

Chapter 5

THE ANALYSIS OF KEY HYDROPOLITICAL PROCESSES IN THE SOUTH AFRICAN CASE STUDY

5.1 Introduction

This study has shown that increasing levels of insecurity often arise from basin closure. This was subsequently shown to be the situation in the South African case study, particularly in the Incomati River basin and to a lesser extent the Limpopo River basin. This study has also shown that these increasing levels of insecurity could result in the securitization of water resource management, which the South African case study supported, but qualified by showing that hydropolitics is subordinate to the broader set of political interactions in which the respective basin states are enmeshed. It was also shown that alternatives do exist to the securitization of water resource management, and the South African case study showed that there are indeed elements of desecuritization taking place, particularly after the ending of the Cold War and the collapse of the apartheid system in South Africa. Significantly, this is taking place in the Incomati River basin, which has a high level of insecurity. Furthermore, it was shown that second-order resources are an important element of regime creation, with failed regimes being correlated with the existence of endemic second-order scarcity in one of the riparian states involved. What now remains is to analyze and assess the South African case study in light of 3 important sets of parameters: securitization processes; regime creation processes; and institutional development processes. This chapter consequently focuses on the hydropolitical processes that have been evident in South Africa's international river basins with a view to analyzing the political aspects of institutional development in the water sector.

5.2 An Analysis of the Key Hydropolitical Processes in the Orange River Basin

The Orange River basin has 2 functioning bilateral regimes - the *Treaty on the Lesotho Highlands Water Project* and the *Agreement on the Establishment of a Permanent Water Commission* - with a recently created multilateral basin-wide regime in the form of the *ORASECOM Agreement*. South African relations with Lesotho have been troubled at times, particularly when guerilla forces from the various liberation movements started operating from that country, ostensibly with the support of the Lesotho government.

South African relations with Botswana have generally been good, although there were fears at one time that guerilla forces were operating out of that country. South African relations with Namibia have always been good, given the fact that the latter was being administered by South Africa under a League of Nations mandate. These aspects have been relevant to the processes of securitization and regime creation within the Orange River basin.

5.2.1 Securitization Processes

In order to assess the securitization processes in the Orange River basin in greater detail, the key questions that were presented as part of the research design (see Chapter 1) form the basis for the following analysis and discussion.

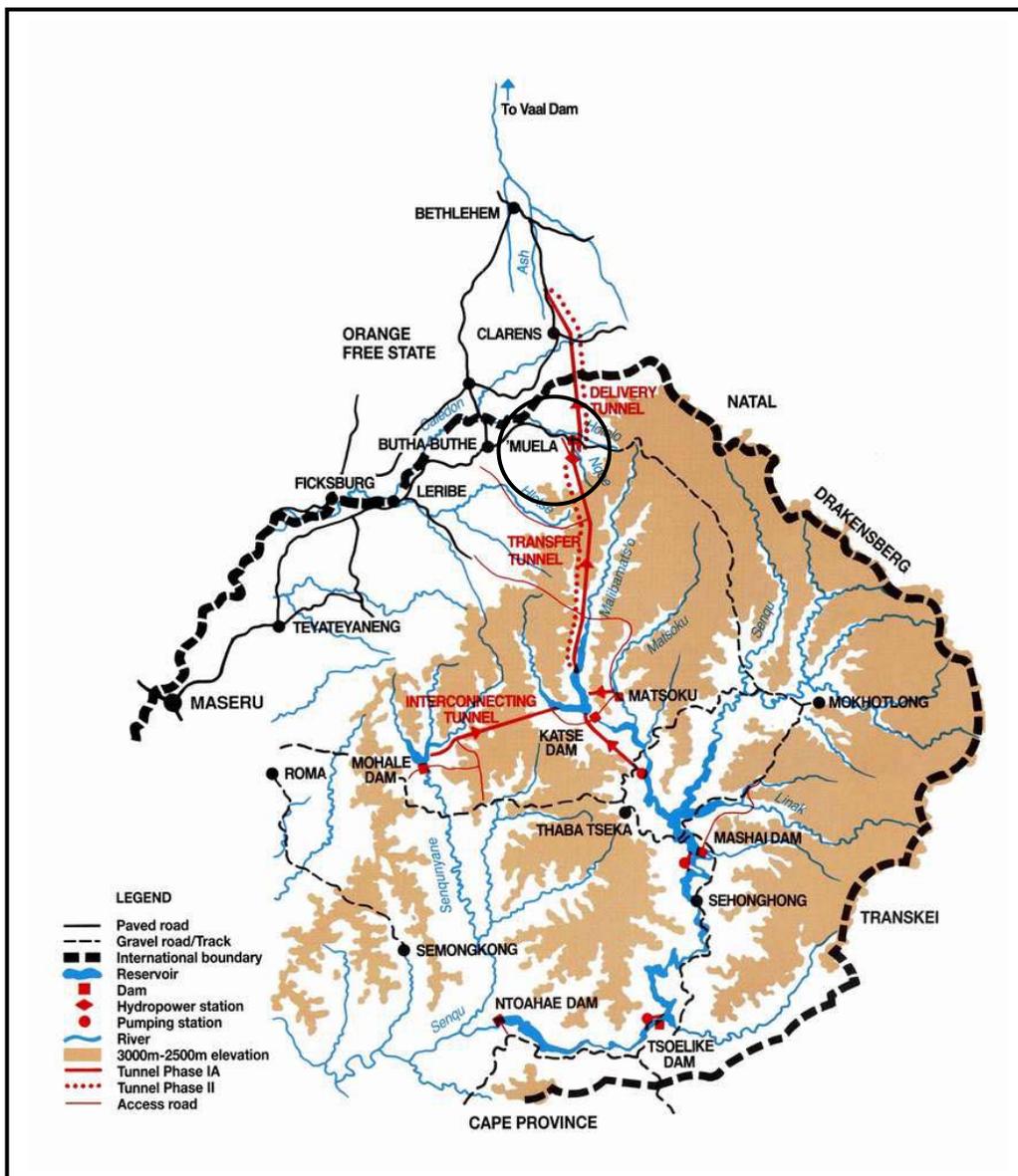
(a) Is there evidence of the securitization of water resource management in the Orange River basin?

The most strategically important portion of the Orange River basin from a South African perspective is the upper basin reach that is shared with Lesotho. It is therefore highly significant that the most complex regime in the entire country (and indeed within the whole Southern African region) is located there. During the initial founding of the Apartheid State, the NP that came to power was primarily focused on economic growth and development. This was the result of the debilitating effects of the Anglo-Boer War that left many people landless, followed by the Great Depression that merely exacerbated this situation. After the 1948 election victory, it was felt by many NP elites that political power was sterile if it was not supported by economic power - a sentiment that was to be reiterated by African Nationalists half a century later. Yet in semi-arid South Africa, economic development of any great magnitude would need a secure supply of water if it was to have any realistic chance of succeeding. This gave rise to the South African hydraulic mission with early reconnaissance studies on the feasibility of importing water from outside the country, such as that performed by Ninham Shand (1956), with the later work by others merely building on this central theme (Carter, 1965; Heyns, 2003:24; Midgley, 1987; Young, 1961). There was no significant securitization of water resource management at this early stage.

It was only when Chief Leabua Jonathan, who became the Prime Minister of Lesotho in 1966, started to publicly support the liberation movements in their quest to topple the

Apartheid State that early elements of securitization started to occur. A series of politically relevant events happened in quick succession, laying the foundation for securitization. During 1970 the Jonathans government was toppled in a *coup d'état*, followed shortly afterwards by the formation of the SSC in South Africa during 1972 and the publishing of the first *White Paper on Defence* that started to develop the *Total National Strategy* as an official policy a year later.

Map 14. The Lesotho Highlands Water Project.



Source: LHDA 1995:4.

It was the SSC that became the custodian of the *Total National Strategy* approach as it became increasingly responsible for all domestic and foreign policy-making. It was the coincidence of these various events, each having little direct relevance to water resource management *per se*, that started the process of securitization, not only of the water sector, but of all aspects of South African life that were deemed to be strategically relevant to the survival of the Apartheid State in general, and to the welfare of the Afrikaner as an ethnic nation in particular. It is against this background of high politics that the formation of the ostensibly narrowly focused JTC in 1978 must be evaluated.

It was therefore inevitable that the subsequent LHWP had a strong security element in it. Evidence of this can be seen in the final design of the project (see Map 11), with the Muela Power Station, that supplies all of its electricity to Lesotho, being strategically located downstream of the control valves of the delivery tunnels to South Africa, which means that if a belligerent government in Lesotho decided to “close the taps” as a hostile act, they would lose their entire supply of electricity in the process. This is a hydropolitical equivalent of the concept of mutually assured destruction (MAD) found in deterrence theory.

In the lower basin area, there is no evidence of the securitization of water resource management. This is because Namibia has never posed a threat to South Africa, and was administered as a *de facto* province during the period of time that the SSC was in charge of South African policy-making. Given the fact that the PWC was formed after the collapse of the Apartheid State, the prime cause of securitization had been removed from the hydropolitical equation.

(i) If so, who are the main securitizing actors and what are their long-term objectives?

The main securitizing actor was the SSC, which had, as its long-term objective, the survival of the Apartheid State, which implied the survival of the Afrikaner ethnic nation and the growth of the economy needed to sustain that survival. DWAF was not the main securitizing actor, but the parameters in which it was expected to meet its mandate had been determined by the SSC and filtered through the government, reducing DWAF to pawns on the larger strategic chessboard confronting the Apartheid State.

(ii) If so, what is the referent object that is being existentially threatened; by whom is it being threatened; and what is the nature of that threat?

The referent object that was being threatened, at least in terms of the prevailing threat perception that was inherent to the *Total National Strategy* frame of mind, was state sovereignty (specifically the right of the minority government to make and implement domestic policies without outside interference), national identity (specifically of the Afrikaner as an ethnic group under the collective label of the “*volk*”) and the economic stability of the Apartheid State. There is no evidence to suggest that the environment was ever a referent object in its own right.

(iii) Who are the functional actors, support actors and veto actors; what are their long-term objectives; and what is the nature of the relationship between them?

The only functional actor that can be identified, at least during the *Total National Strategy* period, was the SADF and the DMI, which were in essence the “hawkish” elements of the Apartheid State that enjoyed privileged access to the Office of the President (PW Botha) and were thus able to influence policy-making by entrenching a specific threat perception. There are no support actors or veto actors that are readily discernable from the available data.

(b) Is there evidence that water scarcity can have an impact on the economic growth potential and social stability in any of the riparian states found in the Orange River basin?

There is evidence to show that water scarcity does have a significant impact on the economic growth potential and social stability of all of the Orange Basin riparians. While Lesotho is exporting water to South Africa, representing one of its major sources of foreign revenue, it remains a highly water scarce state. Falkenmark (1989b:113) lists Lesotho as being water stressed with a high level of technological input needed to maintain basic food self-sufficiency, let alone macroeconomic growth. The mountainous nature of Lesotho also means that water availability in the highlands is far removed from the existing human population, who mostly live in the lowlands. Lesotho displays signs of structural scarcity, which has a severe impact on economic development at the household level.

The majority of the South African economy is supported by the Orange River as a resource (see Figure 17). Prof. Kader Asmal, in his capacity as Minister of Water Affairs and Forestry, announced in 1995, that South Africa would deplete available water resources within the next fifteen years. Asmal specifically mentioned Gauteng Province, which at that time generated 40% of the GDP that supported 27% of the jobs within the country. In this speech, Asmal noted specifically that “the limiting constraint on the region’s continued economic growth is water” (Financial Mail, 1995:20-23), an observation that is supported by a retired Director of Strategic Planning in DWAF (Conley, 1995:3; Conley, 1996a:19; Conley, 1996b). Botswana does not use water from the Orange River basin, but it is a water scarce state, similar to Namibia, both of which have no perennial rivers flowing on their soil, with all readily exploitable rivers forming borders with neighbouring states. Botswana therefore views the Orange River basin as an unexploited strategic reserve for the future, while the southern portion of the Namibian economy is totally reliant on the Fish River (a tributary of the Orange) (see Map 11). All of the Orange River basin riparian states thus face water scarcity constraints to their economic growth potential, and consequently their social stability.

