses Protocol* (SADC 2000), the RWP (SADC 2005b) and the RWS (SADC 2006).

The *Revised Watercourses Protocol* is the major document on which the RWP and RWS is based. The major stipulations of this protocol are to maintain the unity and coherence of each shared watercourse; uphold the existing rules of customary or general international law; promote the sustainable development of the environment; cooperate on the study and execution of projects in shared basins; apply the norms of equitable and reasonable utilisation to all shared resources; protect the watercourses for the benefit of current and future generations; and mitigate or compensate affected parties in the case of significant harm (SADC 2000).

Whilst this treaty has been internationally lauded in terms of its normative content, much still needs to be done to implement these frameworks. States need to align their national legislation with these normative frameworks (Ramoeli 2002: 111).

5.3.5.2 The ORASECOM context

Since ORASECOM was the first basin-wide regime to form after the adoption of the *Revised Watercourses Protocol*, it directly aligns with this Protocol. The *ORASECOM Agreement* (2000) is important as it codifies the content of the *Revised Watercourses Protocol* in the sub-regional context of the Orange River basin. The agreements governing bilateral cooperation along the river also contain norms and associated standards of behaviour. The norms of hydrosolidarity are implied in the *ORASECOM Agreement* although little attention is given to the norm of inclusivity, given the specific mandate of ORASECOM to advise its member states.

The ethical content of the *ORASECOM Agreement* includes the need to uphold the norm of equitable and reasonable utilisation of the resources; the need to uphold the norm of

sustainable development in the Orange River basin; the recognition of the rules and norms contained in the *Helsinki Rules (*1966), the *UN Watercourses Convention* (1997) and the *Revised Watercourses Protocol*; the importance of cooperation and support of the implementation of the *ORASECOM Agreement*; the norm of avoidance of significant harm; and the expectation that exchange of available information and data should occur between member states (ORASECOM 2000).

Importantly, the member states of the Orange River basin are at different stages in terms of harmonising their national legislation to align with regional and basin level agreements. South Africa's legislation is currently the most aligned and developed, although there are still numerous capacity and implementation related challenges linked to this legislation (Jacobs 2009: 124-132). This reality may hinder that capacity to enforce and implement the norms of the regional and basin agreements in national contexts.

5.3.6 Conclusions about the indicators of hydrosolidarity

The capacity of SADC WS and ORASECOM to deliver on the indicators of hydrosolidarity yields a mixed result. On the one hand, it is evident that these regional and basin regimes are actively addressing and realising the indicators of hydrosolidarity. Notably, these indicators are not referred to as the indicators of hydrosolidarity, but are implied in programmes and activities of the regional and basin level regimes. Thus, the case studies respond to all of the mentioned indicators, albeit with challenges and limitations that have been discussed. The limitations in realising these indicators are linked to the capacity of the lean organisational structures, the limited technical and advisory mandate of these regimes and the reality that implementation of most aspects of these indicators resides in the domestic context where the regimes have no jurisdiction.

5.4 Conclusion

The aim of this chapter was to assess the capacity of SADC WS and ORASECOM to foster the norms and deliver on the indicators of hydrosolidarity. Based on the analysis of these regional and basin level regimes and supported by the evidence provided, the conclusion is that these regimes are only partially successful in this task.

On the positive side, there is evidence of the application of all the outlined norms and indicators of hydrosolidarity in SADC WS and ORASECOM. The challenges come in when an analysis is made of the extent to which implementation of the norms and indicators (as opposed to mere acknowledgement and awareness of the issues) can be achieved.

Challenges in implementation arise for three sets of reasons. The first set of reasons involves the capacity constraints within these regional and basin organisations that manifest in various ways:

- Secretariats are small and understaffed, making it difficult for them to deliver on the various indicators of hydrosolidarity.
- Government officials serving on councils and technical task teams are overburdened with diverse portfolios, making it difficult for them to give adequate attention to these transboundary regimes.
- There are vastly different technical capability levels between the member states of SADC, which means that it takes time to level the playing field and produce data that everyone agrees on and can trust.
- There is a high turn-over of skilled staff in national and regional water organisations. This makes it difficult to maintain sustainable knowledge transfer within the regimes.
- There is an urgent need to establish mentoring programmes and succession planning programmes so the current leaders in the sector, who are nearing retirement age, will be replaced by competent people.

Apart from the need to have skilled people to do the daily work of these regimes and use the knowledge that these regimes produce, the issue of personal relationships and influential individuals is also a critical aspect of capacity building. When leaders in water sectors from different countries come to know and trust each other personally, regimes function more effectively. Individuals who come to be trusted and who are skilled in these sectors are influential in the regimes. Currently, there appears to be a fairly high degree of trust amongst key role players in the region. Many of these role players were involved in crafting the regional and basin level agreements and have been part of their development and implementation so far. The problem arises when new people start entering the system. This further highlights the importance of the mentoring and succession plans mentioned above.

The above-mentioned feedback about the capacity constraints and process oriented challenges in regional and basin level regimes predominantly came from the practitioners who were interviewed. These individuals work within these regimes as officials and members of the secretariats and technical task teams, and their daily experience and work is focused on operationalising these regimes. Thus, this kind of perspective highlights the functional concerns associated with running regimes.

The second set of concerns centres on the limited mandate that these water regimes have, as evidenced by the observations of the power and authority of regimes. These regimes are

unable to deliver fully on hydrosolidarity as a result of their limited mandate. Here, interviewees reflected on the fact that the regional and basin regimes have advisory and technical mandates, and explicitly respect the sovereign authority of the member states that constitute them. Two implications of this are that states are not obligated to act on or accept the recommendations of these regimes; and that the domestic domain remains the jurisdiction of states. This makes it very difficult to affect change directly at local level where communities experience water challenges.

This kind of feedback came from government representatives who are confronted by their own national roles and responsibilities. Ultimately the mandate and work of these interviewees is to uphold national obligations and the sovereign right to manage water.

The third concern centres around the limitations of the regime structure itself. This weakness was previously discussed in the theoretical analysis. When considering the practical manifestations of this, it is important to bear in mind that regimes are a type of governance structure that exemplifies three main assumptions. Firstly, states are the most powerful authority when it comes to making decisions on matters pertaining to their sovereign territory. Secondly, regimes internalise rigid views of territoriality. Thirdly, regimes reify a Western-centric, positivist type of scientific knowledge as being the most authoritative statements of truth with which to guide policy.

Thus, water regimes of Southern Africa are limited, as is their capacity to deliver on the indicators of hydrosolidarity. The type of knowledge that is produced by SADC WS and ORASECOM is relevant to government officials and elite water managers. This knowledge has little relevance to people's everyday, lived experience of the rivers and how they understand their own use of the water. The capacity for regimes to promote integration is limited by the fact that they form around highly specific issues. This is because it is easier to get states to agree to narrow, specific cooperation than to broad developmental cooperation. The further problem is that water regimes have an implicit water-centric bias, and often perpetuate silo approaches to the management of water rather than holistic interlinked management of water in relation to other developmental issues. Stakeholder interaction is limited by the fact that regimes have no real mandate in the domestic space where stakeholders reside. Norm entrepreneurship is dependent on states implementing norms in their national contexts, as regimes have no mandate to act here.

