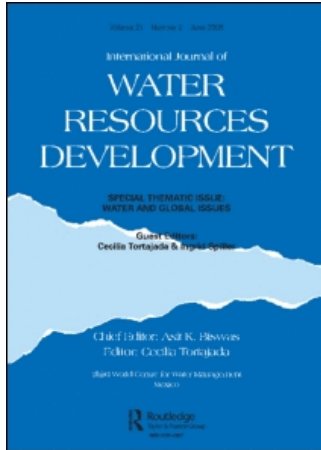


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Basin Closure and Issues of Scale: The Southern African Hydropolitical Complex

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ABSTRACT *Southern African countries face serious regional water scarcity constraints to economic growth and development. The water resources in the four most economically diverse countries—South Africa, Botswana, Namibia and Zimbabwe—are approaching closure at the national level. Investigations using the concept of a Hydropolitical Complex, rather than the river basin alone, as the unit of analysis have produced a more subtle understanding of how hydrologically-constrained states are dealing with the problem. The Southern African Hydropolitical Complex (SAHPC) case suggests that where states have water constraints to future economic development options, then the incentives to seek consensual management options are high.*

Introduction

The first region in the world that encountered severe water scarcity constraints to economic growth and development was the Middle East and North Africa (MENA) (Allan, 2000). The second region in the world where hydrological realities impose similar constraints is southern Africa (Allan, 2002; Turton *et al.*, 2003). This situation prompts the question: have the lessons learned from the MENA case been sufficiently well understood and effectively institutionalized within southern Africa to enable the countries concerned to cope with the situation, and thereby attain national and regional goals of water security while simultaneously avoiding adverse social and economic effects? This paper examines the implications of this question, argues that the real world is far more delicately nuanced than simple unitary basin-level analyses would indicate, and suggests that issues of scale are particularly relevant to deriving long-lasting solutions to this complex problem. An example of a level of scale is the so-called hydropolitical complex (Turton, 2003a, 2003b), which exists above the basin level but below the level of any regional political and economic cooperative structures that might be in place. The implications of this and other issues of scale are discussed in more detail in this paper.

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The Concept of River Basin Closure

A river basin is said to be facing closure when all the available water has been allocated to some productive activity and no 'surplus' water is available for allocation to new water uses (Svendsen *et al.*, 2001, p. 184). This differs from standard hydrological definitions where the term 'closed river basin' is applied to an endorheic basin that terminates in an internal (inland) sea, lake or other sink and does not flow into an ocean (Wester *et al.*, 2001, p. 161). The concept of river basin closure (Svendsen *et al.*, 2001) as a constraint to river basin management has been discussed in the literature for slightly more than a decade and is thus still relatively new (Seckler, 1996).

Shared (Transboundary) River Basins in Southern Africa

The Southern African Development Community (SADC) region contains 15 international (shared) river basins (Figure 1) that form a series of hydraulic linkages across national borders. Another four shared river basins (not shown in Figure 1) link these SADC countries with neighbouring states to the north. Four of the most economically developed states in the SADC region—Botswana, Namibia, South Africa and Zimbabwe—are water scarce and approaching the limits of their readily available water resources (Smakhtin *et al.*, 2001). As a result, escalating water scarcity will progressively impose stricter limitations to the economic growth potential of these countries (Ashton & Turton, 2007) and could potentially elevate water resource management to the level of a national security concern (Turton, 2003c). This process is known as 'securitization' and, if left unmanaged, can lead to disputes and conflict, both between countries and between economic sectors within a single country (Ashton, 2007). The interests of these four states are also closely linked through their co-riparian status of the adjacent Orange-Senqu and Limpopo basins (Figure 1), because high proportions of their respective national economies depend on these water resources. Importantly, these four countries are riparian to the Basins at Risk as defined by Wolf and his co-workers (Wolf *et al.*, 2003, p. 29).

Against this background, it is important to understand the de-securitization dynamics that may be at work, where de-securitization comprises any combination of processes and interventions that lead to the normalization of interstate interactions by institutionalizing the conflict potential. In the context of water, this occurs when water resource management is removed from the security domain and is treated as a purely technical issue (Turton, 2003c). This formalizes the processes involved (Conca, 2006), and the greater degree of consensus among participants makes them less conflict-prone and thus more amicable and predictable.