This raises an extremely important strategic issue. Water scarcity is relative and a highly nuanced condition, and is not as absolute as the concept suggests at first glance. South Africa is only water scarce as a country if it continues to rely on agricultural self-sufficiency. Agriculture as an economic sector, has a low SWE - a fact that is well established (Allan, 2000:185-187; Conley, 1995:3; Conley, 1996a:19; Conley, 1996b). If a country that is being confronted by water deficit as a limitation to its economic growth potential allocates water to economic activities with a higher SWE, then the water budget can be balanced by importing cereals, and paying for those imports by the increased efficiency of the national economy. This is the virtual water thesis that is now entering the water resource management literature and becoming part of accepted practice (Allan, 2000; Conley, 1995:3; Conley, 1996a:19; Conley, 1996b). Being based on notions of comparative advantage, and in particular on the economic efficiency inherent in inter-sectoral allocation of water, this solution impacts directly on the economic growth potential of the state and as such is a driver of potential securitization unless water allocation between riparian states is fully institutionalized.

Central to the virtual water thesis is the level of development of the second-order resource-base of the economy, because this increased economic activity is what opens a wider range of strategic options and generates the foreign currency that enables the

importation of cereals in the first place. Given the fact that 3 of the Orange River basin riparian states are adaptively secure (see Figures 14 & 19), the transition from national self-sufficiency to food security can in most probability be managed successfully. Under these conditions, water scarcity becomes a relative constraint to the economic growth potential of the state, and consequently not a finite barrier.

(i) If so, what is the nature of that impact and how is this threat perception being articulated?

The nature of the impact is directly related to a limitation of the economic growth potential of the state in all cases. This is an over-simplification of reality however, because land security, and access to unfettered economic activities arising from this, for the previously advantaged White minority communities of both South Africa and Namibia, is becoming an important issue with strategic significance for national security. The current land reform process in Zimbabwe is adding strong securitization elements to this dynamic process in South Africa and Namibia.

Historically the South African government has articulated the threat perception in 2 distinct ways over time. During the *Total National Strategy* era of White minority rule, the threat perception was clearly focused on economic stability insofar as it was a necessary condition for the survival of the South African state and the somewhat unique national identity that the Apartheid State provided to the political elite within the minority Afrikaner ethnic group.

With the collapse of the Apartheid State, the threat perception changed somewhat, but still retained the central element of economic stability. Stated simplistically, if the democratic experiment is to succeed in post-apartheid South Africa, then the skewed nature of economic development that water had brought to the White ethnic minority, has to be redistributed to the now enfranchised but largely landless and economically marginalized Black majority. For example, Principle B.2 of the *Discussion Document on Water Law Principles* (DWAF, 1996:4) states that there will be no ownership of water, while Principle B.3 states that the ownership of land no longer confers preferential rights to water that is riparian to that land. Principle 4 of the *White Paper on Water Policy* (DWAF, 1997) revokes the riparian right principle that land ownership automatically conferred preferential rights to land owners. This is also clearly spelled out in the Preamble to the *National Water Act*, which recognizes that “while water is a natural

resource that belongs to all people, the discriminatory laws and practices of the past have prevented equal access to water, and use of water resources”. This sentiment is further supported in Chapter 1, Paragraph 2(c), which states that the purpose of the *National Water Act* must take account, amongst other factors, of the need to redress the results of past racial and gender discriminations. It can therefore be argued that the demise of the Apartheid State did not immediately end the process of securitization with elements of this still in existence, albeit under a changed guise.

The earlier sentiment expressed by Afrikaner Nationalists that to achieve economic power was as important as political power, is again being articulated by African Nationalists. Water resource management in South Africa is therefore still linked to issues of a high politics nature, which is likely to remain a driver of securitization for some time to come, despite the overall desire to normalize relations with neighbouring states. The highly emotive issue of land reform is extremely sensitive. Land is given its economic value only by means of the availability of water, so the fact that Chapter 1, Paragraph 4(4) of the *National Water Act* removes the automatic right that land owners used to have to groundwater under their property, or surface water flowing in rivers or streams over their property, has changed the balance of hydropolitical privilege in a fundamental way that impacts on individual perceptions of personal security. The resurgence of Rightwing extremism, supported by rhetoric linking their struggle to the land (in a manner similar to the ideological component of Zionism that was reviewed in the Jordan River basin case study), is still a potential driver of securitization within the Orange River basin.

The use of inter-sectoral allocative efficiency as a tool for managing water scarcity, implies increased industrialization and mechanization in a drive for improved efficiency - an outcome that is not necessarily conducive to rapid job creation. There are thus 2 contradictory forces at work within the post-apartheid securitization dynamic that were not in existence during the rise to prominence of Afrikaner Nationalism. The fact that South Africa is at the upper end of the adaptive security spectrum (see Figures 14 & 19) suggests that in terms of the balance of probability, the desecuritization dynamic will prevail, even though elements of securitization will persist.

(c) Is there any evidence of the desecuritization of water resource management in the Orange River basin?

After the collapse of the Apartheid State, which saw the demise of the SSC as the major securitizing actor, South African water policy seemed set for a rapid desecuritization. Principle C.5 of the *Discussion Document on Water Law Principles* says that allocations agreed for downstream countries in international river basins should be respected. This is codified in Chapter 1, Paragraph 2(i) of the *National Water Act* as official South African policy in international river basins. The existence of uncontested basin-wide hydrological data that was the product of the ORRS and related studies, combined with what appear to be relatively sophisticated bilateral regimes, is also a significant driver of desecuritization. The fact that the balance of hydropolitical interaction between the respective actors occurs within the upper range of the adaptive security spectrum (see Figure 19) also suggests that the desecuritization dynamic will be dominant.

(i) If so, who are the functional actors, and what are their long-term objectives?

There are no functional actors in the narrow sense of the concept applicable to the desecuritization of water resource management in South Africa. It can be argued that DWAF, as a government department, is reflecting the national political sentiment by seeking to normalize relations with neighbouring states, and as such is functioning in the role of a desecuritizing actor. Therein lies the contradiction however. While desecuritizing water resource management at the official level, DWAF is also supporting the official South African government policy of redistributing hydropolitical privilege in South African society while reallocating water to stimulate economic growth. In so doing DWAF is unintentionally securitizing water resource management by placing the issue in such a high order of importance that it is undebatable, and therefore removed from the normal political domain. It is in a sense jumping the queue on normal political processes by being made non-debatable, which is a classic securitization move. As such, DWAF has as a long-term objective, the redistribution of rights and privileges associated with access to water, such as the right to share in the economic growth of the country. The struggle to achieve this noble goal is far from over.

(ii) Is there any evidence that regimes are acting as potential desecuritizing agents?

The 3 regimes in existence are acting as potential desecuritizing agents because they all limit the range of arbitrary action by any one of the role-players. By so doing, they introduce rules in the formal sense of the concept, prescribing specific types of action that

are permissible. They also provide a source of certainty in an otherwise unpredictable world by generating uncontested hydrological data. The institutionalization of knowledge is also likely to result in a changed perception of the core problem being managed, given the high level of adaptive security within the Orange River basin (see Figure 19).

(d) Is there any evidence that a hydropolitical security complex is emerging, or is likely to emerge, within the Orange River basin in the near future?

There is no evidence that a hydropolitical security complex is emerging because hydropolitical dynamics do not yet constitute both a necessary and sufficient condition for securitization in the water sector. However, given the fact that the Orange River basin links 3 of the 4 most economically developed states in the Southern African region (South Africa, Botswana and Namibia), combined with the fact that it is linked with other international river basins through IBTs, suggests that what can be called an immature hydropolitical complex is emerging as a distinct component of the regional security complex initially identified by Buzan (1991:210). In this regard, the mooted hydropolitical complex is sufficiently structured as to reflect distinct patterns of amity and enmity between the respective riparian states as to offer a meaningful explanation of international relations in a regional context, but this is not necessarily based on security considerations alone. It is therefore not a hydropolitical security complex, but it is a hydropolitical complex, which in turn is a component of a regional security complex.

(i) If so, what are the main drivers of this process?

The main drivers of this process are the co-riparian status of 3 of the 4 most economically developed states in the SADC region, all of which are facing water scarcity limitations to their future economic growth potential in the Orange River basin. This is supported by the fact that IBTs are an essential component of water resource management in those 3 countries, thereby creating a physical linkage between international river basins by cascading perceptions of insecurity into other donor basins. The land reform / water resource nexus is also a potential crosscutting linkage that can become a driver in future.

(ii) If so, can the emergent hydropolitical security complex be regarded as being a component of a broader regional security complex?

The emergent hydropolitical complex can be regarded as being a component of the broader regional security complex because it provides a coherent way of analyzing patterns of amity and enmity that mediate between the unit and the international subsystem level of analysis (see Figure 5).

5.2.2 Regime Creation Processes

In order to assess the regime creation processes in the Orange River basin in greater detail, the key questions that were presented as part of the research design (see Chapter 1) form the basis for the following analysis and discussion.

(a) How do actors define the situation?

During the apartheid and Cold War era of international hydropolitics, the main actor in regime creation was also the securitizing actor in the form of the SSC. This actor defined the prevailing situation in terms of a *total onslaught* against the norms, values and principles of the minority-defined state, which served to provide a substantial policy framework in which securitization was an inevitability. The other actor in the creation of the JPTC (the Lesotho government) defined the situation in terms of development advantages to Lesotho, a particular angle that suited the *Total National Strategy* approach of the South Africans at the time. The same applied to the JTC, which was established between South Africa and the Transitional Government of South West Africa. In this case both actors were from the same government, with one masquerading as an independent actor working on behalf of the former South West Africa. In this case the actor's definition of the situation was also framed in terms of the *Total National Strategy* paradigm, with the potential benefits of cooperation being presented in terms of mutual economic development. This situation largely prevailed with the creation of the JWC, although by this stage Namibia had gained its independence. Consequently the Namibian actors had more of an independent definition of the situation, but were essentially in a weaker position because of their lower-order riparian status, so they focused on gaining a degree of assurance from South Africa about water volumes and associated rules.

This situation had changed dramatically by the time that the *ORASECOM Agreement* was negotiated. By the time the final agreement was reached, South Africa had overturned apartheid and had already secured its main strategic interest upstream with Lesotho, so

they were able to adopt a wider definition of the problems. This meant that consensus was achieved between all actors on legal concepts inherent in the *Helsinki Rules*, the *United Nations Convention on the Non-Navigational Uses of International Watercourses* and the *SADC Protocol on Shared Watercourse Systems*. The fact that the *ORASECOM Agreement* does not limit any existing bilateral regimes means that South Africa still retains hegemonic status, thereby offering sufficient inducement not to defect from the arrangement.

(b) What changes do the role-players make in their definitions of the situation and their preference structure?

During the apartheid and Cold War era of hydropolitics, there was such a heavy emphasis placed on national security that this influenced the preference structure. In this regard, water resource management was subordinated to national security, and all decision-making with respect to regime creation reflected this bias. Given the gross differences in power and capabilities between the different actors, the hegemon's preference structure remained dominant.

With the dawn of the post-apartheid period, the preference structure changed to reflect the increased role of regional structures and instruments such as the SADC Tribunal and the *SADC Protocol on Shared Watercourse Systems*. This situation was possibly promoted by the intention of the South African negotiators to distance themselves from any possible apartheid stigmatization, resulting in a temporary political climate that was conducive to non-hegemonic state attempts at maximizing their respective position. This was also supported by the South African desire to re-integrate the country into the regional political structures that had so vehemently opposed it before. This after all, was proof that South Africa, having rid itself of the blight of apartheid, could again resume its place in the body of sovereign states at the international systems level.

(c) What vision do governments and all of the other relevant actors have?

During the apartheid and Cold War era of international hydropolitics in the Orange River basin, the South African government had an official view centered on CONSAS, embracing a common economic, political and security approach by all participating states, which happened to coincide with vision of the hegemonic state in the basin (Geldenhuis, 1984:41). Insofar as this suited the development aspirations of the Lesotho

government at the time, negotiators played along in the creation of the JPTC, but it is clear that they did not share this grand vision with much conviction. In the post-apartheid era, this vision has changed somewhat, with more of an economic focus to it.

5.2.3 Institutional Development Processes

In order to assess the institutional development processes in the Orange River basin in greater detail, the key questions that were presented as part of the research design (see Chapter 1) form the basis for the following analysis and discussion.

(a) Is there hydrological data that has been institutionalized?

The *Agreement on the Establishment of a Permanent Water Commission* makes no mention of the institutionalization of any hydrological data. The *Agreement on the Vioolsdrift and Noordoewer Joint Irrigation Schemes* does contain some hydrological data, and in particular provides for the diversion of $20 \times 10^6 \text{m}^3 \text{yr}^{-1}$, which is subject to rules that have been agreed between the parties. The *Treaty on the Lesotho Highlands Water Project* and subsequent *Protocol VI of the Lesotho Highlands Water Project Treaty* contain a complex array of hydrological data that pertains to the yield, supply and management of the LHWP. Article 5 of the *ORASECOM Agreement* makes specific mention of the need to coordinate all hydrological investigations by standardizing the method of collecting, processing and distributing data. With the strong focus on methodology, this is likely to result in the generation of knowledge and institutional learning. Given the fact that all bilateral regimes are supposed to become harmonized with ORASECOM, the data that has been institutionalized in the respective bilateral regimes will remain relevant and become increasingly institutionalized.