This kind of analysis typically came from the academic or researcher interviewees who are in touch with theoretical analyses of constructs such as regimes.

Where do these conclusions leave the hydrosolidarity project in SADC? More specifically what is the answer to the subsidiary research question: *Can SADC WS and ORASECOM foster hydrosolidarity?* The assumption was that regimes can partially deliver on the norms and indicators of hydrosolidarity and as such partially foster this ideal. However, the inflexibility of the regime structure makes it difficult to transcend established notions of territoriality, state authority and reification of scientific knowledge to embrace the more fluid conceptions of territory, authority and knowledge that hydrosolidarity embraces. Essentially, it has been concluded that whilst water regimes are well positioned to contribute to achieving the norms and indicators of hydrosolidarity, they cannot achieve hydrosolidarity completely. Thus the assumption was confirmed.

CHAPTER 6

EVALUATION AND RECOMMENDATIONS

6.1 Introduction

This study assessed transboundary water governance in Southern Africa with the specific aim of analysing the role of regional and basin level water regimes in the promotion of hydrosolidarity in SADC. Water must be governed effectively because, whilst water is essential for development in the region, it is also profoundly scarce. In addition, a significant proportion of the region's water resides in shared basins, making the governance of water a cooperative endeavour. In order to respond to this resource-based dilemma, water regimes are used to govern the resource.

Given this context, this study was underpinned by three considerations. Firstly, because water is essential, scarce and shared, it is important to govern transboundary waters in a way that is fair and avoids conflict. Secondly, there is an extensive body of scholarship on water governance that identifies and proposes norms to guide actors that need to share water. Creative ways need to be found to encapsulate water governance norms in a way that will enable actors to understand how best to share water and how to focus their cooperation efforts. Hydrosolidarity is a concept that brings these ideas together. Thirdly, given the current popularity and use of water regimes to govern transboundary water resources, it is necessary to assess how effective water regimes are in fostering principles of good water governance.

Accordingly, this study adopted two approaches: a critical literature study aimed at the development of a theoretical framework and empirical case studies to analyse and assess the role of water regimes in practice. The first approach involved the development of a theoretical framework to clarify the concepts and analyse the relationship between hydrosolidarity and water regimes. This required an engagement with two different bodies of theory. On the one hand, theory and literature on water governance was studied. This overview focused on water governance literature broadly associated with hydrosolidarity. Such theorising is rooted in the water community, which is largely constituted by natural scientists, engineers and water managers. On the other hand, IR literature was studied, focusing on theory relevant to water regimes in order to explain the potential of water regimes to deliver on hydrosolidarity.

In summary, this development of a theoretical framework to analyse water regimes' capacity to deliver on hydrosolidarity required that technical theorising on water management be merged with IR theory on regimes and associated forms of cooperation. In principle, this task

is fraught with contradictions. Water theorists have articulated an approach to water management in the form of hydrosolidarity. This demands an ethical approach to and an internalised sense of responsibility about water. In IR there is scepticism about the ability of states to act in the interest of the common good. For example, the realist exponents of the rationalist paradigm, in which regimes are situated, contend that states cooperate because they are strategic and do so, as a general rule, to further their own interests. In contrast, the liberal-pluralist exponents of rationalism argue that common interest does exist, along with the possibility of mutual benefits to all concerned which provides incentives for cooperation. This contradiction of mutually beneficial altruism as opposed to self-interested, egoistic behaviour intersects uncomfortably in both theory and practice. This contradiction is further complicated when merging it with attempts to use a rationalist vehicle (such as a water regime) to articulate the norms and indicators of hydrosolidarity.

The second approach required the application of this theoretical framework to the selected case studies, namely SADC WS and ORASECOM. This essentially allowed for conclusions about the capacity of SADC WS (a regional regime) and ORASECOM (a basin regime) to, in practice, deliver on hydrosolidarity. This section of the study also involved interviews with experts in transboundary water governance, managers of RBOs and government officials who interact with these water regimes to better understand how these regimes are actually operating.

In order to capture the learning of these two tasks, this chapter summarises the major research questions, assumptions and related conclusions of this study. The research implications of the study will also be presented, followed by theoretical and practical recommendations.

6.2 Research findings

Given the preceding context, the primary research question of this study has been: *Do regional and basin level multilateral water regimes foster hydrosolidarity in SADC, and if so how and why do they do this?* The assumption was that water regimes in SADC offer a partial promotion of hydrosolidarity by fostering cooperative, institutional structures that allow for the development of norms and standards of behaviour in relation to transboundary water governance. It was also contended that water regimes struggle to create enhanced integration and linkages beyond the water sector and to deal with issues relating to holistic stakeholder participation. In order to determine if this assumption is valid, this study was divided into four subsidiary research questions and assumptions. The findings in relation to these sub-questions assisted in answering the primary research question.

The first subsidiary question was: W*hat contribution does hydrosolidarity make to water governance in a transboundary context?* The assumption was that hydrosolidarity clarifies a

vision for water governance by laying out a set of normative criteria and a set of practical indicators to work towards. This problem was addressed in Chapter 2, which constitutes the water theory section of the study. The chapter summarises the last four decades of transboundary water governance literature with a focus on how this relates to hydrosolidarity. Hydrosolidarity is recognised to be closely related to ecohydrology and IWRM.

What results is a representation of an ideal for transboundary water governance that can be aspired to and can guide transboundary water governance. This is expressed through a clarification of the norms and indicators of hydrosolidarity. The norms that underpin hydrosolidarity include: cooperation and solidarity, equity, inclusivity, water for human well-being and environmental protection in a transboundary water context. In order to guide the implementation of these norms in transboundary water governance practice, a set of indicators of hydrosolidarity were distilled from the literature analysis. These were used in a dual sense, either to identify hydrosolidarity in practice (i.e. to operationalise the abstract concept of hydrosolidarity) or to guide practice to achieve this ideal (i.e. the pursuit of these indicators to implement hydrosolidarity). The indicators were: shared knowledge production in transboundary rivers; creation of linkages and integration within water regimes and between water and related issue areas such as energy and agriculture; the promotion of stakeholder engagement in transboundary water governance; the development of organisational structures to promote water governance; and the development of normative frameworks to guide behaviour. By clarifying the norms and indicators of hydrosolidarity, it was evident that the preliminary research assumption was valid. Hydrosolidarity can and does clarify a vision or goal for good water governance by articulating norms and indicators to work towards in a transboundary context.

Significantly, hydrosolidarity has a high degree of overlap with notions of ecohydrology and IWRM. What makes hydrosolidarity unique is that it emphasises not just a technical approach to holistic water management, but also the importance of ethics in water management. This makes hydrosolidarity an interesting idea to combine with IR theoretical approaches that have a range of different viewpoints on the capacity of states and other actors to behave in an ethical manner.