International Trends in the Governance of Shared River Basins

Possible Convergence of Norms and Values

In order to understand the way that basin closure is being managed in southern Africa's key river basins, useful insights can be gleaned from the prevailing international trends in the governance of shared river basins. In the entire world's 263 known transboundary river basins that span international political borders (Conca, 2006), a central question concerns the possible convergence of norms and values around issues of governance in these shared ecosystems. Lamenting the fact that the global response to the management of such



Figure 1. Map of southern Africa showing the 12 mainland countries comprising the Southern African Development Community (SADC) and the 15 river basins shared by these countries. The three pivotal river basins are shaded darker. *Source:* Map modified and redrawn from Ashton & Turton (2007).

systems tends to be focused on the intended reproduction of one particular institutional form—the negotiated international agreement among sovereign states known as the regime—the Maryland School set out to understand the evolution of such a process (Conca & Wu, 2002; Conca *et al.*, 2003; Conca, 2006, p. 6). Central to this effort is the attempt to identify rules that contain and channel deeply divisive, often contentious debates that occur at the sub-national level, where a broad consensus on substance is often not easily

apparent (Conca, 2006). Here a regime is taken to be the product of interstate bargaining in the context of the structural disorder (anarchy) of the international political system in which states are forced to interact, not because it is the ideal form, but rather because it is the form that the dominant coalition in favour of regimes' desires (Conca, 2006). This is an example of what Tony Allan and his London-based hydropolitics researchers view as a form of hydro-hegemony (Zeitoun & Warner, 2006). A regime¹ is formally defined as, "a set of implicit or explicit principles, norms, rules and decision-making procedures around which actors' expectations converge in a given area of international relations" (Krasner, 1982, p. 186).

Informed on the one hand by databases such as the *Systematic Index of International Water Resources Treaties, Declarations, Acts and Cases by Basin* (FAO, 1978), but also using the Transboundary Freshwater Dispute Database (TFDD) at Oregon State University (TFDD, 2004) and the United Nations Food and Agriculture Organization's Legal Database (FAOLEX, 2004), Conca (2006) noted that there are now more than 150 basin-specific treaties that set out the rights and responsibilities of states that share a specific international river basin. By analyzing these, a set of protonorms were distilled, where a protonorm is defined as a norm that has become sufficiently recognizable and well established, in order to become available for application to watershed governance in basins and watersheds that are beyond the direct reach of the agreement concerned (Conca, 2006). Seen through the conceptual lens of an international regime, the seeming absence of open conflict over shared rivers in keeping with the Water Wars thesis, together with the general proliferation of basin-wide agreements, suggests cautious optimism about the governance of international aquatic ecosystems (Conca, 2006).

UN Convention

Arguably, the best example of a global rivers regime in the form of a codified legal instrument is the United Nations Convention on the Law of the Non-Navigational Uses of International Watercourses (referred to as the UN Convention) that was adopted by the General Assembly in 1997 (United Nations, 1997). At the opposite end of the scale are a range of bilateral or multilateral agreements that have been negotiated between riparian states at the level of the individual shared river basin. Conca and his team analyzed a total of 62 river management agreements with reference to the core principles of the 1997 UN Convention (Conca, 2006). These agreements covered 36 international river basins, approximately one-seventh of the global total. Sixteen of the agreements represent the first agreements for the particular river basin. For the remaining 46 agreements, there was evidence of prior agreement having been reached in the same river basin; this implies that at least three-quarters of the agreements relate to basins with a previous history of cooperation between the respective riparian states. This finding suggests that the idea of creating an instrument of shared governance, by means of a regime, may not be diffusing rapidly to new, previously uncovered basins (Conca, 2006). Forty-six of the 62 agreements in the dataset are bilateral, while 16 involve three or more parties (Conca, 2006, p. 108). Significantly, two-thirds of the bilateral agreements are in basins that are shared by three or more riparian states. This supports Pike's Law,² which proposes that the complexity of river basin negotiations increases exponentially as the number of riparian states increase. This means that, in a basin with complex issues, the likelihood of reaching a multilateral agreement is significantly lower than reaching a bilateral agreement.