(b) Is this data uncontested and therefore seen as a legitimate basis for future agreements between the respective riparian states?

There is no significant contestation of hydrological data in the LHWC, PWC or ORASECOM. This is a specific characteristic of the Orange River basin when compared with other international river basins under review.

(c) Are there agreed-upon rules and procedures?

Both the LHWC and the PWC, as major bilateral regimes in the overall management of the Orange River basin, are based on sophisticated rules and procedures. Given the structure of ORASECOM, these will automatically become part of that institutional arrangement.

(i) If so, have they been formalized, or do they exist only as a loose arrangement?

These rules and procedures have been formalized in *Protocol VI of the Lesotho Highlands Water Project Treaty*, the *Agreement on the Establishment of a Permanent Water Commission* and in the *ORASECOM Agreement*, but they are also supported by normative developments in the SADC region including the evolution of the SADC Tribunal and the *SADC Protocol on Shared Watercourse Systems*.

(d) Is there a dedicated conflict resolution mechanism as part of the overall institutional arrangement?

Article 16 of the *Treaty on the Lesotho Highlands Water Project* defines the conflict resolution mechanism that has been incorporated into the LHWC. Neither the JTC nor the PWC have dedicated conflict resolution mechanisms, but the VNJIS does have a conflict resolution mechanism in the form of an Arbitral Tribunal. The *ORASECOM Agreement* has a more sophisticated conflict resolution mechanism, with formal recourse to the SADC Tribunal, thereby harmonizing ORASECOM with the regional structures in a way that was hitherto absent in the 2 earlier bilateral regimes.

(i) If so, has it been used and what has been the outcome?

These dispute resolution mechanisms have not been used to date.

(e) Has there been a re-definition of the core management problem away from perceiving water scarcity in an absolute sense, to perceiving water scarcity in a relative sense?

There is no evidence that a re-definition of the core management problem has taken place. All available evidence shows that the respective riparian states are functioning primarily in terms of a supply-sided management approach. There is some evidence that the Lesotho delegation is actively opposing WDM policies being introduced as these would reduce their revenue and weaken their overall position.

(i) To what extent has WDM become one of the institutional objectives?

There is no mention made of WDM in any substantial sense of the concept. It seems unlikely that any of the regimes within the Orange River basin will adopt a demand-sided management approach in the near future, although the existence of a relatively high degree of adaptive security in the basin (see Figure 19) suggests that there is considerable room for the introduction of WDM as an element of a future coping strategy. Namibia would have to take the lead in this regard as they would benefit the most. Lesotho on the other hand, would probably oppose such an approach, as it would limit their future revenue on the sale of water to South Africa.

(ii) Is there any evidence of inter-sectoral allocative efficiency being a policy objective?

There is no evidence of inter-sectoral allocative efficiency being a policy objective in either of the regimes under review. The introduction of such a policy instrument would provide empirical evidence of a transition from a supply-sided management approach to a demand-sided management approach. Given the relatively high degree of adaptive security in the basin (see Figure 19), the likelihood of adopting such a policy option is good.

(f) Is there a mechanism to sanction non-compliant actors?

There is no mechanism to sanction non-compliant actors in either of the regimes under review.

(i) If so, has it been used and what has been the outcome?

This question is not relevant to the Orange River basin.

(g) Has there been any redistribution of water resources between the various riparian states directly as the result of the regime, and if so what has been the outcome?

There has been no redistribution of water resources between any of the riparian states as a direct result of the regime.

(h) Is there any evidence of regime resilience?

There is evidence of resilience in the LHWC in the form of consensus on the core problem being managed. This is also manifest to a lesser extent in the PWC, so by default it is evident in ORASECOM.

(i) Is there any evidence of regime robustness?

There is no empirical evidence of robustness in any of the regimes under review because there has never been any substantial challenge.

(j) Is there any evidence of regime effectiveness?

There is some empirical evidence of effectiveness in all of the regimes under review because no riparian state has materially breached any of the norms or rules. Furthermore, the ORRS was a successful exercise, resulting in a number of data collection initiatives within the basin. These have all combined to create an uncontested dataset for the entire basin, which is not found in any of the other basins under review. Furthermore, given the engineering complexity of the overall problem being managed in the case of the LHWP, the LHWC is highly effective, but in a narrow sense of that concept. This is also the case with the PWC and the VNJIS, but in this regard regime effectiveness would conceivably include a redistributive component to it (at least when viewed from a Namibian perspective), which has not been the case thus far.

(k) Is there any evidence of the growth and development of institutional knowledge or institutional learning as the result of the regime?

There is some evidence that the experience gained bilaterally between South Africa and Lesotho in the LHWC; and between South Africa and Namibia in the PWC, has started to contribute to the growth of institutional knowledge. A specific component of this process was the ORRS, which created a basin-wide set of relatively undisputed hydrological data. Article 5 of the *ORASECOM Agreement* contains a number of measures that are conducive to the process of institutional learning and the development of knowledge in a narrow definition of that concept.

(i) If so, to what extent has this become a confidence-building and unifying factor?

It seems as if the ORRS project played a significant role in building confidence between all relevant actors in the basin under review.

(l) Can the existing water management arrangements within the Orange River basin be called a regime?

It seems as if the 3 existing water management arrangements within the Orange River basin can be called a regime because they all contain specific principles and norms that have created a convergence in the expectation of the relevant actors, even if each actor has been motivated by a different set of priorities and interests, in a specific area of international relations. Furthermore, the growth in complexity of both the LHWC and the PWC over time, along with the subsequent formation of ORASECOM, all indicate the same tendency towards a general harmonization of principles, norms, rules and procedures to the mutual benefit of all actors. These arrangements cannot be called an institution in the narrow sense of that concept, because while they contain both formal and informal rules, there is an absence of any enforcement arrangement for non-compliance.

5.2.4 Conclusion Regarding the Orange River Basin

The Orange River basin contains good examples of regime creation with respect to the management of water resources in an international river basin that is closed. While the initial stimulus for regime creation was driven primarily by security concerns inside South Africa, subsequent changes to the overall political configuration of the basin suggest that they can play an important role in the desecuritization of water resource management, primarily by restricting the range of independent action, and by decreasing the level of uncertainty through the knowledge, norms and rules that they codify. The Orange River basin also shows the critical role that uncontested data plays in desecuritization, with some evidence of the emergence of knowledge in the narrow sense of that concept. The desecuritization dynamic is complex however, and despite the overt intentions of the democratically elected South African government to normalize relations with other riparian states, this may not automatically result in desecuritization. This implies that desecuritization is not an automatic outcome, and will have to be actively

worked on if a genuine plus-sum outcome is to be achieved in the basin. The balance of probability suggests that the desecuritization dynamic will prevail however. The role of uncontested data in building confidence, and specifically in redefining the core problem being managed by creating durable knowledge, is likely to become a good indicator of regime resilience in the future.

5.3 An Analysis of the Key Hydropolitical Processes in the Limpopo River Basin

The Limpopo River basin has one functioning bilateral regime - the *Agreement on the Establishment of the Joint Permanent Technical Commission*, which is also supported by the separate but related *Agreement on the Establishment of the Joint Permanent Commission for Cooperation* - with a failed multilateral basin-wide regime (*Agreement on the Establishment of the Limpopo Basin Permanent Technical Committee*). South African relations with Botswana were generally good, although guerilla forces were sometimes being infiltrated into South Africa from Zimbabwe through Botswana, making this a theatre for SADF Special Forces retaliation on occasion. South African relations with both Zimbabwe and Mozambique have mostly been troubled, particularly when open support was given to guerilla forces from the various liberation movements, which started operating from there into South Africa. These aspects have been relevant to the processes of securitization and regime creation within the Limpopo River basin.

5.3.1 Securitization Processes

In order to assess the securitization processes in the Limpopo River basin in greater detail, the key questions that were presented as part of the research design (see Chapter 1) form the basis for the following analysis and discussion.

(a) Is there evidence of the securitization of water resource management in the Limpopo River basin?

The most strategically important portion of the Limpopo River basin from a South African perspective is the upper basin reach that is shared with Botswana. It is therefore significant that the most complex level of regime creation is found in this area of the basin. As with the Orange River case economic growth and development were South African priorities before Botswana gained its independence in 1966. The birth of the early South African hydraulic mission saw reconnaissance studies on the feasibility of

importing water from the Okavango and Zimbabwe River basins, all of which would have of necessity involved Botswana (Basson, 1995:46; Borchert & Kemp, 1985; Borchert, 1987; Heyns, 1995:15; Heyns, 2002:164; Heyns, 2003:34; Midgley, 1987; Scudder *et al.*, 1993:268; Trollalden, 1992:138; van der Riet, 1980; Williams, 1986). This consequently became an important factor in the subsequent securitization within the Limpopo River basin, given this strategic access as part of the overall South African survival strategy at the time, although this was never a driver in its own right.

The main impetus for securitization arose from the worsening security situation that started to occur after the hasty Portuguese withdrawal from Mozambique in the mid 1970s. This opened up what was in effect a war zone in the Limpopo River basin, with the Rhodesian Bush War taking on a new ferocity as guerilla forces opened a second front along the Mozambican border. South Africa quickly became embroiled in this, with military support being given to Rhodesia, and with SADF Special Forces operations being launched into Mozambique itself. After Zimbabwean independence, the South African SSC was deeply alarmed at the deteriorating security situation in the whole basin, with the likelihood of guerilla infiltration from Zimbabwe through Botswana, and from Mozambique through Swaziland, becoming a growing reality. The hastily convened TPTC that excluded Zimbabwe but sought to address the Limpopo issue as one of “common interest”; the infrastructural agreement with Swaziland; the *Nkomati Peace Accords*; and the revival of the Cahora Bassa Project must all be evaluated against this background of high politics. It therefore comes as no surprise that there is a lot of evidence of the securitization of water resource management, particularly in the middle and lower basin involving both Zimbabwe and Mozambique. It was highly improbable for any other outcome to arise given the gravity of the overall situation, and the chosen response to CONSAS by those 2 countries.

The importance of the Zimbabwean and Mozambican support to the liberation struggle has left a lasting legacy within the Limpopo River basin. Vas (1999:66) refers to Mozambican support during these troubled years and raises the notion of the expectation of political payback by the now democratic South Africa. Given the fact that the Limpopo River basin is closed, combined with the high priority that the post-apartheid government has placed on economic empowerment for the historically disadvantaged Black majority, many of whom live in the Limpopo basin, means that payback is likely to fall short of expectation, thereby contributing to a possible perpetuation of the securitization process within the basin. This assessment is supported by the wide spread of the respective

riparian states across the adaptive security spectrum (see Figure 21), and the resultant propensity towards polarization that arises from this condition.

(i) If so, who are the main securitizing actors and what are their long-term objectives?

As with the Orange River case the main securitizing actor was the SSC, which had as its long-term objective, the survival of the Apartheid State, which implied the survival of the Afrikaner nation as an ethnically distinct entity under the banner of the “*volk*”, and the economy needed to support that survival. Given the absence of a viable desecuritizing actor in the post-apartheid era, the incompatible national development priorities of the lower basin riparian states are likely to continue driving the securitization process.

(ii) If so, what is the referent object that is being existentially threatened; by whom is it being threatened; and what is the nature of that threat?

As with the Orange River case the referent object was state sovereignty, national identity and the economic stability of the Apartheid State. The prevailing threat perception at that time played a major role in determining the referent object. The environment never became a referent object in its own right. In the post-apartheid era, incompatible national development priorities continue to make the referent object state sovereignty and economic stability.

(iii) Who are the functional actors, support actors and veto actors; what are their long-term objectives; and what is the nature of the relationship between them?

As with the Orange River case the only functional actor was the South African military establishment during the period of heightened securitization.

(b) Is there evidence that water scarcity can have an impact on the economic growth potential and social stability in any of the riparian states found in the Limpopo River basin?

There is evidence to show that water scarcity does have a significant impact on the economic growth potential of all 4 Limpopo River basin riparians. Botswana is currently sourcing its strategic supply for the NSC from the Limpopo basin, with plans to extend

this to the Zambezi River in order to either service Botswana alone, or to service both Zimbabwe and Botswana as a joint venture, with South Africa as a potential beneficiary (Heyns, 2002:167) (see Map 15).