The second subsidiary question was: *Can multilateral water regimes foster hydrosolidarity?* The assumption was that water regimes offer a partial promotion of hydrosolidarity by promoting cooperative institutional structures and allowing for enhanced linkages and integration between water stakeholders, but that they were unable to achieve full hydrosolidarity given the limits of the rationalist paradigm, which emphasises the centrality of states, the importance of upholding sovereignty of states and the strategic approach that

states have to managing their interests when engaging with other states and actors. Notably, the neo-realist component of rationalism places greater emphasis on states using regimes to secure and maximise their interests, whilst the neo-liberal component of rationalism can acknowledge that states may desire and derive benefit from having a cooperative and supportive approach to engagement with other states and actors.

This question was addressed in Chapter 3, which reviewed IR theory relevant to the study of multilateral water regimes. In particular, a critical review was conducted of the partial theories of IR on cooperation, international regimes and international organisations. Although these partial theories are related and even overlap, they are also contextually and analytically distinct. The concept of a water regime was specifically considered, given that scholars like Turton (2003c) and Jägerskog (2003) argue that water regimes have attributes that are particularly important to consider, such as the role that knowledge production plays in facilitating cooperation and avoiding conflict in transboundary rivers.

An important part of this theoretical analysis was to position the partial theories within the context of the grand debates of IR. The partial theories under analysis are predominantly influenced by the rationalist paradigm. It is necessary to recognise this because rationalism is based on assumptions that need to be made explicit in order to facilitate understanding of the parameters, strengths and weaknesses of a given set of theoretical ideas. The assumptions were furthermore considered through the lenses of a different theoretical paradigm (in this case, that of the constructivist and reflectivist theorists). For example, constructivists emphasise that norms emerge from a social context and are thus influenced by states' interactions with each other and other actors. This is in contrast to the rationalist position that states come into all interactions with a set of pre-defined interests. This constructivist perspective allows for a more transformative role for regimes to play if, by providing a site for interaction, norms can deepen or change over time. Reflectivists highlight the inherent power of states and how this actively excludes other participants from having equal authority. This has important implications for the extent to which water regimes can include non-state actors in their processes. Thus opposing theories offer 'lenses' to reveal other theories for what they are in terms of their underpinning implications and assumptions.

Based on the identification and clarification of the various roles and functions of regimes, multilateralism and international organisations, a link was made to the norms and indicators of hydrosolidarity. The purpose of this was to determine, on a theoretical level, if it was possible for water regimes to enable the realisation of the norms and indicators of hydrosolidarity. Ultimately this analysis validated the subsidiary assumption. Water regimes offer a partial promotion of hydrosolidarity by promoting cooperative institutional structures

and allowing for enhanced integration and linkages between water stakeholders. However, they are unable to achieve full hydrosolidarity, given the limits of the rationalist paradigm within which they are theoretically embedded. These limits are linked to the assumptions that regimes make about states being the most authoritative actors in water regimes; the need to uphold sovereign territoriality; and the bias towards a particular kind of knowledge (rational, scientific knowledge) to guide policy behaviour. These assumptions make it difficult to manage a natural resource that is as fluid as water. Water shows no regard for national borders, often has localised problems with transboundary implications and generally does not fit a neat statist mould.

The third subsidiary question was: *Do multilateral water regimes exist at regional and basin level in SADC, and if so what form do they take?* The subsidiary assumption was that a regional water regime has manifested in the form of SADC WS and a basin level regime (in the Orange River) has manifested in the form of an RBO, namely ORASECOM. Thus, regional and basin level water regimes were established that concur with a narrow definition of a water regime that places emphasis on the need for regimes to be accompanied by an organisational presence.

This subsidiary research question was addressed in Chapter 4, which first introduced and contextualised the case studies. This was done by describing and clarifying the regional and basin level bio-physical context, by depicting existing frameworks for water governance and by analysing the nature, scope and manifestations of water regimes at the global, continental levels. With this contextual background the core case studies were analysed at regional and basin level respectively. A high level of overlap was found at these different levels, but it was not clear if this occurs because of hierarchical normative diffusion. The processes of norm convergence seem to be much more complex than this, and to depend on a range of factors such as prior history of cooperation in a basin.

There is evidence of regime building at global and continental level, but this has not yet matured into an established regime. In both of the case studies, water regimes have clearly manifested. The regional-level water regime is situated within SADC. Thus water (as a sectoral issue) is seen as one issue area on the broad developmental agenda for the Southern African region. The basin level example, in the form of ORASECOM, however, had an exclusive and very specific water focus. Both SADC WS and ORASECOM had clear indications that the states that constituted them are the primary actors in the regime. Sovereign territoriality of these states is protected by the foundational documents of the regimes. Both organisations have developed an organisational presence by developing

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Secretariats, and have a broader institutional presence in terms of a range of technical task teams and advisory councils.

Based on an empirical analysis of transboundary waters and their governing arrangements in SADC and in the Orange River basin, and by applying IR partial theories on cooperation, regimes and international organisations, the subsidiary assumption was validated in that the regional water regime has manifested as SADC WS and the basin level regime in the Orange River has manifested as ORASECOM. Both of these regimes are multilateral (with all parties represented) and have organisational structures to support their daily functioning.

The fourth subsidiary question was: *Can SADC WS and ORASECOM foster hydrosolidarity?* The subsidiary assumption was that these regimes partially deliver on the norms and indicators of hydrosolidarity and as such partially foster this ideal. Given that regimes emphasise sovereign borders and state power and prize scientific knowledge, it is difficult for them to fully support the multi-stakeholder, multi-issue area and inclusive vision that hydrosolidarity promotes.

This sub-question was analysed in Chapter 5 and was largely based on primary documentation produced by the regimes under analysis and a series of unstructured interviews with experts in the field who study these regimes or work for them. This documentary and empirical investigation and assessment revealed that there is evidence of the application of the norms and indicators of hydrosolidarity in these regimes. These norms and indicators are not specifically labelled as being indicative of hydrosolidarity, however. Rather, these principles and norms are contained within legislation and practice as indicators of good or necessary water management in a transboundary setting.

The extent to which these norms and indicators of hydrosolidarity are actually promoted necessitates a more complex response. All of the norms of hydrosolidarity were promoted, to some extent, by either being enshrined in the agreements of the regimes or being practised in various ways. The norm of inclusivity was most weakly promoted. This is because these water regimes have difficulty with the meaningful inclusion of non-state actors, given that their primary mandate is to serve and support states. They cannot meaningfully engage with local inhabitants of riverside land, because this lies within the domestic jurisdiction of sovereign states. Also, these regimes have not yet reached a point of maturity where they are systematically linking up and working across issue areas that are closely associated with water. All of the indicators of hydrosolidarity were also present in these regimes. There are, however, particular challenges around stakeholder engagement and meaningfully enhancing integration and linkages between actors and issues.