The possibility that Pike's Law may hold true in the real world is significant for two reasons. First, multilateral agreements are substantially over-represented in the dataset used by Conca and his team. Two-thirds of the world's international river basins comprise only two states (67% or 176 of the 263 known basins), yet more than three-quarters of the agreements written during the study period (49 out of 62, or 79%) dealt with basins shared by three or more riparian states. Second, in the case of multilateral basins, the most common agreement is a bilateral regime (by a ratio of 2:1), that deliberately excludes one or more of the other riparian states within the given river basin. The patterns of fragmented cooperation that were found in the Maryland School study support the earlier findings of Wolf and his team (Conca, 2006, p. 109).

The same trend is evident when the temporal distribution of transboundary freshwater regimes was analyzed. The temporal distribution of the 62 agreements is marked by three distinct features: relative consistency before the 1992 UN Convention on the Environment and Development (UNCED, 1992); a sharp increase in the number of agreements immediately following UNCED; and a noticeable drop-off in the number of agreements reached after UNCED (Conca, 2006). Statistical analysis of the dataset showed that eight core elements appear to be emerging, although each of these are grouped around different river basin configurations in distinct ways. The core normative elements (Conca, 2006) found in the empirical analysis are:

- 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.

Two Clusters of Principles

In-depth analysis of the dataset revealed two clusters of principles. The first consisted of a distinct correlation around the issue of openness and transparency, such as the commitment to exchange information, prior notification and the peaceful resolution of disputes, but excluded references to any principles underpinning a state's right to water. In contrast, the second set of principles correlated with particular issues such as specific water allocation formulae, or exempting domestic water use from the provisions of an agreement. From this, it is clear that one subset is anchored in principles of openness and sustainability while the second subset is anchored in the state's right to water (Conca, 2006).

Interpreting this work in its totality, it is evident that there is a strong tendency for cooperation to be concentrated in international river basins that have a prior history of cooperation between the states concerned (Conca, 2006). However, nowhere is there strong evidence of the diffusion of these norms and, more significantly, most of the norms seemed to be well established already at the beginning of the study period, suggesting that they did not evolve further or acquire greater emphasis over time. More importantly, while the 1997 UN Convention goes well beyond merely codifying existing principles at the basin-level, some of the core themes—universal participation, equitable use and the

avoidance of significant harm—appear only sporadically as explicit components of specific basin-level agreements (Conca, 2006). In fact, the UN Convention, as an example of the culmination of decades of regime creation in the global management of international river basins, makes a stark and polarized distinction between the domestic sphere of water resource management, which is the sole domain of state governance, and the international sphere between co-riparian states, which is the sole domain of interstate agreements or regimes (Conca, 2006). There is little compelling evidence that a common normative structure is emerging in the sphere of interstate cooperation, and there is no evidence to suggest that international legal principles are taking on greater depth, or even moving in an identifiable direction (Conca, 2006).

These findings are significant in the context of the conclusion by the Oregon School (Wolf *et al.*, 2003) that the Basins at Risk are areas that have the potential to become so-called ‘flash-points’ in the next decade, specifically where river basins have been recently internationalized, or where there is little institutional resilience. This is particularly relevant to South Africa, where Percival & Homer-Dixon (1998, 2001) have found evidence of a history of conflict related to scarcity of environmental resources. The core message from the Maryland School is thus derived from the findings of the Oregon School that a history of interstate cooperation tends to mitigate against future conflict. Therefore, the six Basins at Risk in southern Africa are likely to be crucial in terms of understanding the extent to which water scarcity (or, more specifically, the impact of the cumulative modification of aquatic ecosystems whose impacts are felt across international borders) might become a potential driver of conflict in future.