Map 15. The Botswana National Water Plan.



Source: Heyns 2002:167.

While current water needs for the industrializing hub around Gaborone have been catered for, future economic growth will be impacted unless a secure strategic supply can be guaranteed, probably from outside the Limpopo basin. The unknown impact of global climate change is likely to exacerbate the problem by increasing the range of variability in existing precipitation patterns. The Zimbabwean economy is already in a state of decline, and the increasing pariah status of that country will impact negatively on the mobilization of funds for future infrastructural developments. The area lying within the Limpopo basin in Zimbabwe is semi-arid and approaching the limit of its sustainable utilization. The Mozambican economy is in a phase of rapid growth as post-war reconstruction occurs, with both water scarcity and occasional flooding in the Limpopo basin being a definite limitation to sustainable growth. Existing patterns of flooding and

drought are likely to increase in severity as a result of global climate change, with strategic importance to the sustainability of the current economic growth trend. A number of former Bantustans are located in the South African portion of the basin, raising the need for rapid economic development. In short, for all riparian states water scarcity poses a definite limitation to economic growth and development, a fact that is exacerbated by the existence of significant levels of adaptive insecurity within the basin (see Figure 21).

(i) If so, what is the nature of that impact and how is this threat perception being articulated?

The land reform issue is probably more pressing in the Limpopo basin than in the Orange River case. This arises from the Zimbabwean crisis in which land reform is a central feature. The fact that in the former Bantustan areas of South Africa, there is a high population density with low economic growth, coexisting alongside large commercial farms that are mostly White owned and managed, makes this an explosive issue. The implementation of the CMAs that the *National Water Act* calls for, combined with the political complexity of inter-sectoral allocative efficiency measures that will have to be introduced if water deficit is to be managed sustainably, makes this a potential hotbed of future securitization. One particular permutation of this threat perception that will be politically stressful is the land reform / water resource / race nexus. While the *National Water Act* is clearly an instrument of redistribution and equity, this can be interpreted as being unnecessarily discriminatory and an example of reverse racism, which would undermine the integrity of the process. The sensitivities arising from South Africa's experience with racism should not be underestimated as a continued driver of conflict in the basin.

(c) Is there any evidence of the desecuritization of water resource management in the Limpopo River basin?

As with the Orange River case, the demise of the SSC as a major securitizing actor set the scene for the potential desecuritization of water resource management. The existence of a high level of adaptive insecurity in the Limpopo River basin acts as a mitigating factor (see Figure 21).

(i) If so, who are the functional actors, and what are their long-term objectives?

As with the Orange River case there are no functional actors. As noted earlier, the application of current policy can become a securitizing factor in its own right, even though this is clearly unintended.

(ii) Is there any evidence that regimes are acting as potential desecuritizing agents?

There is no functioning basin-wide regime in the Limpopo River, even though the LBPTC exists as an entity. This means that their role as potential desecuritization agents cannot be brought to bear on the problem, specifically in the portion of the basin that is dominated by adaptive insecurity (see Figure 21). The well functioning JPTC and JPCC are both acting as a desecuritizing agent in the portion of the basin that is dominated by adaptive security (see Figure 21).

(d) Is there any evidence that a hydropolitical security complex is emerging, or is likely to emerge, within the Limpopo River basin in the near future?

As with the Orange River case there is no evidence of a hydropolitical security complex emerging, but there is strong evidence to suggest that within the Limpopo and Orange River basins combined, there is an immature hydropolitical complex. This is coalescing around the 4 most economically developed states (South Africa, Botswana, Namibia and Zimbabwe) and the 2 international river basins to which they are all riparian (Orange and Limpopo).

(i) If so, what are the main drivers of this process?

The main drivers relate to the co-riparian status of 3 of the 4 most economically developed states in the SADC region (South Africa, Botswana and Zimbabwe), all of which are facing water scarcity limitations to their future economic growth potential. Additional support for this relates to crosscutting linkages such as IBTs, which cascade perceptions of insecurity elsewhere, and the land reform / water resource / race nexus that is highly relevant in the Limpopo River basin.

(ii) If so, can the emergent hydropolitical security complex be regarded as being a component of a broader regional security complex?

This emergent hydropolitical complex can be regarded as being a component of the broader regional security complex for the same reasons previously given in respect of the Orange River basin.

5.3.2 Regime Creation Processes

In order to assess the regime creation processes in the Limpopo River basin in greater detail, the key questions that were presented as part of the research design (see Chapter 1) form the basis for the following analysis and discussion.

(a) How do actors define the situation?

As previously discussed in the Orange River case, during the apartheid and Cold War era of international hydropolitics, the main actor in regime creation was also the securitizing actor in the form of the SSC. This actor defined the prevailing situation in terms of a *total onslaught* against the norms, values and principles of the minority-defined state, which served to provide a substantial policy framework in which securitization was an inevitability. The other actor in the creation of the JPTC (the Botswana government) defined the situation in terms of development advantages to Botswana, a particular angle that suited the *Total National Strategy* approach of the South Africans at the time. While the acute need for security considerations had declined by the time that the JPCC was formed, it was still a consideration, but this time being one of a range of issues of mutual concern to both Botswana and South Africa. The existence of a high level of adaptive security in the portion of the basin that is shared by these 2 riparian states means that a greater harmonization of national development priorities is possible.

The strong securitization approach by the South African government did not resonate with either Zimbabwe or Mozambique at the time. Zimbabwe defined its fundamental position as a vanguard in the anti-colonial liberation struggle, and somewhat of a leader in the Southern African region. For this reason Zimbabwe chose to throw in its support for the creation of SADCC in direct opposition to South African plans to launch CONSAS. While aspiring to less of a regional leadership role, Mozambique remained deeply committed to the liberation struggle. Given these irreconcilable positions in the areas of high politics, there was little to be negotiated in the water sector.

While the overall circumstances had changed dramatically at the end of the millennium, these attitudes proved to be somewhat enduring, with evidence of deep rifts still in existence during talks to revive the LBPTC, a fact that the persistence of adaptive insecurity in this particular portion of the basin has done little to alter in the post-apartheid era. Minutes from a meeting held in 1999 show that Zimbabwe had failed to send delegates to various meetings, while Mozambique was perceived to be particularly pedantic by South African negotiators (LBPTC, 1999). This is understandable as the Mozambican experience with South Africa, poignantly defined in the *Piggs Peak Agreement* debacle, was consistently negative, thereby causing the delegation to be reluctant to engage in a process that had a patently asymmetrical configuration.

(b) What changes do the role-players make in their definitions of the situation and their preference structure?

As noted in the Orange River case the main emphasis was on national security concerns, which influenced the preference structure accordingly. In the South African case, water resource management was subordinated to national security, while in Zimbabwe the persistent belligerent stance prevented any institutional development in the water sector. To a certain extent this was mirrored by the Mozambique experience, but in this case they had less capacity than Zimbabwe and were victimized more as a result. In the Limpopo River basin case there is strong evidence to show that the hegemon's preference structure does not always end in the realization of that preference structure. This has hardened attitudes and has mitigated against a major change in their preference structure, even after the Apartheid State collapsed and South Africa became part of SADC.

(c) What vision do governments and all of the other relevant actors have?

The strongly articulated South African CONSAS vision of a joint economic and security community was vehemently opposed by Zimbabwe (Geldenhuys, 1984:41). This became a fundamental driver of hydropolitical and other processes in the Limpopo River basin, and indeed within the Southern African region as a whole. While the Botswana government allowed itself to be drawn into the *Agreement on the Establishment of the Joint Permanent Technical Committee* with South Africa, ostensibly because it would benefit materially as a result, the latter abandoned the grand CONSAS vision and resorted instead to the "carrot" and "stick" approach inherent in the *Total National Strategy*. The post-apartheid vision has shifted to more of an economic integration of the whole SADC

region, but the persistence of high levels of adaptive insecurity in the basin (see Figure 21) increases the complexity of making this a reality.

5.3.3 Institutional Development Processes

In order to assess the institutional development processes in the Limpopo River basin in greater detail, the key questions that were presented as part of the research design (see Chapter 1) form the basis for the following analysis and discussion.

(a) Is there hydrological data that has been institutionalized?

Neither the *Agreement on the Establishment of the Limpopo Basin Permanent Technical Committee*, nor the *Agreement on the Establishment of the Joint Permanent Technical Commission* makes specific mention of the institutionalization of hydrological data. The JULBS has yielded a substantial amount of data however, which has been shared between South Africa and Botswana. This indicates that within the JPTC, there is a natural process involving the institutionalization of data under way, a fact that is supported by the high level of adaptive security in the upper basin reach of the river (see Figure 21).

(b) Is this data uncontested and therefore seen as a legitimate basis for future agreements between the respective riparian states?

The existence of contested data in the Limpopo River basin, specifically regarding Mozambique and Zimbabwe, is problematic (see Table 15). The JULBS has resulted in uncontested data between South Africa and Botswana, but little evidence exists that the nature of this contestation is likely to change with either Zimbabwe or Mozambique in the short-term, given the persistence of high levels of adaptive insecurity in the portion of the basin shared by these 2 riparian states (see Figure 21). Recent developments in the Incomati and Maputo River basin, particularly in the form of the *Incomaputo Agreement*, may serve to attenuate this problem for Mozambique, and become relevant to the Limpopo River basin as well.

(c) Are there agreed-upon rules and procedures?

Given the rudimentary nature of the LBPTC, combined with the fact that it has been dysfunctional for most of its existence, there are no agreed-upon rules and procedures.

The JPTC is a little more sophisticated in this regard, but certainly nowhere near the level of development found in the Orange River basin.

(i) If so, have they been formalized, or do they exist only as a loose arrangement?

Formalized rules are not a feature of the Limpopo River basin, except in the bilateral *Agreement on the Establishment of the Joint Permanent Technical Commission* between South Africa and Botswana, in which case a significant portion of those rules are part of a loose arrangement.

(d) Is there a dedicated conflict resolution mechanism as part of the overall institutional arrangement?

There is no dedicated conflict resolution mechanism in the LBPTC, with Article 7 of the *Agreement on the Establishment of the Limpopo Basin Permanent Technical Committee* stating that rules of procedures are still to be established, an outcome that failed to materialize given the inherent dysfunctionality of the regime.

(i) If so, has it been used and what has been the outcome?

Given the dysfunctional nature of the LBPTC, the non-existent conflict resolution mechanism has clearly failed. Within the JPTC, there has been no need to resort to any conflict resolution mechanism.

(e) Has there been a re-definition of the core management problem away from perceiving water scarcity in an absolute sense, to perceiving water scarcity in a relative sense?

Given the dysfunctional nature of the LBPTC, there has never been any redefinition of the core management problem. In fact the core problem is currently related to removing the causes of dysfunctionality within the regime, rather than redefining the problem being confronted by that regime. Within the JPTC, there has also not been any redefinition of the core problem with a strictly supply-sided management approach being the best way to describe the regime throughout its existence.

(i) To what extent has WDM become one of the institutional objectives?

WDM is not part of the institutional objectives in either the dysfunctional LBPTC or the functional JPTC.

(ii) Is there any evidence of inter-sectoral allocative efficiency being a policy objective?

There is no evidence of inter-sectoral allocative efficiency being a policy objective in either of the regimes under review.

(f) Is there a mechanism to sanction non-compliant actors?

There is no mechanism to sanction non-compliant actors in either of the regimes under review.

(i) If so, has it been used and what has been the outcome?

This question is not relevant to the Limpopo River basin.

(g) Has there been any redistribution of water resources between the various riparian states directly as the result of the regime, and if so what has been the outcome?

There has been no redistribution of water resources between any of the riparian states as a direct result of the regime.

(h) Is there any evidence of regime resilience?

There is evidence of resilience in the JPTC in the form of consensus on the need to generate uncontested data, with the JULBS being a manifestation of this. There is no evidence of resilience in the LBPTC, which collapsed into dysfunction almost immediately after its initial creation.

(i) Is there any evidence of regime robustness?

The dysfunctionality of the LBPTC suggests an absence of robustness. The JPTC has shown remarkable robustness however, because it has managed to withstand the rigors that were encountered in the Limpopo River basin during the *Total National Strategy*

period, and has even grown from Committee (Treaty, 1983a) to Commission (Treaty, 1989) status over time.

(j) Is there any evidence of regime effectiveness?

The collapse into dysfunctionality of the LBPTC indicates an absence of effectiveness. The JPTC presents evidence of effectiveness in the form of ongoing compliance with norms and rules during a difficult period of time, as well as in the collection and institutionalization of uncontested hydrological data that arose from the JULBS.