Despite there being evidence of an effort to realise the norms and indicators of hydrosolidarity in an implicit sense, these regimes were not able to respond to this challenge in its fullest sense. This was as the result of a number of factors such as capacity constraints, the weak mandate of transboundary regimes and the underpinning weaknesses of the regime structure itself. Thus the subsidiary assumption that these regimes can partially deliver on the norms and indicators of hydrosolidarity and as such partially foster this ideal was validated. The inflexibility of the regime structure renders it difficult to transcend established notions of territoriality, state authority and reification of scientific knowledge and embrace the more fluid conceptions of territory, authority and knowledge that hydrosolidarity supports.

By addressing and answering these questions, the different aspects implied in the main research question were analysed and the latter question answered. The overall assumption was validated, based on the conclusion that water regimes in SADC offer a partial promotion of hydrosolidarity by fostering cooperative, institutional structures that allow for the development of norms and practical standards of behaviour in respect of transboundary water governance. These regimes, nevertheless, do not fully succeed in creating and enhancing integration and linkages beyond the water sector and in dealing holistically with issues requiring and involving stakeholder participation. It is clear that the aspiration of hydrosolidarity in transboundary water relations and governance cannot be achieved by water regimes alone. More detailed analysis of the capacity of individual states, bilateral arrangements and civil society actors is required to determine the potential of a region or basin (rather than an individual regime) to deliver on hydrosolidarity. The task of enabling holistic hydrosolidarity in SADC is the responsibility of citizens of the region and a variety of actors.

6.3 Research observations and implications

Based on these conclusions, three sets of observations and implications need to be considered, namely those for the water discourse, the IR discourse and the case studies.

6.3.1 The transboundary water governance discourse

This study provided clarity about the concept, nature, scope and features of hydrosolidarity. Until now, the term has been used at various high profile water-related events, conferences, seminars and meetings. It has also been used in the political rhetoric of the water sector in various forums. Despite this, there has, as the critical literature review indicated, been little clarification of what the concept actually refers to, especially when considering the normative content and practical indicators thereof. By reviewing the literature explicitly dealing with hydrosolidarity as well as literature associated more generally with water governance, a

conceptual framework was developed to determine the existence of hydrosolidarity and to provide practical suggestions about how to promote hydrosolidarity in transboundary rivers.

The norms laid out as a framework for analysis in the study are not new to transboundary water governance. What is unique about these norms and indicators is that they are explicitly linked to hydrosolidarity, both conceptually and in practice. There is a vast amount of overlap of thinking associated with the transboundary water discourse, more specifically, thinking associated with ecohydrology, IWRM and hydrosolidarity. Whilst this was conceptually confusing, it nevertheless indicates the high level of knowledge diffusion and convergence around certain ideas and values within the transboundary water governance epistemic community.

The investigation of hydrosolidarity as used in the context of the respective case studies indicated that the practitioners of water governance do not specifically use the term and rather prefer the related notion of IWRM. However, the norms and indicators associated with hydrosolidarity in this study are clearly identifiable in the regimes that were analysed. What this also points to is that regimes require practical guidelines and viable alternatives when it comes to the implementation of transboundary water management. Highly theoretical terminology and debates are not part of the way water regime practitioners operate (Pule 2011; Jacobs 2011). Thus, the real emphasis must not be on promoting hydrosolidarity *per se*, but rather on articulating clear criteria for good water governance in these regimes. Nevertheless, an understanding of the nature and scope of hydrosolidarity is required to come to a clearer theoretical understanding of good water governance.

Hydrosolidarity is, however, a useful concept in an academic sense. It helps to focus literature searches and conceptualise the norms and indicators associated with it. In this respect it is also advantageous to avoid the popularised IWRM focus in order not to be entrapped by the IWRM technical discourse.

6.3.2 The International Relations discourse

It is important to acknowledge that there is a close relationship between theory and practice when it comes to the study of transboundary water governance issues. Du Plessis (2000) argued that there is a strong influence of rationalist thinking in water sector scholarship. This can be attributed to the dominant influence of rationalist thinking in the IR discipline as a whole. Linked to this is the ongoing dominance of states and state-run international regimes in practice. Essentially, this study confirmed that rationalist constructs (such as international regimes, multilateralism and international organisations) continue to represent the dominant way of operating in the water sector. There has, however, been some development in water-related scholarship from more constructivist and reflectivist schools of thought.

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Given the link between theory and practice in the water sector, the approach of this dissertation has been to let practice guide the application of IR theory. The assumption is that the dominant paradigm needs to be identified in order to understand the strengths and limitations of specific practices. Water regimes (which are part of the rationalist school of thought) have been identified as being a dominant way of managing transboundary waters in practice. This institutional choice comes with a host of assumptions that are seldom made explicit as it is usually not IR scholars, but rather technical water managers, who develop water regimes in the first place. These assumptions need to be made clear in order to understand the capacity and limitations of the institutional choices, such as international water regimes.

6.3.3 The case study areas

The case study chapters are an assessment of the capacity of SADC WS and ORASECOM to deliver on the norms and indicators of hydrosolidarity. Implicit in this task has been an assessment of the effectiveness of these water regimes to govern transboundary rivers effectively in Southern Africa. This is useful, given that SADC WS and ORASECOM have not been explicitly assessed in terms of their effectiveness in delivering on good water governance (from an academic angle).

A few key observations have emerged. Water regimes cannot deliver on the norms and indicators of hydrosolidarity in isolation. These water regimes are just one type of institutional structure. A more complex portfolio of actors and organisations is necessary to realise the vision of hydrosolidarity on a deeper level. Multilateral regimes are one amongst many actors that are collectively working on the broad project of development and poverty alleviation in SADC, of which water (and hydrosolidarity) is part. Multilateral water regimes work alongside pre-existing bilateral agreements around water, work with national governments, work with civil society and NGOs, work with the epistemic community, and work with water users (such as farmers, miners, energy and industry) who use water in a domestic context. Somewhere in the loose collaboration of this diverse spectrum of actors lies the potential to achieve the grand ideal of hydrosolidarity.

In order to produce more integrated and sustainable solutions to water challenges in the region, we will have to move beyond sectoral based or 'silo' approaches to managing issues such as energy, water, mining, tourism and farming towards seeing these in holistic and interlinked ways.

The stakeholder engagement conundrum needs to be solved if regimes hope to deliver people- and policy-relevant support and solutions to the region. This will require a unique approach for different basins, and skilled commitment from states and the regime staff themselves.

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6.4 Recommendations

In light of this analysis a number of recommendations can be made in terms of a future research agenda as well as policy recommendations for the SADC region.

6.4.1. A multi-theoretical approach to complex problems

Water-related challenges are complex problems that require the inputs of multiple theoretical and experiential perspectives to solve. In this respect there is an urgent need to make theory speak to practice rather than to theorise for the sake of theory. This requires that research works towards open-ended problem formulation that embraces the complexity of a given problem, rather than problem formulation that tries to advance or fill gaps for a particular theoretical paradigm. Also, the complex interactions between different aspects of a problem need to be considered and drawn from different theoretical paradigms. Ultimately, theoretical findings need to engage in both academic debates as well as practical problems. This approach can broadly be referred to as analytical eclecticism (Sil & Katzenstein 2010: 19). Analytical eclecticism is related to the transdisciplinarity approach that has gained traction in water scholarship.