The Southern African Hydropolitical Complex

The concept of a Southern African Hydropolitical Complex (SAHC), as detailed by Turton (2003b, 2004) and Ashton & Turton (2007), suggests that riparian states are linked in a series of interstate arrangements at one or more levels other than the river basin, where water issues have become drivers of international relations in their own right. This view is based on the tenet that while water scarcity may occur at the level of the river basin, appropriate remedies can be found at several different levels (Schulz, 1995), in what has been referred to as the “problemshed” (Allan, 1999). This concept is particularly relevant in those countries where growing water scarcity in a shared river basin has stimulated substantial long-term investment in water management measures to avoid conflict (Gleditsch, *et al.*, 2005). Closely linked to this context is the evidence that those countries with stronger and more diversified economies have sufficient resources to allow them to adopt strategies that avoid conflict (Homer-Dixon, 1995). This is consistent with the ingenuity thesis developed by Homer-Dixon (1996, 2000), and the concept of second-order resource³ scarcity (Ohlsson, 1999). It is argued here that this situation also holds true in southern Africa.

The SAHC is predicated on the understanding that two central issues are always relevant in any hydropolitical analysis. First, all river basins are not equal. This is visible in the various attempts to describe the water resources and the social and economic characteristics of basins (Gleditsch *et al.*, 2005). In addition, a country’s degree of dependence on ‘external’ and ‘internal’ sources of water adds additional complexity to the analysis. Second, all riparian states are not equal. Some are more dependent on a given river basin for their future economic security than others, and some states are more reliant

on external supplies of water than others. Even more significantly, countries differ in their economic and technological capacities, as well as their military capabilities. For simplicity, the concept of a Southern African Hydropolitical Complex is based on the analytical distinction between river basins and riparian states, using the simple terminology of 'pivotal' versus 'impacted'. Definitions of the four key components of the Southern African Hydropolitical Complex (Turton, 2003c; Ashton & Turton, 2007) are as follows:

- *Pivotal States* are riparian states with a high level of economic development and diversification⁴ that also rely heavily on one or more shared river basins for strategic sources of water. In southern Africa, four states are in this category: Botswana, Namibia, South Africa and Zimbabwe.
- *Impacted States* are riparian states with a critical need to access water from international river basins that are shared with a Pivotal State, but seem to be unable to obtain an equitable allocation of water. In southern Africa, seven states are seen to be in this category: Angola, Lesotho, Malawi, Mozambique, Swaziland, Tanzania and Zambia.
- *Pivotal Basins* are basins that face closure, and which are also strategically important to any one (or all) of the Pivotal States because of the economic activities that they support. In southern Africa, three basins are in this category: Orange, Limpopo and Incomati. Significantly, all three of these were regarded as Basins at Risk (Wolf *et al.*, 2003, p. 29).
- *Impacted Basins* are basins where at least one of the Pivotal States is a co-riparian, and where there seems to be less opportunity for an Impacted State to develop its water resources in a fair and equitable manner. In southern Africa, six basins are in this category: Cunene, Maputo, Okavango, Pungué, Savé-Runde and Zambezi. Three of these were listed as Basins at Risk (Wolf *et al.*, 2003, p. 29).

The Southern African Hydropolitical Complex offers an analytical framework to analyze the hydropolitical configuration of Pivotal States versus Impacted States in each basin and improve our understanding of the patterns of cooperation and competition in the SADC region's shared river basins (Turton, 2003a, 2003b; Ashton & Turton, 2007). A recent analysis (Ashton & Turton, 2007) has highlighted the prevailing patterns of hydropolitical dynamics, and, more importantly, has indicated that the states concerned have a high level of incentive for the negotiation of solutions to prevent or mitigate potential conflict. Water has a long history of politicization in the SADC region and played a prominent but subtle role during the conflict years of the last three decades (Turton, 2004; Ashton, *et al.*, 2005). While the overt nature of southern African hydropolitics has changed in the post-Apartheid era, the underlying drivers remain largely unchanged. The four states with the most highly developed and diversified economies in the region—Botswana, Namibia, South Africa and Zimbabwe—are also those facing the greatest scarcity of water; they all share international river basins with other states, they are all riparian to the Basins at Risk, and they all face significant limitations to their future economic growth prospects as a result of looming water shortages (Ashton & Turton, 2007). However, while it is still not clear if this range of issues will drive conflict or cooperation in future, it provides a useful opportunity to compare the Neomalthusian and Cornucopian views on hydropolitics. Importantly, Zimbabwe's situation has been compromised in recent years because political instability has led to an economic collapse (Turton, 2005) that has dramatically reduced its ability to mobilize economic and technological resources. The structural