(k) Is there any evidence of the growth and development of institutional knowledge or institutional learning as the result of the regime?

There is no evidence for the growth of institutionalized knowledge in the LBPTC. The JULBS has made a major contribution to the development of institutionalized knowledge in the context of the JPTC, with not only data, but also the methodologies used to collect, process and interpret those data contributing to this growth.

(i) If so, to what extent has this become a confidence-building and unifying factor?

The uncontested nature of data in the JPTC has resulted in a high level of confidence between actors, with advanced plans on the future construction of 3 new dams having resulted. Conversely, the absence of uncontested data in the LBPTC has prevented the growth of institutional knowledge, which in turn has become a factor inhibiting the regeneration of confidence that was so undermined during the anti-colonial and anti-apartheid liberation struggle.

(l) Can the existing water management arrangements within the Limpopo River basin be called a regime?

The LBPTC is dysfunctional, but it does still exist as a *de facto* entity. It can be considered to be a regime because there is evidence of the convergence of actor's expectations (at least between some riparian states) at various moments in historic time, and because efforts are actively under way to revive it. The LBPTC is not a well-defined regime however. Similarly, the JPTC is definitely a regime because it contains specific

norms and principles that have created a strong convergence in the expectation of the relevant actors. Neither the LBPTC nor the JPTC can be regarded as being an institution in the narrow sense of that concept, because they have no enforcement arrangement for non-compliance.

5.3.4 Conclusion Regarding the Limpopo River Basin

The Limpopo River basin provides an excellent example of the complexity surrounding regime creation when there are issues of a high politics nature impacting on the development of more narrowly-defined water resource management agreements. This complexity is exacerbated by the high level of adaptive insecurity that is somewhat of a unique feature of this basin. The basin also provides an example of the likelihood of bilateral regimes to be more easily negotiated in the face of divisive issues of a high politics nature impacting at the basin level, and in the face of persistent adaptive insecurity. As with the Orange River basin, the primary stimulus for regime creation was national security, but unlike the Orange River basin there is little real evidence of desecuritization outside of the bilateral arrangement between South Africa and Botswana, both being riparian states that are adaptively secure. Significantly, the stark difference between the upper and lower basin highlights the role that uncontested data plays in the creation of confidence between potentially antagonistic riparian states. Consequently, there is evidence of the development of institutionalized knowledge in the upper basin, but nothing in the middle and lower reaches of the river. This has been to the detriment of the downstream riparian (Mozambique), which has a high dependence on the resource and finds itself marginalized in all existing institutional arrangements due to historic factors. The Limpopo River basin thus displays a plus-sum outcome in the upper reaches (where adaptive security is the norm) and a zero-sum outcome in the lower reaches (where adaptive insecurity is the norm), and can be considered a classic case in this regard.

5.4 An Analysis of the Key Hydropolitical Processes in the Incomati and Maputo River Basin

The Incomati and Maputo River basin has 1 functioning bilateral regime (the *Joint Water Commission Agreement between South Africa and Swaziland*); 1 failed bilateral regime (the *Joint Water Commission Agreement between South Africa and Mozambique*); with a failed and recently revived multilateral basin-wide regime (*Agreement on the*

Establishment of the Tripartite Permanent Technical Committee). South African relations with Swaziland have generally been good, although guerilla forces were operating out of that country during the anti-apartheid liberation struggle. South African relations with Mozambique have been troubled, particularly when open support was given to guerilla forces from the various liberation movements, which started operating from there into South Africa, sometimes through Swaziland. These aspects have been relevant to the processes of securitization and regime creation within the Incomati and Maputo River basin.

5.4.1 Securitization Processes

In order to assess the securitization processes in the Incomati and Maputo River basin in greater detail, the key questions that were presented as part of the research design (see Chapter 1) form the basis for the following analysis and discussion.

(a) Is there evidence of the securitization of water resource management in the Incomati and Maputo River basin?

The Incomati River basin is strategically important for South Africa, in part because it supports a significant amount of economic activity within the basin, and partly because it is a source of high quality water that is needed to support industrial processes outside of the basin. The Maputo River has been less important for South Africa in the past, partly because it is more difficult to exploit relative to the volumes involved, and partly because it has been kept as a strategic reserve (see Map 8). Both the Incomati and Maputo River basins are sources of IBTs (see Table 16), a factor that increases their strategic significance to South Africa as a whole. As such the South African hydraulic mission has impacted on both of these international river basins, linking them with the hydropolitical dynamics of the Orange and Limpopo.

The main impetus for securitization within the Incomati and Maputo River basin arose from the deteriorating security climate that occurred in Mozambique, particularly after the rapid withdrawal of the Portuguese in the mid 1970s. Similar to the Limpopo basin case, the lower Incomati River basin became the theatre of a localized low intensity war. The second front that was opened with Rhodesia saw increased military activity in both the Limpopo and Incomati Basin within Mozambique. After Zimbabwean independence in 1980, the same areas became theatres of military operations against the Apartheid

State. The launching of the TPTC must be seen against this background and in light of the *Total National Strategy* approach that South Africa had chosen to adopt. Similarly, the Swaziland infrastructural agreement, the *Nkomati Peace Accords* that was signed in the Incomati River basin and the revival of the Cahora Bassa Project were all a manifestation of the high politics of the time. Under such conditions, water resource management became subordinated to national security considerations. One of the manifestations of this securitization was regime creation in the water sector, in an attempt to offer the incentive of development as a countermeasure to the support by the governments of Mozambique and Swaziland of the anti-apartheid liberation struggle. This has left an indelible imprint on the hydropolitical dynamics of the Incomati and Maputo River basin.

In the post-apartheid era, the structural scarcity that has arisen from earlier South African developments, and in particular from the IBTs that support economic activities in the adjacent Limpopo and Orange River basins, will continue to act as a fundamental driver of conflict potential and therefore securitization. The high level of expectation for political payback that is manifest in Mozambique, is unlikely to be met because of South African priorities towards so-called “emerging irrigation farmers” (Article 9, Paragraph 4(c) of the *Incomaputo Agreement*), so this could also be a factor in the continued securitization within the basin.

(i) If so, who are the main securitizing actors and what are their long-term objectives?

The main securitizing actor was the SSC during the period of the *Total National Strategy* approach by South Africa. The long-term objective of the SSC was the survival of the Apartheid State, which implied the survival of the Afrikaner nation and the economy needed to support that survival. The need for rapid economic growth to redress the historic inequity of apartheid means that economic development has remained a priority for South Africa. This priority is also manifest in Mozambique as post-war reconstruction is attempted.

(ii) If so, what is the referent object that is being existentially threatened; by whom is it being threatened; and what is the nature of that threat?

The referent object was state sovereignty, national identity and economic stability in the Apartheid State. The environment never became a referent object in its own right. In the

post-apartheid era, economic development has become the referent object for all 3 of the riparian states.

(iii) Who are the functional actors, support actors and veto actors; what are their long-term objectives; and what is the nature of the relationship between them?

The only functional actor was the South African military establishment during the period of heightened securitization.

(b) Is there evidence that water scarcity can have an impact on the economic growth potential and social stability in any of the riparian states found in the Incomati and Maputo River basin?

The economic growth potential within both the Incomati and Maputo River basin is highly dependent on water. Given the fact that the Incomati and Maputo River basin is a strategic source of water for the entire South African economy, a fact that becomes evident when one examines the destination of that water. Given the high quality of the water in the Incomati and Maputo River basins, it is fed directly into ESCOM generating sets located at the coalfields in the Limpopo and Orange River basins, which produce the raw power on which the industrial stability of the entire country is based (see Table 16). The fact that the Maputo River basin has been earmarked as a strategic reserve for the future increases the significance of this resource (see Maps 8 & 9).

The Incomati and Maputo River basins form the foundation for the entire economic development of Swaziland. This will become increasingly significant after the completion of the Maguga Dam, which will also be a source of electricity for Swaziland, making it more independent of the regional electricity grid, similar to Lesotho in the LHWP case. In Mozambique, the Incomati River lies in an area with a high population density and will become the second source of supply for the capital city of Maputo in the future. In the case of Mozambique, structural scarcity is a specific feature impacting negatively on its own economic growth potential. All 3 riparian states are thus impacted negatively as the result of water scarcity, making water a strategic issue within the Incomati and Maputo River basin during the post-apartheid and post-war reconstruction era.

This in turn raises the issue of SWE. As previously discussed, virtual water is an accepted way of balancing out strategic water deficits at the national level, but this is second-order

resource dependent. Both Mozambique and Swaziland have second-order scarcity problems, so they are unlikely to be able to resort to virtual water trade as a remedy to endemic water deficit. This is not the case in South Africa however, where second-order resource abundance gives strategic planners in that country a wider range of options. This is also manifest in the adaptive security spectrum that shows Mozambique to be extremely insecure, with Swaziland hovering on the threshold of insecurity (see Figure 23). This raises a series of complex issues that will need a robust institution in the narrow sense of that concept, if it is to be managed successfully.

(i) If so, what is the nature of that impact and how is this threat perception being articulated?

The answer to this question is similar to that previously given in respect of the Orange River basin, so it will not be repeated here. Mozambique, with its inherent second-order scarcity constraints, will probably continue to articulate this threat perception in terms of first-order resource availability only. South Africa, with its relative degree of second-order resource abundance, will be in a position to shift this threat perception away from simply sharing water as a first-order resource focus, to sharing benefits as a second-order resource focus. This will require a robust water regime and a sophisticated river basin management institution if it is to occur in a sustainable manner.

(c) Is there any evidence of the desecuritization of water resource management in the Incomati and Maputo River basin?

The response given in respect of the Orange River basin is also relevant here and will not be repeated. In addition to this, the *Incomaputo Agreement* can be regarded as being a significant instrument for the desecuritization of water resource management. The reason for this is the fact that Mozambique's strategic needs have been acknowledged in Paragraph 4(a) of Article 9 of the *Incomaputo Agreement* and the whole agreement is being regarded as an interim one only - a fact that is reflected in the official title of the document. This implies that future negotiations will have the realistic likelihood of achieving an equitable water sharing agreement that is enforceable, which in its own right is a driver of potential desecuritization. The existence of a high level of adaptive insecurity in the basin (see Figure 23) may mitigate against this likelihood however, so second-order scarcity continues to be a salient feature.

(i) If so, who are the functional actors, and what are their long-term objectives?

Unlike any of the other international river basins under review, the Incomati and Maputo River basin provides an example of functional actors at work in regime creation in the context of desecuritization. The Incomati River basin has attracted international attention, partly because of media interest in the plight of Mozambique during the flood event of 2000 (Matlou, 2000:28; Christie & Hanlon, 2001), partly because of media interest in the collapse of the Apartheid State, and partly because of the resurgence of global interest in IWRM as a concept. There are consequently some examples of third party involvement in the desecuritization of water resource management in the Incomati and Maputo River basin.

The Swedish government became involved in the Incomati River basin through a SIDA funded project that was called the Shared Rivers Initiative (SAWB, 2000:12; Turton & Quinn, 2000). This project sought to bring scientists together from all 3 Incomati riparian states in a collaborative venture that was designed to determine what the “real” issues within the river basin were (i.e. issues that affect the people rather than those being expressed officially by the government). Government officials who were directly responsible for negotiations within the context of the TPTC were deliberately avoided, because it was felt that they would articulate the interests of their specific governments too strongly. The TPTC was briefed on the progress of the project however (SRI, 2000). The Shared Rivers Initiative succeeded in taking scientists from all 3 riparian states and exposing them to actual conditions in the different reaches of the river (SAWB, 2000:12). This served to sensitize them to the range of problems being encountered, and resulted in a report being made public (Breen, 2000; Fakudze *et al.*, 2000; Leestemaker *et al.*, 2000; Peter *et al.*, 2000; Quinn *et al.*, 2000). Elements of this entered the South African water research community by virtue of the involvement of South African scientists in the Shared Rivers Initiative (Breen *et al.*, 2002).

The Dutch Foreign Ministry became involved when 2 missions were sent to Mozambique during October 1999 and June 2000. As a result of this, the Incomati and its adjacent coastal zone was identified as a high priority by the Mozambican government (Proposal, 2000). Given the fact that the Dutch government hosted the Second World Water Forum during 2000, combined with the high media coverage that the Mozambican flooding had been given simultaneously, created an opportunity for functional actor involvement.

The International Water Management Institute (IWMI), an international non-governmental organization with close funding links to the Dutch Foreign Ministry, also became involved (IWMI, 2002a; IWMI, 2002b; IWMI, 2002c). Significantly, IWMI involvement is in direct support of the *Incomaputo Agreement* and is designed to give some impetus to the desecuritization of water resource management within the Incomati and Maputo River basin.