To some extent, this dissertation has engaged with analytical eclecticism and transdisciplinarity by combining a range of technical perspectives on water governance with theories of IR relevant to the analysis of water regimes. Also, the dissertation has not tried to further any particular theoretical debate in IR, but has rather applied IR theory and approaches to the analysis of a practical phenomenon, namely the occurrence of multilateral water regimes in Southern Africa.

However, to rise to the opportunity posed by analytical eclecticism, studies such as these need to become far more diverse, bold and creative in terms of the scope of theories used to deepen analysis. This will require the academic community to deepen its capacity for doing transdisciplinary research in order to solve the challenges of the water sector. This kind of research demands that the theories and expertise of multiple disciplines be combined and also demands that non-academics be brought into the research process to influence, guide and co-define the theoretical framework and response to problems.

This dissertation has illustrated that different ways of thinking do not always fit comfortably together, given that different disciplines and schools of thought have different assumptions. Also, whilst engagement with practitioners will help to determine the relevance of the theoretical framework and research questions, it can also make the process of research more complex and time consuming to manage because interview participants and

stakeholders end up actively influencing the theoretical approach, research questions and form of the study. If, for example, this dissertation had adopted a transdisciplinary approach, where stakeholders were part of co-defining the research problem and question, hydrosolidarity would probably not been selected as a focal point, given that this term does not find traction amongst water managers.

Another interesting issue to consider is the link between theory and practice. For example, one could argue that there is a tendency in practice towards developing multilateral water regimes. The theories that best help us to understand this link are those relating to regimes, cooperation and organisations that largely fall within a rationalist theoretical paradigm. Thus, by allowing practice to guide the application and choice of theory, the dominance of the rationalist paradigm in transboundary water management may be perpetuated. As such, part of the challenge of analytical eclecticism and transdisciplinarity is to try to achieve some degree of balance so that theorising does not perpetuate the *status quo* but allows for change and flexibility in the way in which problems are solved. Part of achieving this flexibility is the need to remain conscious of the assumptions underpinning a given approach, process or practice. Being aware of these assumptions allows for critical analysis of opportunities and limitations of a given way of thinking or doing.

6.4.2 Transboundary problems with local manifestations

The issue of engaging at the relevant scale is an ongoing conundrum in IR. The analysis of transboundary rivers, however, vividly depicts this conundrum. On the one hand transboundary rivers are profoundly international in scale, given that they are shared between countries. In this respect, they are an appropriate topic for IR scholarship and application. On the other hand, rivers are profoundly local and also nationally strategic. This makes them an issue for Political Science and the domestic realm. Given that rivers provide a physical connection between local and international scales, they are also the transmitters of complex challenges that have simultaneously local and regional sources and impacts. To respond to these challenges requires theorising that can simultaneously address local, regional and global issues. This will require bold partnerships between different disciplines, and will challenge prevailing assumptions of IR around statism, national boundaries and sovereignty. Herein lies an interesting theoretical and practical task for ongoing scholarship.

6.4.3 Partnering water regimes with civil society initiatives

This study has indicated that whilst multilateral water regimes are important and play an important role in implementing the norms and indicators of water governance, they can respond only partially to the complex challenge of governing transboundary rivers. This is

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largely because they cannot transcend their internationally bound space to operate in the domestic context where water problems are directly experienced. Part of responding to this limitation and inflexibility is to build strong partnerships with civil society. Civil society players such as NGOs, the epistemic community and businesses can often operate at more flexible and fluid scales in a way that water regimes (constituted by sovereignty-defending states) cannot. This process of building robust partnerships between regimes and civil society actors is a complex one that requires further study as well as bold experimentation and openness in practice.

6.4.4 Water regimes and states

Multilateral water regimes at regional and basin level in SADC are all relatively new and still need time to mature. One of the important signs of maturity will be when states start to take advice from these regimes. Also, important will be the need for states to revise national legislation to bring it in line with regional and basin level protocols and agreements. To date, the regional and basin level RBOs have not advised states to behave in a certain way. Nor have all states in SADC revised their national water legislation. This issue of advising states brings all sorts of issues such as sovereign autonomy and the regime's levels of soft power into the spotlight. Technical managers and RBO Secretariats are going to have to become increasingly skilled in terms of influencing and supporting the development and reform of national legislation. They are also going to have to render their services and advice so indispensable that states will have to consider their advice in future. This will be particularly complex in basins that are already highly developed and allocated.

6.5 Conclusion

The aims of this study have been twofold. The first aim was to distil literature on transboundary water governance and hydrosolidarity into a framework that makes explicit some of the core norms and indicators of appropriate transboundary water governance. Secondly, the aim has been to assess whether regional and basin level multilateral water regimes are able to promote the identified norms and indicators. These aims gave rise to a core research question which focused on the extent to which SADC WS and ORASECOM can foster hydrosolidarity in Southern Africa.

The conclusion is that water regimes are well positioned to help to practise the ethics of hydrosolidarity and partially promote the norms and indicators of this concept. The project of fully entrenching these norms and indicators of hydrosolidarity will, however, require many more actors to be involved. Sustainable transboundary water governance in Southern Africa region into the future depends on many individuals and organisations internalising the notion

of being hydrocitizens and taking up the task of implementing good water governance principles in the contexts (and at the different levels) in which they operate.

Water practitioners and IR scholars alike should not underestimate the positional role that water regimes have to play in delivering on hydrosolidarity, but nor should they expect water regimes to achieve more than this institutional form can deliver on, given its specific assumptions and limitations.

What will be important in the future is to link water, as a sectoral concern, to regional development in SADC explicitly. This will create the necessary awareness and raise concern about this resource that will contribute to the mobilisation of a more diverse spectrum of actors to work on fostering good water governance in the region. This good governance needs to include the promotion of hydrosolidarity by regional and basin level water regimes.

Ultimately, SADC WS and ORASECOM are only partially able to foster hydrosolidarity. These regional and basin level regimes need to work with a wider range of actors to realise and entrench the norms and indicators of hydrosolidarity more deeply in the practice of transboundary water management in Southern Africa.