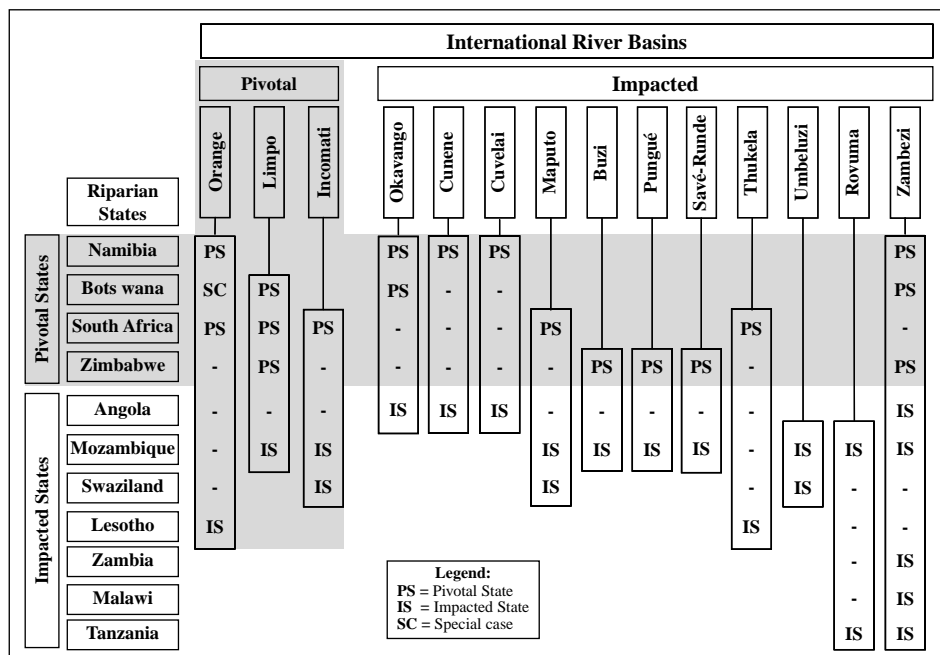


Figure 2. Structural configuration of the Southern African Hydropolitical Complex, highlighting the relationships between the three pivotal and 11 impacted river basins and the four pivotal and seven impacted basin states. *Note:* the Democratic Republic of Congo and the Congo River Basin have been omitted from this analysis. *Source:* Figure modified and redrawn from Ashton & Turton (2007).

configuration of the SAHC is presented in Figure 2, showing the cross-cutting linkages across various river basins in which specific states have a strategic interest.

The Orange, Limpopo and Incomati basins have been classified as Pivotal Basins (see Figure 1), based on three critical criteria: a significant portion of the basin falls within Pivotal States; those Pivotal States have a high reliance on the water from these basins; and each basin is approaching the point of closure (Basson, *et al.*, 1997; Conley & van Niekerk, 1998; Vas & Pereira, 1998; Vas, 1999; Heys, 2003).

Insights into National and Regional Strategies to Cope with Basin Closure

Against the backdrop provided by this international trend, what insights can our understanding of the Southern African Hydropolitical Complex provide? For a start, the investigations in this paper have shown that the Basins at Risk assessment was incomplete for several southern African river basins (Ashton *et al.*, 2005; Turton, 2005). For example, basin-wide agreements have been signed in every one of the so-called southern African Basins at Risk; since many of these basins are multilateral basins, this is counter to the global norm identified by Conca (2006). In fact, every transboundary river basin in the SADC region that has a significant level of development within it is covered by a joint agreement between the riparian states (Ashton *et al.*, 2005), because all southern African riparian states have acceded to the SADC Protocol on Shared Watercourse Systems

(SADC, 2001). Even more significantly, these riparian states have de facto accepted the core principles enshrined in the UN Convention because these principles have been codified into the SADC Protocol. Thus, irrespective of whether the individual states have ratified the UN Convention or not, their accession to the SADC Protocol on Shared Watercourse Systems requires them to abide by the core requirements of the UN Convention (Ashton *et al.*, 2005).