The long-term objective of SIDA and the Dutch Foreign Ministry centre on the projection of political influence in the SADC region, specifically incorporating potential commercial spin-offs that may arise, while the long-term objective of IWMI relates to the stimulation of capacity in the field of water resource management in the developing world.

(ii) Is there any evidence that regimes are acting as potential desecuritizing agents?

In the context of the Incomati and Maputo River basin there is no evidence that the TPTC ever acted as a desecuritizing agent during the *Total National Strategy* period of history. The *Piggs Peak Agreement* was flagrantly violated by South Africa, resulting in a deep sense of insecurity for Mozambique that has persisted since then (Vas & Pereira, 1998:119; Vas, 1999:65). The apparent rejuvenation of the TPTC, possibly as the result of the activities of the functional actors previously noted, allowed for the *Resolution of the Tripartite Permanent Technical Committee on Exchange of Information and Water Quality* to be reached. The timing of this agreement, occurring as it did during the run up to the WSSD that was hosted by South Africa, was significant because it allowed the *Incomaputo Agreement* to be signed in public under the full scrutiny of the international media. While it is too early to determine with any degree of certainty, it is likely that the rejuvenated TPTC will contribute substantially to the desecuritization of water resource management in the basin.

The bilateral JWC and KOBWA did act as a desecuritizing agent during periods of heightened political tensions in the region, by limiting the range of arbitrary actions that could be taken by any of the role-players. This provided a sense of predictability in a period of heightened risk and uncertainty.

(d) Is there any evidence that a hydropolitical security complex is emerging, or is likely to emerge, within the Incomati and Maputo River basin in the near future?

There is no evidence of a hydropolitical security complex emerging because hydropolitics are not a necessary and sufficient condition for securitization. The Incomati and Maputo River basin does provide evidence that a hydropolitical complex is becoming a distinct element of the Southern African regional security complex that was initially identified by Buzan (1991:210). The evidence from the Incomati and Maputo River basin suggests that the actions of the hegemon within the international river basin impacts directly on the less-developed and economically weaker low-order riparian state by limiting the range of options open to them. In this regard Mozambique can be regarded as being an example of an impacted state, while South Africa can be regarded as being a pivotal state.

(i) If so, what are the main drivers of this process?

The main drivers of this process relate to the co-riparian status of the economically most developed and least developed states in the SADC region in any given international river basin. The higher level of second-order resources that the hegemonic state is able to muster, enables it to extend its influence into international river basins that are also the primary source of water for the less developed state. As such, the asymmetrical hydropolitical power relations within the international river basin are nothing more than a manifestation of the overall power configuration in the region. This is starkly evident in terms of the adaptive security spectrum (see Figures 14 & 23).

(ii) If so, can the emergent hydropolitical security complex be regarded as being a component of a broader regional security complex?

The emergent hydropolitical complex can be regarded as being a component of the broader regional security complex because it provides a coherent way of analyzing patterns of amity and enmity that mediate between the unit and the international subsystem level of analysis.

5.4.2 Regime Creation Processes

In order to assess the regime creation processes in the Incomati and Maputo River basin in greater detail, the key questions that were presented as part of the research design (see Chapter 1) form the basis for the following analysis and discussion.

(a) How do actors define the situation?

As previously noted prior to 1994 the SSC was the main actor in regime creation. The SSC defined the situation in terms of a *total onslaught* against the norms, values and principles of the minority-defined state. Within the context of the TPTC, Mozambique resisted this approach vehemently, with a degree of commitment that brought the country into a debilitating civil war. The South African military establishment sponsored the rebel RENAMO movement, at least until a year before the full democratization of South Africa, in flagrant violation of the *Nkomati Peace Accords*. It can therefore be concluded that Mozambique defined the situation in terms of an ideological paradigm involving both the anti-colonial and the anti-capitalist liberation struggles. Significantly, the JWC between South Africa and Mozambique, which was agreed after the collapse of apartheid and in the face of the moribund TPTC after the *Piggs Peak Agreement* debacle, makes no mention of “the Peoples Republic of Mozambique” in the official title of the agreement, suggesting that the ideological element was being de-emphasized at that stage. Swaziland on the other hand, chose to avoid the ideological conflict, and to define the situation in terms of its own direct needs for infrastructural improvement, job creation and economic development. The bilateral *Joint Water Commission Agreement between South Africa and Swaziland* saw a general harmonization of interests.

(b) What changes do the role-players make in their definitions of the situation and their preference structure?

During the apartheid and Cold War hydropolitical era, the major emphasis was on national security, which influenced the preference structure. As with other international river basins, the South African preference was to subordinate water resource management to national security. The Mozambican government adopted a persistent confrontational posture, motivated as they were by their predominantly ideological stance, which prevented any significant institutional development in the water sector. The Swaziland preference structure was defined by what they could get out of the regime in terms of hard infrastructural and economic development. The consistent bad experience within the multilateral TPTC, juxtaposed against the consistently good experience within the bilateral JWC, meant that both South Africa and Swaziland eventually opted for a preference structure that was defined by this bilateral form of regime.

(c) What vision do governments and all of the other relevant actors have?

Mozambique, with its strong ideological commitment to the anti-colonial and anti-capitalist liberation struggle, received moral support from Zimbabwe in its opposition to the South African promoted CONSAS. Given the fact that both Mozambique and Zimbabwe are co-riparians with South Africa in the Limpopo River basin, there was a degree of spillover from one international river basin to the other. This broader ideological struggle consequently became one of the key defining parameters in the Incomati and Maputo River basin. Consequently, South Africa persisted with the “carrot” and “stick” approach that was inherent to the *Total National Strategy*, while Mozambique doggedly adhered to its ideologically-defined stance, resulting in a sharply polarized vision. This process of polarization was further enhanced by the wide spread of the respective riparian states across the adaptive security spectrum. Swaziland, hovering as it were on the threshold of adaptive insecurity itself, was drawn into the South African camp, being rewarded with a series of development projects that have persisted into the post-apartheid era, resonating somewhat with the contemporary SADC vision of regional economic integration enshrined in the *Declaration Treaty and Protocol of the Southern African Development Community*.

5.4.3 Institutional Development Processes

In order to assess the institutional development processes in the Incomati and Maputo River basin in greater detail, the key questions that were presented as part of the research design (see Chapter 1) form the basis for the following analysis and discussion.

(a) Is there hydrological data that has been institutionalized?

The initial basin-wide *Agreement on the Establishment of the Tripartite Permanent Technical Committee* makes no mention of hydrological data as a specific entity, focusing instead on “measures to be undertaken to alleviate short-term problems regarding water shortages on rivers of common interest during drought periods”. The *Piggs Peak Agreement* makes reference to the need for data, calling for the joint study of the whole basin - what subsequently became JIBS - with South Africa offering to finance the entire project. The *Resolution of the Tripartite Permanent Technical Committee on Exchange of Information and Water Quality* devotes itself entirely to the institutionalization of hydrological data; with specific timeframes (Paragraph 2.2); specific parameters to be

monitored (Appendix A); specific polluting substances to be monitored (Appendix E); specific hydrometric monitoring stations involved (Appendix B); and sampling methods and analysis (Appendix D) all receiving individual attention. The *Incomaputo Agreement* calls for the open exchange of information and data between all parties (Article 2), with the specific requirement for all parties to exchange data on the ecological state of both the Incomati and Maputo Rivers (Paragraph 6 of Article 2). This is the first example of specific attempts to institutionalize data, and in particular data needed to sustain ecological functioning of the river, as part of a regime in any of the international river basins under review.

The bilateral *Joint Water Commission Agreement between South Africa and Mozambique* makes mention only of “technical matters relating to the joint or separate investigation by the Parties of the development of any water resource of common interest” (Article 3, Paragraph 1(b)).

The *Joint Water Commission Agreement between South Africa and Swaziland* makes no specific mention of hydrological data, but Article 3 calls for separate or joint investigation needed for the development of water resources (Paragraph 1(b)), along with the development of criteria to be adopted in the allocation of water between the parties (Paragraph 1(d)). Subsequent agreements go into great detail about water allocation and water data, specifically as this pertains to the apportionment of capital cost (Annex 3 of the *KOBWA Agreement*).

(b) Is this data uncontested and therefore seen as a legitimate basis for future agreements between the respective riparian states?

The data in the Incomati River basin has a history of contestation, specifically during the anti-colonial and anti-apartheid liberation struggle period. The collapse of the *Piggs Peak Agreement* saw an increase in the level of contestation over data and loss in confidence by Mozambique. The *Resolution of the Tripartite Permanent Technical Committee on Exchange of Information and Water Quality* became a watershed, with the subsequent harmonization of data that was presented in Article 4 ending the period of bitter disagreement between South Africa and Mozambique. The JIBS programme, while being the source of initial contestation, ultimately became the main vehicle for the de-escalation of conflict over the hydrological data. There is no history of data being contested between South Africa and Swaziland.

(c) Are there agreed-upon rules and procedures?

Given the rudimentary nature of the TPTC, combined with the fact that it has been dysfunctional for most of its existence, there were no agreed upon rules and procedures until the *Resolution of the Tripartite Permanent Technical Committee on Exchange of Information and Water Quality*, and subsequent *Incomaputo Agreement*. The *Resolution of the Tripartite Permanent Technical Committee on Exchange of Information and Water Quality* provides specific rules and procedures of a technical nature with respect to water quality. The *Incomaputo Agreement* introduces rules on the protection of the environment (Article 6), with specific details of the IFR rules to be applied to different sub-basins in the whole Incomati system (Article 5 of Annex I) and in the whole Maputo system (Article 7 of Annex I), along with the specific stipulation of flow regimes (Article 9 and Annex I). This represents the most detailed set of rules and procedures in any of the international river basins under review.

Given the complex nature of KOBWA as the infrastructural component of the JWC, there are more elaborate rules and procedures than was initially the case in the TPTC. The subsequent *KOBWA Agreement* consists of 19 Articles and 3 Annexes, all of which relate to a specific set of rules and procedures.

(i) If so, have they been formalized, or do they exist only as a loose arrangement?

These rules and procedures were not formalized in the TPTC until the signing of the *Resolution of the Tripartite Permanent Technical Committee on Exchange of Information and Water Quality* and subsequent *Incomaputo Agreement*. The rules in the JWC have always been formalized in terms of the *Joint Water Commission Agreement between South Africa and Swaziland* and the *KOBWA Agreement*.

(d) Is there a dedicated conflict resolution mechanism as part of the overall institutional arrangement?

There was no dedicated conflict resolution mechanism in the TPTC at the time of its inception. Article 15 of the *Incomaputo Agreement* refers to arbitration procedures, ultimately incorporating the SADC Tribunal, with the Office of the President of the International Court of Justice (ICJ) also being recognized under specific circumstances.

Article 7 of the *Joint Water Commission Agreement between South Africa and Swaziland* makes provision for dispute resolution through the offices of an arbitrator that is mutually agreed by both parties, with the UN Secretary General being recognized in the event that agreement cannot be reached on the appointment of the arbitrator. Article 8 of the *Joint Water Commission Agreement between South Africa and Mozambique* calls for negotiation between the parties with no other formal conflict resolution mechanism being stipulated.

(i) If so, has it been used and what has been the outcome?

The TPTC became dysfunctional with the collapse of the *Piggs Peak Agreement* and no official conflict resolution mechanism was used. The revival of the TPTC was not the result of any official conflict resolution mechanism, but can be attributed, at least in part, to the activities of the functional actors previously noted, as well as the emblematic event that arose in the form of the WSSD. With regards to the latter, the South African government, as hosts of the global event, used the opportunity to showcase their commitment to sustainable development - a fact reflected in the detail of the *Incomaputo Agreement*, specifically with respect to IFR rules as a management parameter for the sustainable utilization of watercourse systems.

(e) Has there been a re-definition of the core management problem away from perceiving water scarcity in an absolute sense, to perceiving water scarcity in a relative sense?

The TPTC offers the only empirical evidence of the re-definition of the core management problem as a specific component of any water regime under review. Article 8 of Annex I of the *Incomaputo Agreement* makes mention of “better management practices or other water conservation measures, including pricing policies”. This represents the first tangible proof that a demand-sided management approach is starting to be recognized in the domain of what has traditionally been supply-sided management approach dominant.

(i) To what extent has WDM become one of the institutional objectives?

While WDM is not specifically mentioned by name in any of the regime agreements under review, the recognition of water pricing as an example of “water conservation measures” and “better management practices” in Article 8 of Annex I of the *Incomaputo Agreement* is an integral component of WDM. This is a small but important step in the

growth of the TPTC as a regime, and in particular, towards the evolution of a more sophisticated policy that is based on equity and sustainability.