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APPENDICES

Appendix 1: List of people interviewed

Researcher/ Consultants/ Technical Advisors				
Name and Surname	**Date of Interview**	**Organisation**	**Current Position**	**Career history relevant to this study**
Dr Inga Jacobs	10.11.2011	Water Research Commission (WRC)	Executive Director: Business Development, Marketing and Communication	Masters and PhD in transboundary water governance (IR); Case study expertise: Orange River and Upper Nile River; SADC WS research work; Nile Basin strategy contributor.
Dr Peter Ashton	10.11.2011	Council for Scientific and Industrial Research (CSIR)	Principal scientist	Aquatic ecologist specialising in the impacts and implications of water quality issues on aquatic biodiversity in African river and lake ecosystems, and the role of aquatic ecological issues in decision making in shared river basins. Research interests: Development of research strategies and management plans for shared river basins; Review and evaluation of water quality management plans and river basin plans; Integrated catchment (river basin) management plans; Water quality assessments and evaluation of impacts; Design of water quality monitoring systems; Aquatic biodiversity assessments and their role in river basin management.
Dr Richard Meissner	10.11.2011	Council for Scientific and Industrial Research (CSIR)	Senior Researcher	Masters and DPhil in transboundary water governance (IR); Research and publication experience in transboundary water issues in Southern Africa;

Dr Anthony Turton	11.11.2011	Touch Stone Resources	Director/ Senior Research	Participant in BRICS Academic Forum; Founding member of South African Water and Energy Forum; Specialist trainer on the International Transboundary Water Resource Management Program (Universities Partnership for Transboundary Waters); Extensive publication experience in the fields of hydropolitics, governance and transboundary rivers; DPhil in transboundary water governance (IR); Academic/Research Career at the University of Pretoria and Council for Scientific and Industrial Research (CSIR).
Dr Marius Claassen	4.11.2011	Council for Scientific and Industrial Research (CSIR)	Research Group Leader	Transboundary water governance research focus; Involved with drafting the first and second Nile Basin Strategy; Okavango water withdrawals; RBO research for SADC WS; Benefit sharing theoretical work.
Jacob Granit	8.11.2011	Stockholm International Water Institute (SIWI)	Director: Knowledge sciences	Worked with donor agencies; worked on Nile; benefit sharing issues; WB water resources focus.
Simon Hugues	14.11.2011	Hatfield Consultants Africa	Director	Background in Geography; Information management with a focus in the context of shared rivers; Hatfield has worked extensively with RBOs in the region; Main contributor to the River Awareness Kits.
Practitioners				
Peter van Niekerk	11.11.2011	Department of Water Affairs (DWA) – South Africa	Water Resources Engineering Expert	Involved with drafting the *ORASECOM Agreement* and an ORASECOM commissioner for many years; Involved in drafting the *Revised Watercourses Protocol* and worked for the SADC Water Sector on the WRTC.

Peter Pyke	7.11.11	Department of Water Affairs (DWA) – South Africa	Chief engineer	Works on the Central Water Management Area in South Africa (DWA). This area falls in the Orange River Basin; On the ORASECOM Technical Task Team; Involved with the bilaterals along the Orange River with Namibia and Lesotho.
Lenka Thamae	04.11.2011	Orange-Senqu River Commission (ORASECOM) Secretariat	Executive Secretary	Worked for: Department of Water Affairs in Lesotho; Headed SADC Water sector 1996 – 1998; Environmental consultant for IUCN; Currently Executive Secretary for ORASECOM.
Rapule Pule	07.11.11	Orange-Senqu River Commission (ORASECOM) Secretariat	Water Resources specialist	Hydrologist; Worked for SADC Water Sector; International Council for Local Initiative (ICLI).
Phera Ramoeli	30.11.2011	Southern African Development Community Water Division (SADC WD)	Senior Programme Officer SADC WD	Chief Engineer; Extensive experience in regional water management; Heading up SADC WS.
Ebinezario Chonguica	10.11. 2009	Okavango Basin Commission (OKACOM)	Executive Secretary of OKACOM	PhD in fluvial geomorphology; Lecturer at University of Mozambique (Geography); IUCN country representative for Mozambique; Experience in running RBOs – currently Executive Secretary of OKACOM Secretariat.
Dr Mike Muller	15.12.2011	University of the Witwatersrand (Wits)	Visiting Adjunct Professor	DDG and DG DWA (94-2005) included leadership and oversight of all international relations including negotiating LHWP 1B and Incomaputo treaty as well as participation in UN-CSD; Chaired SCOWSAS, transitional policy forum 1992/4 and led DWA policy development and drafting of new water resources legislation; DBSA water and policy 1988/94. Govt. Mozambique 1979/88

				(DNA); GWP technical advisory committee 2005/11; WITS honorary professor; National Planning Commissioner; Currently leading AfDB and WRC projects on water and regional integration; Published on donors, water policy and Washington Consensus.

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Appendix 2: List of unstructured interview questions

All interviews were initiated by first dealing with ethical clearance issues and then giving some background to the participant about the nature and purpose of the study. In particular, the theoretical framework for the analysis of hydrosolidarity was described in terms of the norms and indicators of the concept.

To remind the participants of the framework, they were given a printed list of the norms and indicators as seen below.

Norms underpinning hydrosolidarity
• Cooperation and solidarity around transboundary waters • Equity of use around transboundary waters • Inclusivity in transboundary water governance • Transboundary waters for human well-being • Protection of transboundary waters
Indicators underpinning hydrosolidarity
• Shared knowledge about transboundary rivers • Enhanced integration and linkages between relevant actors, issue areas and governance structures • Organisational structures for fostering transboundary water governance • Stakeholder involvement in transboundary water governance processes • Development of a normative framework to transboundary water governance

Below are the broad research themes or ideas that were explored in the interviews. Not all of these questions were necessarily addressed in each interview. Due to the nature of unstructured interviews, new issues and questions emerged as part of the interview process.

- Can you briefly describe your involvement in regional and/or basin level water governance in Southern Africa and your main responsibilities in your work?
- Can you please analyse and problematise my hydrosolidarity framework. Do the articulated norms and indicators make sense in terms of your experience in the water sector?
- Do you agree that there is broad buy-in (in a SADC context) around the norms underpinning hydrosolidarity?
- Can you reflect on the positional role of 'catch all' multilateral water governance institutions in SADC at regional and/or basin level? In other words, how do multilateral initiatives fit into the spectrum of other water governance initiatives such as bilateral agreements, national governments, civil society, economic actors such as energy, industry, and farming?

- Is the suggestion that basin-wide institutions are the most ideal mechanisms to govern shared waters a fair one? Or do these multilateral regimes have a very specific role to play in collaboration with other initiatives?
- What is the role of basin-wide RBOs in basins approaching closure? Are they less or more likely to be successful in such basins?
- What is the role of ICPs in regional water governance?
- Do regional and basin level multilateral water regimes foster hydrosolidarity in the region? Please explain how they do or do not comply with the norms and indicators of hydrosolidarity.

Appendix 3: SADC WD projects listed by river basin

Listed as they appear on the SADC WS Portal on 13 December 2013.