The array of bilateral and basin-wide agreements signed by the individual states within the SADC region, and their accession to important international agreements, suggest that the respective governments are committed to enhancing and strengthening the levels of cooperation between states and reducing the potential for disputes and conflicts to occur (Ashton *et al.*, 2005). Ideally, this should be followed by the creation of suitable multi-state institutions or regimes that can manage the different river basins on behalf of the riparian states concerned. However, 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 river basins (e.g. the Cunene, Incomati, Limpopo, Orange-Senqu, Okavango, Umbeluzi and Zambezi basins), these commissions 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 (Turton, *et al.*, 2006). This would suggest that the countries concerned are reluctant to delegate part of their sovereign responsibility to another party (in this case to an institution for the management of water resources), especially where these resources are critical for their future social and economic development.

While part of this quandary can be attributed to national concerns by each country to achieve higher levels of assurance of their water supplies (Smakhtin *et al.*, 2001; Ashton & Turton, 2007), there is growing evidence that attempts to achieve national water security will probably only succeed at the cost of regional water security (Turton *et al.*, 2006). The problem is particularly acute in southern Africa, not only because each country obtains relatively large fractions of its water resources from shared surface water and groundwater resources (Ashton & Turton, 2007), but there is also little agreement as to what proportion might constitute as an 'equitable share' of these resources (Wolf, 1999; van der Zaag, *et al.*, 2000). For example, not only are the water resources within the Incomati, Limpopo and Orange-Senqu basins rapidly approaching closure, but South Africa already uses by far the largest share of the available water. In addition, the South African government has recognized that the demand for water elsewhere in the country is fast approaching a situation where national demands for water will exceed the supplies available from internal sources (NWRs, 2004). To face this challenge, the South African government is planning to build additional water storage and water transfer infrastructure (Ashton & Turton, 2007), while several studies have evaluated possible alternative sources of water, including possible transfers of water from the Zambezi and Congo basins to which South Africa is not riparian (e.g. Smakhtin *et al.*, 2001; Heyns, 2002). Similar studies have been conducted in Botswana, Namibia and Zimbabwe, to obtain additional supplies of water from shared river systems, in order to meet their escalating internal demands for water (Turton *et al.*, 2006).

Here, it is important to remember that there are a growing number of examples in many regions of Africa where disputes and conflicts over access to shared water resources have occurred (Ashton, 2002, 2007). All of these incidents have occurred at relatively small

(local) scales between individuals and between communities, and in regions where water supplies are scarce (Ashton, 2007). Those areas of Africa where the rivers undergo a transition from perennial to seasonal flows appear to be the most vulnerable to these conflicts and reflect the fact that Africa's water resources are finite. The rapidly growing populations of most African countries and their associated increased demands for water (Ashton & Turton, 2007), coupled with the potential adverse effects of climate change, could worsen this situation in future (Ashton, 2002).

Conclusions

The available evidence (e.g. Biswas, 1993) suggests strongly that small-scale conflicts over access to water are inevitable unless appropriate and concerted preventive actions are taken by the respective governments (Ashton, 2007). However, while the cliché 'prevention is better than cure' certainly holds true (Ashton, 2002), most of the measures designed to avoid conflict are generic in nature and are based on joint decision-making processes within suitable legislative and institutional frameworks. However, because of the importance of issues of scale, the respective governments need to customize these processes, tools and institutions to make them more site-specific, so that they more closely suit the needs of the communities and countries involved (Turton *et al.*, 2006). In each case, the equitable share of water that each country can expect to receive from a shared surface water or groundwater resource is the central issue that must be agreed amongst them (Wolf, 1999). Preliminary studies have indicated that if countries can agree on the specific criteria that should be used to determine equitable shares of the water within a shared resource, then it becomes a relatively simple technical procedure to derive the quantitative estimates (van der Zaag *et al.*, 2000).