(ii) Is there any evidence of inter-sectoral allocative efficiency being a policy objective?

There is no evidence of inter-sectoral allocative efficiency being a policy objective in any of the regimes under review.

(f) Is there a mechanism to sanction non-compliant actors?

There is no mechanism to sanction non-compliant actors in any of the regimes under review.

(i) If so, has it been used and what has been the outcome?

This question is not relevant to the Incomati and Maputo River basin.

(g) Has there been any redistribution of water resources between the various riparian states directly as the result of the regime, and if so what has been the outcome?

There has been no significant redistribution of water resources in any of the regimes under review. The *Incomaputo Agreement* recognizes the *Piggs Peak Agreement*, which gives Mozambique $2\text{m}^3\text{s}^{-1}$ at the Ressano Garcia border (Vas & Pereira, 1998:119; Vas, 1999:65). While it does not deviate from this allocation, the *Incomaputo Agreement* does lay the foundation for the reallocation of water to be negotiated by recognizing the rights of Mozambique to water for the capital city Maputo (Paragraph 4(a) of Article 9), and by introducing reference projects (Annex II). The full official title of the *Incomaputo Agreement* also gives recognition to the fact that this is an interim agreement, further suggesting that the redistribution of water between riparian states is a probability at some time in the future.

There is no redistribution of water between South Africa and Swaziland under the *Joint Water Commission Agreement between South Africa and Swaziland*, but the initial allocation to both South Africa and Swaziland is determined by Article 12 of the *KOBWA Agreement*.

(h) Is there any evidence of regime resilience?

Despite the initial collapse of the TPTC into dysfunction, it has continued to exist as a *de facto* entity. The fact that the *Incomaputo Agreement* could finally be reached, despite the history of bitter conflict over issues of a high politics nature, provides some of the strongest empirical evidence of resilience in any of the regimes under review.

(i) Is there any evidence of regime robustness?

The TPTC has endured a baptism of fire over 2 decades of ideological struggle, much of which had a military dimension to it. It can be argued that the very fact that the TPTC survived at all makes it more robust than any of the bilateral regimes in existence in either of the international river basins under review.

(j) Is there any evidence of regime effectiveness?

The TPTC provides significant evidence of the material breach of norms and rules over time. It also provides strong indications, through the *Resolution of the Tripartite Permanent Technical Committee on Exchange of Information and Water Quality* and the *Incomaputo Agreement* of regime resilience and robustness, both factors that contribute to effectiveness. The TPTC is an example of a regime that initially failed, but that managed to endure enormous challenges over time, which improves the prognosis for future effectiveness. The detail contained within the *Incomaputo Agreement*, covering both hydrological parameters and the realities of shared political experiences, suggest that the TPTC is set on a path of greatly enhanced effectiveness. It can be argued that the trial by fire that the TPTC has undergone, extending over 2 decades of bitter struggle of a high politics nature, has increased its potential for effectiveness. The actual effectiveness cannot yet be determined beyond the empirical fact that the TPTC has been revived; has been given data as a consensus-building element; and has been transformed in an institutional sense in a way that suggests it will become more effective in the near future. The existence of high levels of adaptive insecurity in the basin acts as a real threat to future effectiveness however, and will have to be given special attention, particularly by the hegemonic state, if the current goodwill is to be sustained (see Figure 23).

(k) Is there any evidence of the growth and development of institutional knowledge or institutional learning as the result of the regime?

The TPTC provides a dramatic example of the growth and development of institutional knowledge. The initial *Agreement on the Establishment of the Tripartite Permanent Technical Committee* established a relatively crude regime with no implicit mention of the institutionalization of knowledge. The *Incomaputo Agreement* on the other hand, provides strong evidence of 2 specific aspects.

Firstly, the revival of the TPTC reflects the experiences of all the riparian states in other regimes, both positive and negative. The positive experiences relate to regimes such as the *Treaty on the Lesotho Highlands Water Project*; the *Joint Water Commission Agreement between South Africa and Swaziland* and the *KOBWA Agreement* between the same parties; the *Permanent Water Commission Agreement between South Africa and Namibia* and *Violsdrift and Noordoewer Joint Irrigation Scheme Agreement* between the same parties; the *SADC Protocol on Shared Watercourse Systems*; and the *ORASECOM Agreement*, all of which have been successful. The negative experiences relate to regimes such as the *Agreement on the Establishment of the Limpopo Basin Permanent Technical Committee* and the *Joint Water Commission Agreement between South Africa and Mozambique*, both of which have been failures to date.

Secondly, the central role of uncontested data as a critical element in the effective management of the complexity that is inherent to international river basins facing closure is highlighted. This provides empirical evidence of the development of knowledge in the narrowly defined meaning of the concept.

(i) If so, to what extent has this become a confidence-building and unifying factor?

The revival of the TPTC, sustained as it were by the institutionalization of knowledge, would not have been possible without the agreement on fundamental hydrological data and the methodologies used to process those data into meaningful management responses in the form of policy. While the JIBS process was initially contested - an aspect that was also evident in the ORRS - it ultimately became the one vital initiative that generated the kind of information that was needed for consensus between riparian states that had previously been divided over seemingly irreconcilable ideological issues.

(l) Can the existing water management arrangements within the Incomati and Maputo River basin be called a regime?

The TPTC has existed for 2 decades that were characterized by intense conflict of a primarily ideological nature. The JWC between South Africa and Swaziland has also survived the rigours of the anti-colonial and anti-apartheid liberation struggle that rendered the TPTC impotent for so long. Both the TPTC and the JWC meet the formal definition of a regime. In fact the TPTC is a particularly good example of a regime because it has been so robust and resilient, even if it has not been very effective for most of its existence. Neither the TPTC nor the JWC can be considered as being an institution however, because neither has an enforcement arrangement for non-compliance.

5.4.4 Conclusion Regarding the Incomati and Maputo River Basin

The Incomati and Maputo River basin provides an excellent example of the dynamics of a water regime. The complexity related to the creation of a regime in the face of conflict of a high politics nature, is highlighted by the collapse into dysfunction of the TPTC during the years of anti-colonial and anti-apartheid liberation struggle, and its subsequent revival in recent times. Despite the seeming irreconcilability of the ideologically-defined positions of the various riparian states, the TPTC endured as a *de facto* institution in the broadest sense of that concept, ultimately reviving itself into a regime that seems to have all the key ingredients of success. The primary stimulation for regime creation was national security, with the main threat perception being articulated by high-order riparian South Africa. It can be argued that the primary stimulus for the revival of the regime was also national security, with the main threat perception being articulated by low-order riparian Mozambique, this time in the guise of a threat to its economic growth potential in a time of post-war reconstruction. Security concerns, no matter whether they are interpreted as being national or economic security in orientation, therefore seem to be a primary driver of regime creation. The Incomati and Maputo River basin also provides an example of the unifying role that hydrological data can play as a potentially desecuritizing agent. An interesting correlation between patterns of regime support and long-term outcomes is presented in the Incomati and Maputo River basin case. Swaziland, as the state in the low-order riparian position that chose to define its situation *vis-à-vis* the regime being offered by the hegemonic power in terms of national self-interest, seemed to benefit because of this. This resulted in a plus-sum outcome in the

upper basin area. Conversely Mozambique, as a state in a low-order riparian position that chose to define its situation *vis-à-vis* the regime being offered by the hegemonic power in terms of broader ideological issues, never benefited from the arrangement. In fact, Mozambique seemed to become progressively more marginalized to the extent that it was finally confronted by a *fait accompli* that could best be described as being a zero-sum outcome.

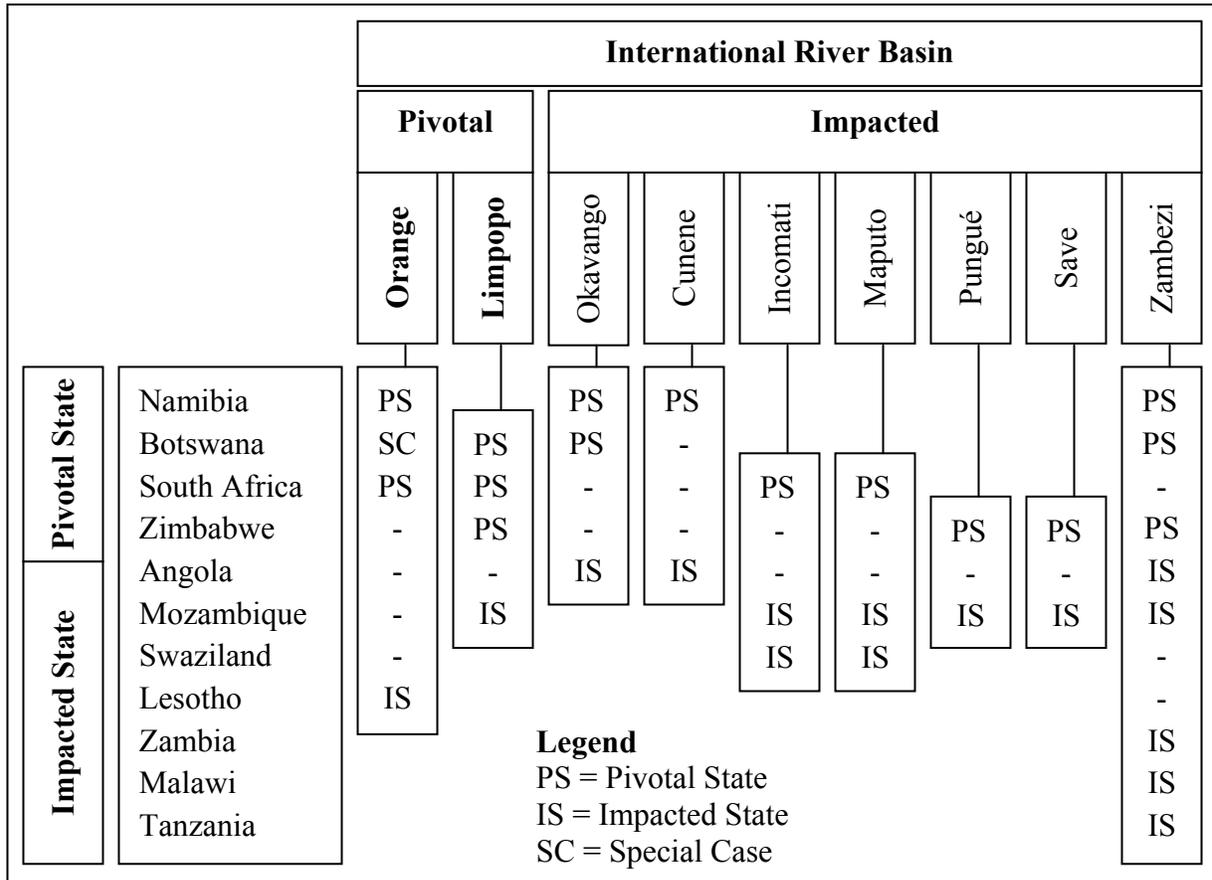
5.5 Water as an Element of a Regional Security Complex in Southern Africa

The analysis of the South African case study has shown that water is indeed an element in the international relations of the SADC region. Four of the economically most developed states in the region - South Africa, Botswana, Namibia and Zimbabwe - are all co-riparians with each other in 2 international river basins - the Orange and the Limpopo. In this regard Zimbabwe is somewhat of an anomaly however, having been the economically second most developed state in the region until recent government policies plunged the economy into decline, a factor that is represented as adaptive insecurity (see Figures 14 & 21). Nonetheless, all of these countries are being confronted by water scarcity in these 2 international river basins as a potential limiting factor to their long-term economic growth potential. These 4 countries (South Africa, Botswana, Namibia and Zimbabwe) can therefore be called “pivotal states”, with the 2 international river basins to which they are all co-riparians (Orange and Limpopo) being called “pivotal basins”. Other international river basins that have either of these pivotal states as riparians can therefore be called “impacted basins” with the other co-riparian states being called “impacted states”. When combined, these make up a hydropolitical complex (see Figure 24).