- AQUASTAT
- KfW - Fund for Small Regional Water Infrastructure Projects
- Mainstreaming Environmental Sustainability into Planning and Management of Infrastructure
- Prediction of Climate Variations and its Application in the Southern African Region
- WaterNet Phase III

Buzi

- SADC - Shared Watercourses Support Project for Buzi, Save and Ruvuma River Basins

Congo

- Partnership Interventions for the Implementation of the Strategic Action Programme for Lake Tanganyika
- Transborder Water Management in the Congo Basin

Cuvelai

- GIZ - Transboundary Water Management in SADC Phase III

Incomati

- Bridging Phase - Progressive Realization of the Incomati-Maputo Agreement
- Integrated Study for Cofamosa Project
- Mozambique Water Resources Development Project 1
- Progressive Realisation of the Incomati-Maputo Agreement
- Support to ARA Sul

Kunene

- GIZ - Transboundary Water Management in SADC Phase III
- Kunene River Awareness Kit
- SADC Groundwater Grey Literature Archive
- Southern Africa Water Wire
- Water Supply and Sanitation Project for the Rural Communities in North Namibia

Lake Chad

- Water, Climate and Development Programme for Africa

Lake Tanganyika

- Partnership Interventions for the Implementation of the Strategic Action Programme for Lake Tanganyika

Limpopo

- Challenge programme IWMI: "Water and Food"
- Enhancing Climate Resilience Through Sustainable Land and Water Resources Management Project
- GIZ - Transboundary Water Management in SADC Phase III
- Limpopo River Awareness Kit
- Limpopo Transboundary Programme
- LoGo Water Project
- Preliminary study: Sustainable Development and Management of Transboundary Aquifers
- Resilience in the Limpopo River Basin
- River Basin Dialogue
- SADC Groundwater and Drought Management Project
- SADC Groundwater Grey Literature Archive
- Southern Africa Water Wire
- Support to ARA Sul
- Sustainable Development and Management of Transboundary Aquifers in SADC
- Targeting and Scaling Out Improved Water Management and Food Production in the Limpopo Basin
- TV Documentary "Bridging Waters"
- Water Governance in the Limpopo Basin
- Water, Climate and Development Programme for Africa

Maputo

- Economic Accounting of Water Use in the SADC Region
- Progressive Realisation of the Incomati-Maputo Agreement
- Support Programme for the Water Sector in SADC: Maputo Basin Study.
- Support to ARA Sul

Nile

- Transboundary Agro-ecosystem Management Programme for the Kagera River Basin

Okavango

- Angola Water Sector Institutional Development Project
- Environmental Protection and Sustainable Management of the Okavango River Basin
- Every River has its People
- Integrated River Basin Management Programme: Environment - Water and Biodiversity
- OKACOM - Support to the Secretariat
- Okavango Integrated River Basin Management
- River Basin Dialogue
- SADC Agriculture Water Management & Food Security - Upper Okavango Basin
- SADC Water Information Sharing Hub
- Sharing Water
- Southern Africa Regional Environmental Program
- Southern Africa Water Wire
- Support to OKACOM Secretariat Phase 2
- The Future Okavango

Orange-Senqu

- A Water Secure Future for Southern Africa: Applying the Ecosystem Approach in the Orange-Senqu Basin
- Africa Water Governance
- African Transboundary River Basin Support Programme: Case of the Orange-Senqu River in Botswana, Lesotho, Namibia and South Africa
- Botswana IWRM: A demonstration project for sub-Saharan Africa
- Development and adoption of a Strategic Action Programme in the Orange-Senqu basin
- Economic Accounting of Water Use in the SADC Region
- GIZ - Transboundary Water Management in SADC Phase III
- Orange-Senqu River Awareness Kit
- ORASECOM AFD/FFEM
- Preliminary study: Sustainable Development and Management of Transboundary Aquifers
- River Basin Dialogue
- SADC Groundwater Grey Literature Archive
- SADC Water Information Sharing Hub
- Southern Africa Water Wire
- Support to Phase II of the Basin-Wide ORASECOM IWRM Plan
- Sustainable Development and Management of Transboundary Aquifers in SADC
- TV Documentary "Bridging Waters"

Pangani

- Mainstreaming Climate Change into IWRM in Pangani River Basin (Tanzania)

Pungwe

- Pungwe River Basin Study

Rovuma

- GIZ - Transboundary Water Management in SADC Phase III

Ruvuma

- River Basin Dialogue
- SADC - Shared Watercourses Support Project for Buzi, Save and Ruvuma River Basins
- SADC Groundwater Grey Literature Archive
- SADC Water Resources Management
- Southern Africa Water Wire

SADC

- SADC Regional Meteorology Project

Save

- Support to ARA Sul

Save/Sabi

- SADC - Shared Watercourses Support Project for Buzi, Save and Ruvuma River Basins

Umbeluzi

- Lomahasha / Namaacha Cross Border Water Supply Project Prefeasibility and Feasibility Study
- SADC Water Resources Management
- Support to ARA Sul

Zambezi

- Climate Change Information Portal for the Zambezi Basin
- Cooperation ARA Zambezi
- Dam Synchronisation and Flood Release in the Zambezi River Basin
- Danish Support to Water Management in the SADC / Zambezi Region 2012-2016
- Flood Forecasting & Early Warning Strategy for Zambezi River Basin
- GIZ - Transboundary Water Management in SADC Phase III
- IWRM in SADC – Zambezi

- Integrating Water Supply, Sanitation and Hygiene Promotion into Home Based Care Projects among Vulnerable Communities in Zimbabwe
- International Training programme on IWRM
- Joint Zambezi River Basin Environmental Flows Programme
- Long-term Cooperation with WWF - Environmental Flows in the Zambezi River Basin
- Mozambique Water Resources Development Project 1
- River Basin Dialogue
- SADC Groundwater Grey Literature Archive
- SADC Regional Water Sector Programme
- Songwe Transboundary River Catchment Management Project
- Southern Africa Water Wire
- Support to Zambezi Basin through CIWA
- TV Documentary "Bridging Waters"
- Water Resources Management in Zambezi river basin
- Zambezi Multi-Sector Investment Opportunity Analysis
- Zambezi River Basin Initiative

Source: SADC Portal 2013

Appendix 4: ORASECOM projects listed by river basin

Listed as they appear on the ORASECOM Official Website on 13 December 2013.

The French GEF provided support for ORASECOM to develop a:

- Capacity Building Programme
- Feasibility Study for the Development of a Mechanism to Mobilize Funds for Catchment Conservation
- Assessment of Potential for the Development and Use of "Marginal Waters"
- Feasibility Study of the Potential for Sustainable Water Resource Development in the Molopo-Nossob Watercourse
- Groundwater Review of The Molopo-Nossob Basin for Rural Communities Including Assessment of National Databases at The Sub-basin Level for Possible Future Integration
- Protection of the Orange-Senqu Water Sources/Sponges

The UNDP/GEF provided support to develop the Orange River Transboundary Diagnostic Analysis, focusing on:

- Identification and initial prioritisation of transboundary problems
- Gathering and interpreting information on environmental impacts and socio-economic consequences of each problem
- Causal chain analysis (including root causes)
- Completion of an analysis of institutions, laws, policies and projected investments

EU Project Support supported ORASECOM in terms of developing its capacity to deliver on its mandate. This has given rise to various reports focusing on:

- Identifying an appropriate institutional form and functions;
- Analysis of the legal mandate of ORASECOM and how this aligns with SADC-wide and existing bilateral arrangements;

- Improving management of the water resources of the Orange-Senqu River System to complement the efforts of Member States and the existing bilateral Organisations in the basin;
- Specific training courses;
- The development and piloting of an Aquatic Ecosystem Health monitoring programme;
- A fitness for use assessment of the waters of the basin;
- A framework for water quality monitoring; and
- Urban pollution management studies.