In southern African countries, impending basin closure in both shared and internal river basins poses enormous challenges to the governments of the states involved. Nowhere is this more clearly seen than the four Pivotal States comprising the Southern African Hydropolitical Complex (Turton, 2005; Ashton & Turton, 2007), where the countries concerned are mobilizing their political, diplomatic, social, economic and technical resources to avoid the impending adverse effects of water shortages caused by basin closure. Clearly, those countries with greater reserves of social, economic and technological assets, such as Botswana, Namibia and South Africa, are likely to achieve their individual goals and they will experience a 'softer' landing. Other countries, such as Zimbabwe, will probably falter in their attempts because they lack sufficient supplies of these 'second-order resources' (Homer-Dixon, 1999; Ohlsson, 1999) and their landing will be 'harder'. This situation also supports the contention that South Africa, at least, often plays the role of a 'hydro-hegemon' in southern Africa (Zeitoun & Warner, 2006).

Against this background, it is vital to note that the SADC countries of southern Africa have a relatively long history of collaboration and cooperation that dates from their individual struggles against various forms of colonialism (Turton, 2003a; Turton *et al.*, 2003). Indeed, their shared historical trajectory has helped the respective governments to reach many of the bilateral and regional cooperation accords that help them to prevent the escalation of disputes and conflicts in different sectors of their economies. However, despite the willingness expressed by all the SADC countries to assist those neighbours that cannot resolve a particular issue using their own (internal) assets, the escalating regional water shortages will place great pressure on the political resolve and resources

of individual countries as they attempt to attain their individual goals and simultaneously contribute to regional goals of sustainable development.

In future, it can be expected that disputes and conflicts between individuals and communities over access to water will still occur at local (small-scale) levels. At the level of individual countries, Botswana, Namibia and South Africa face the greatest challenges because their water supplies are more uncertain and the options that are available to each country contain high levels of social, economic and technological risk. Nevertheless, the growing evidence of collaboration and cooperation between SADC countries suggests that, despite the precarious water supply position faced by each of these countries, they will continue to seek consensual management approaches to resolving their water supply problems.

Notes

1. Attention is drawn to the fact that the Oslo School uses the term 'regime' in a different way, so the reader must be aware that the concept has different meanings and contexts when used by different schools. This conceptual muddle complicates transdisciplinary research, but need not undermine the ultimate value of that research, provided the reader is aware of the nuances.
2. Pike's Law says that "the effort required to reach an agreement increases by the cube of the number of parties involved" (Turton, 2004, p. 251).
3. A second-order resource is defined as the ability of societies, administrative organizations and managers responsible for dealing with natural resource scarcities (so-called first-order resources), to find appropriate tools for dealing with the social consequences of a first-order scarcity (Ohlsson, 1999, p. 161). It is consequently a scarcity of a specific form of resource, or what Homer-Dixon (2000, p. 22) calls either technical or social ingenuity. Stated differently, it is second-order resources that need to be mobilized if water scarcity is to be prevented from becoming a driver of violent conflict, so this is the critical independent variable that is missing from the finding by Gleditsch *et al.* (2005) that there are substantial incentives for the investment in water management measures that avoid conflict. It is a core element of the argument being presented in this chapter, that the presence of second-order resources in southern Africa, at the right time and in the appropriate format, are what has allowed the Basins at Risk to evolve from the high risk profile evident during the original study (Wolf *et al.*, 2003, p. 29), to the lower risk profile evident in 2007. If the Oslo School had to develop a suitable indicator of second-order resource mobilization, then they would probably be able to show why some countries succeed in mitigating water-related conflict, while others do not.
4. This higher level of economic development means that the Pivotal States also have the capacity to project their power outside of their borders. It is significant that all four of the Pivotal States have a history of military activities beyond their own sovereign territory. South Africa was active militarily across many countries in Africa during the Cold War (Bernstein & Strasburg, 1988; Turner, 1998). In the immediate post-Apartheid period, South Africa was involved in Operation Boleas in Lesotho, together with Botswana, in an action that was officially sanctioned by SADC (Turton, 2004, p. 268). Namibia and Zimbabwe both had troops in the Democratic Republic of Congo (DRC), engaging in military actions that had not been sanctioned by SADC. Zimbabwe also deployed troops inside Mozambique to protect its interests during the Mozambique Civil War (Turner, 1998, pp. 131–145).

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