The Joint Water Resources Quality Baseline Survey resulted in a range of deliverables:

- ORASECOM Joint Basin Survey 1 Booklet.
- Workshop1 - Session 1 - Purpose of the workshop
- Workshop1 - Session 2 - Aquatic Ecosystem Health Monitoring
- Workshop1 - Session 3 - Persistent Organic Pollutants Monitoring
- Workshop1 - Session 3.1 - Persistent Organic Pollutants Monitoring
- Workshop1 - Session 4 - Proposed Inter Lab Procedures for Joint Basin Survey
- Workshop1 - Session 5 - Approach to Water Quality Monitoring
- Workshop1 - Session 6 - Joint Danube Survey 2
- Workshop 2 - Session 1 - Aquatic Ecosystem Health Monitoring
- Workshop 2 - Session 2 - Persistent Organic Pollutants Monitoring
- Workshop 2 - Session 3 - Inter-laboratory benchmarking
- Workshop 2 - Session 4 - Water Quality Monitoring
- Workshop 2 - Session 5 - Trans National Monitoring Network-ICPDR
- Workshop 2 - Session 6 - Public Relations Events
- The State of the Orange-Senqu River System
- Final Salts Poster
- Aquatic Ecosystem Health (AEH) Poster
- ORASECOM Aquatic Ecosystem Health (AEH) Baseline Monitoring - Summary Report

Orange-Senqu Basin-Wide IWRM Plan Development

- Phase I was implemented between 2004 and 2007, and focused on collating existing information that then described the water resources of the basin. Topics addressed

were: hydrology and water resource availability; economics and current use of economic tools in water resource management and allocation; demographics, water demand and water resources development in the basin; water infrastructure in the basin; policy, legal and institutional frameworks related to water resources management in the basin; water quality and pollution; groundwater availability and use; and environmental considerations.

- Phase II of the IWRM Planning Programme was implemented between 2009 and 2011, and focused on bridging the planning gaps identified in Phase I. The work was divided into six packages as follows:- (i) Assessment and upgrading of the Integrated Orange-Senqu River Basin Model; (ii) Updating and extension of the hydrology; (iii) Assessment of requirements for, and the development of, an Integrated Water Resources Quality Management Plan; (iv) An assessment of the impact of global climate change on the hydro-climatology, water resources, vulnerabilities and adaptation requirements; (v) An assessment of environmental flow requirements; and (vi) An assessment for the potential for water demand management in the irrigation sector.

- Phase III (2012/2013) sets out the actions necessary to achieve the strategic objectives of ORASECOM. Some of these will be short term and others longer term. The Plan will signify a transition from planning to implementation of the actions that are determined in the Plan.

Source: ORASECOM 2013

SUMMARY

THE ROLE OF WATER REGIMES IN THE PROMOTION OF HYDROSOLIDARITY IN THE SOUTHERN AFRICAN DEVELOPMENT COMMUNITY (SADC): THE CASE OF THE SADC WATER SECTOR AND THE ORANGE-SENQU COMMISSION (ORASECOM)

by

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The aim of this study was to develop a framework that makes explicit some of the core norms and indicators of hydrosolidarity and to assess whether regional and basin-level multilateral water regimes in SADC are able to promote and apply the identified norms and indicators. This is a relevant aim given that water availability and provision is a challenge in this water scarce region. This is further complicated by the reality that transboundary water contains 68 percent of the area of the SADC region; it provides for 74 percent of the region's people and constitutes 91 percent of the available surface water resources in the region. In a region where fresh water is both fundamentally scarce and shared, it becomes critical to best govern water so as to respond to the needs of water-related ecosystems which transcend political boundaries as well as the complex spectrum of social actors and forces that place demands on the resource. Hydrosolidarity is a concept that aims to respond to this challenge. The concept has not, however, been distilled into a framework for analysing the effectiveness of transboundary water governance. Also, International Relations (IR) has extensive scholarship on the closely related ideas of cooperation, regimes and international organisations. This literature has not, however, been systematically linked to a framework for analysing whether water regimes can deliver on the indicators of hydrosolidarity.

This context gives rise to a core research question which focused on the extent to which SADC Water Sector (WS) (a regional water regime) and the Orange-Senqu River Basin

Commission (ORASECOM) (a basin level water regime) can foster hydrosolidarity in Southern Africa. The assumption and thesis statement is that water regimes in SADC offer a partial promotion of hydrosolidarity by developing cooperative institutional structures that allow for the development of norms and standards of behaviour, but are not able to create enhanced integration and linkages beyond the water sector or to deal with issues relating to holistic stakeholder participation. This research question is unpacked through four sub-questions. The first question considers the extent to which hydrosolidarity contributes to an understanding of an ideal for transboundary water governance. The second analyses whether water regimes can foster hydrosolidarity. The third considers if regional and basin-level water regimes exist in SADC, and if so, how they manifest. The last considers whether SADC WS and ORASECOM do actually foster hydrosolidarity in practise.

The task of developing a theoretical framework for analysing hydrosolidarity in a transboundary context results in a set of norms and indicators being clarified. The norms of hydrosolidarity include cooperation and solidarity, equity, inclusivity, promotion of human well-being and environmental sustainability around transboundary waters. Linked to these norms are a set of indicators that can be used to identify and work towards hydrosolidarity. These include striving for shared knowledge about transboundary rivers, enhanced integration and linkages between relevant actors, issue areas and governance structures, organisational structures for fostering transboundary water governance, stakeholder involvement in transboundary water governance processes, and development of a normative framework for transboundary water governance. These norms and indicators are also systematically linked to the characteristics and functions of multilateral water regimes.

When applying this framework to the two case study areas, it emerges that SADC WS and ORASECOM can only partially foster and promote the norms and indicators of hydrosolidarity in SADC. Whilst all the norms and indicators are present in the agreements and practices of the regimes, there are certain limitations to the extent to which the norms and indicators can be entrenched. There are three main reasons for this. Firstly, the regimes are confronted with various capacity constraints. Secondly, the regimes have a limited advisory and technical mandate, meaning that they cannot enforce their recommendations or actually implement anything in the domestic jurisdiction of member states without express permission. Thirdly, the regime structure itself is limited by its theoretical assumptions which emphasise the authority of states, the importance of state sovereignty and the importance of a Western-centric, positivist type of scientific knowledge as being the most authoritative statements of truth with which to guide policy.

In order to fully achieve hydrosolidarity, a more complex set of actors needs to work in collaboration with these water regimes. These other actors include national governments, pre-existing bilateral arrangements in the basin, non-state actors and civil society.

The theoretical contribution of this dissertation from a water perspective is a clarification of the norms and indicators of hydrosolidarity. From an IR perspective, it illustrates how important a multi-theoretical lens is when analysing complex problems, as it helps to elucidate the strengths and weaknesses of a variety of individual theoretical stances. The practical contribution of this dissertation is to provide a clearer understanding of the capacity of water regimes to deliver on the outlined norms and indicators of hydrosolidarity.