This enables a deeper understanding of the changing patterns of amity and enmity to be developed as population growth continues to outstrip the ability of water resource managers to secure sufficient supply. The South African case study has shown that water scarcity on its own has never been a fundamental driver of securitization, which means that a hydropolitical security complex is not emerging as in the Tigris and Euphrates Basin (Schulz, 1995). There is consequently a difference between a hydropolitical security complex, with the primary focus on water resource management as a driver of state security concerns, and a hydropolitical complex, which is embedded in the broader network of regional security concerns and is consequently a component of a regional security complex. A hydropolitical security complex thus sees water as being an

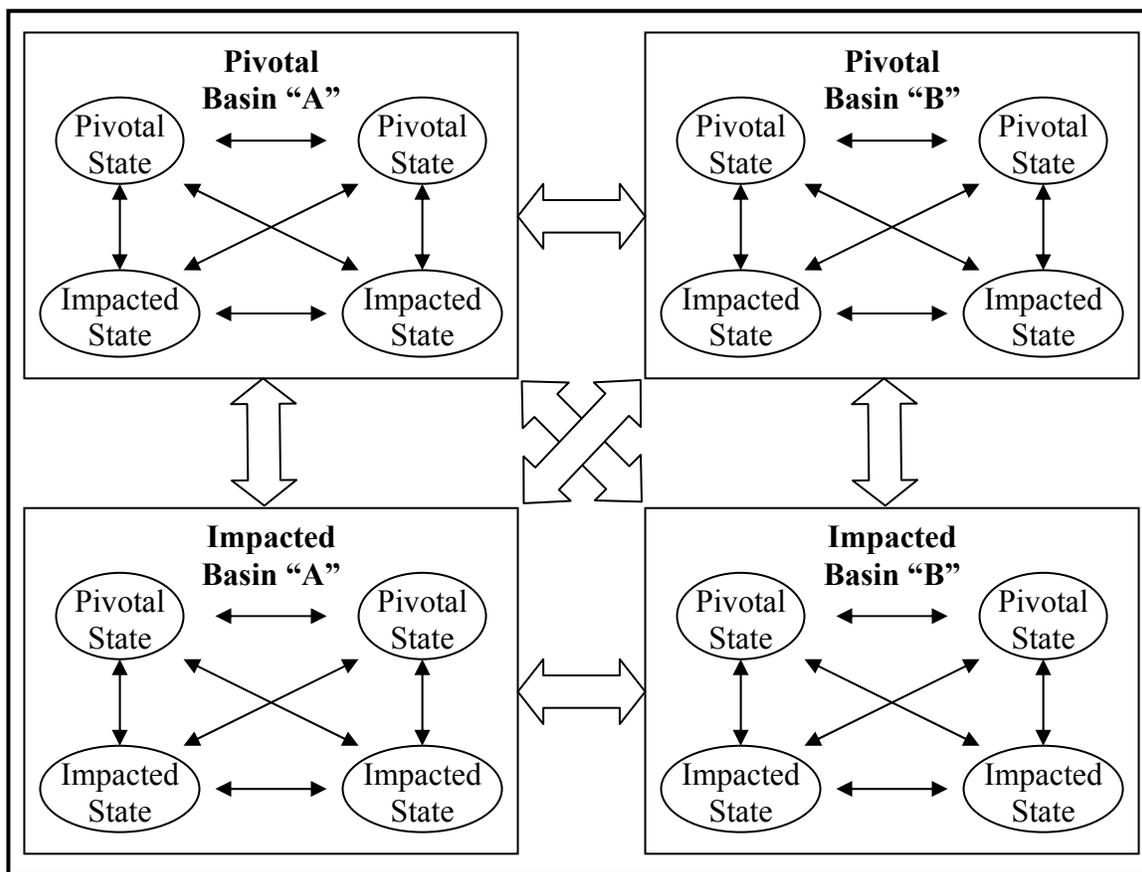
independent variable, whereas a hydropolitical complex sees water as being just another set of patterns of amity and enmity between states in a given international river basin and is therefore a component of a more clearly defined regional security complex.

Figure 24. The Southern African Hydropolitical Complex.



In the context of a hydropolitical complex as defined above, water scarcity is emerging as an important enough feature to impact on the international relations of states within the SADC region, with distinct patterns of amity and enmity being driven by interaction between pivotal state and pivotal state; between pivotal state and impacted state; between impacted state and impacted state; between pivotal basin and pivotal basin; between impacted basin and impacted basin; and between pivotal basin and impacted basin. The complex patterns of potential amity and enmity can occur at specific levels of scale making SCT an appropriate analytical tool (see Figure 25).

Figure 25. Potential Patterns of Political Interaction Between Different Components of a Hydropolitical Complex.



In order to formalize the concept of a hydropolitical complex as being a distinct component of the Southern African Regional Security Complex that Buzan (1991:210) identified, the following key definitions have been developed from this analysis:

(a) *Pivotal state*: Pivotal states are those riparian states with a high level of economic development that also have a high reliance on international river basins for strategic sources of water supply. In the context of Southern Africa, there are 4 states in this category - the Republic of South Africa, Botswana, Namibia and Zimbabwe - although the decline of the latter into recent political decay makes its status as a pivotal state less clear-cut than the rest.

(b) *Impacted state*: Impacted states are those riparian states that have a critical need for access to water from international river basins that are shared with a pivotal state for their own economic and social development, but by virtue of the unequal power relations

within the basin concerned, are unable to negotiate what they consider to be an equitable allocation of water. In the context of Southern Africa, there are seven states in this category - Angola, Mozambique, Swaziland, Lesotho, Zambia, Malawi and Tanzania.

(c) *Pivotal basin*: Pivotal basins are those international river basins facing closure that are also strategically important to any one (or all) of the pivotal states by virtue of the range and magnitude of economic activity that they support. In the context of Southern Africa, there are at least 2 basins in this category - the Orange and the Limpopo - with additional research needed to categorize other basins in this fashion.

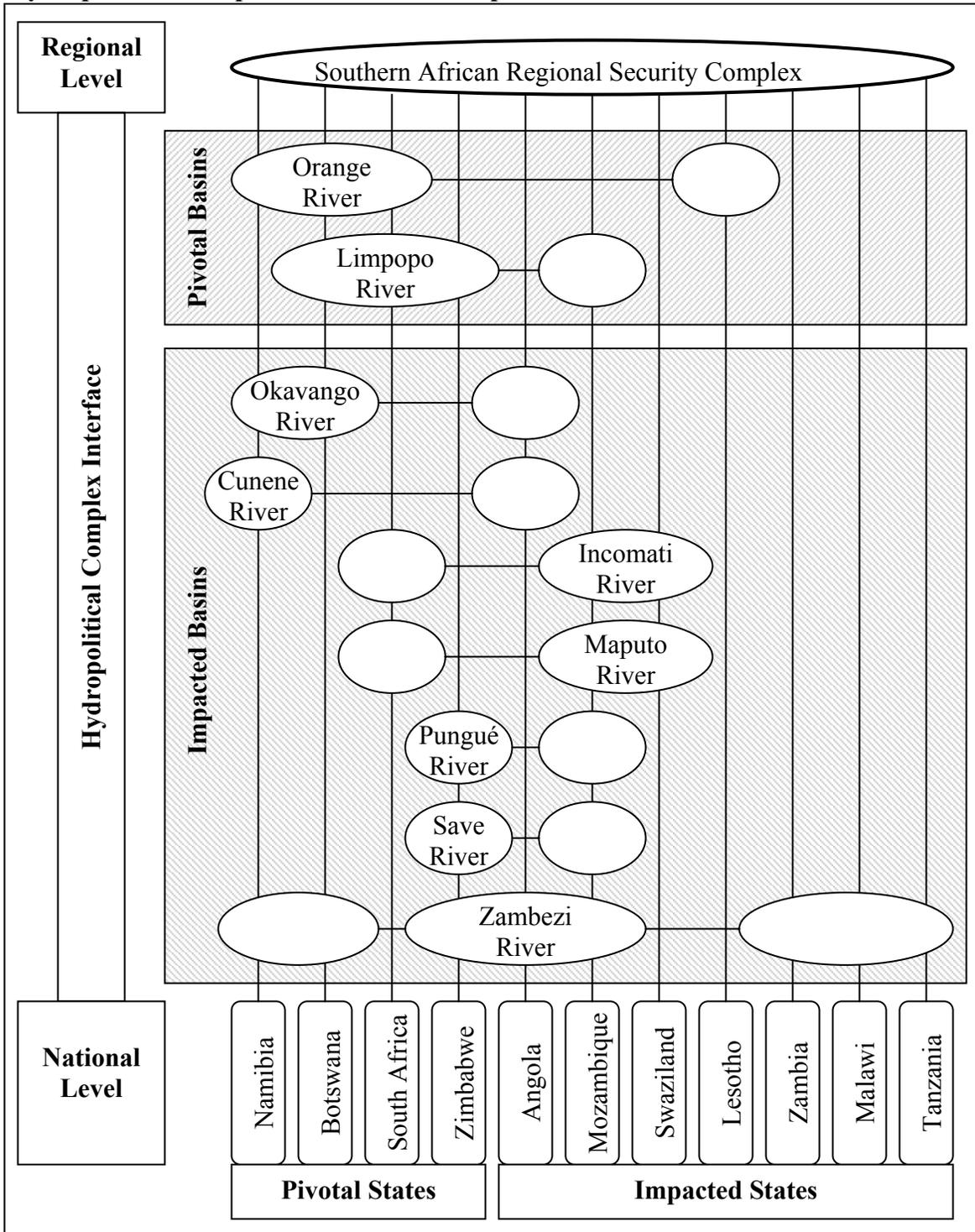
(d) *Impacted basin*: Impacted basins are those international river basins that have at least one (or more) of the pivotal states as co-riparians, which in turn reduces the freedom of choice for the impacted states to develop their water resources in a manner that they deem to be fair and equitable. In the context of Southern Africa, there are seven basins in this category - Zambezi, Cunene, Okavango, Incomati, Maputo, Pungué and Save.

The specific relationship of the various components of the Southern African Hydropolitical Complex with one another (pivotal states and pivotal basins); and the relationship between the mooted hydropolitical complex and the regional security complex is presented in Figure 26. Specific attention is drawn to the levels of analysis that Buzan *et al* (1998:5-6) have developed (see Figure 5) and the hydropolitical complex that has arisen from the analysis of the South African case study (see Figure 26). Similarly, the patterns of possible hydropolitical interaction that were presented, can also embrace different levels of analysis (see Figure 25). This also provides a more nuanced way of understanding Wolf *et al's* (2003) classification of the Orange, Limpopo and Incomati River basins as being “at risk”.

The hydropolitical complex can be understood as being a layer of political interaction, across levels and between units, centered on patterns of amity and enmity in the broad sense, but amplified specifically with respect to water resource management. By using this conceptual tool, it enables a nuanced understanding of international relations *within* the regional grouping (in this case SADC). So for example, a pivotal state has a set of relationships with more than one unit, and this set of relationships is defined not only about water cooperation, but also about a broader set of issues. This means that pivotal states have a specific set of issues that they prioritize, and this acts as a sufficiently

cohesive driver to be viewed on its own. The same holds true for impacted states, but the type of relationship differs, and the range of possible options is more limited.

Figure 26. The Southern African Regional Security Complex Showing the Hydropolitical Complex as a Distinct Component.



Buzan *et al* (1998:13) show that there are 3 components of essential structure in a security complex, namely the arrangement of the units and the differentiation among them; patterns of amity and enmity; and the distribution of power among the principal units. All 3 of these components have been shown to exist in the South African case study:

The arrangement of the units is geographically fixed within the context of an international river basin. While factors driving political coalitions such as ideological struggles come and go, riparian states will always be riparian states in any given international river basin.

The patterns of amity and enmity between the respective units have been played out at the basin level, and the legacy of this dynamic process continues to be manifest at that level long after the fundamental drivers have changed. In addition to this, water deficit in a given international river basin is often the result of abstraction by a pivotal state through the application of technical ingenuity over which an impacted state has no control. It can also be argued that this abstraction has become a driver of international relations in its own right, when perceptions of insecurity are cascaded downstream and across watersheds through IBTs.

The hydraulic mission of the hegemonic riparian state is a manifestation of power, with the level of technical ingenuity that a given state can muster being a good indicator of that power. This is reflected in the subsequent adaptive security spectrum. The more adaptively secure states within any given international river basin can create strategic opportunities for themselves by leveraging advantage out of any regime that the hegemon offers. Conversely, the less adaptively secure states have fewer options open to them, and can choose either to cooperate or defect, with the South African case study providing good examples of both.

Finally, in support of the mooted hydropolitical complex, the empirical evidence presented in the South African case study reflects the Widstrand (1980) and Schulz (1995:102) typology of potential water conflict.

5.6 Summary of the Analysis of the South African Case Study

The detailed analysis of the South African case study, particularly by filtering the raw data through the fine conceptual net provided by the respective key questions, has provided a nuanced picture of the processes of securitization, regime creation and institutional development. In this regard it has provided a detailed insight into the political aspects of institutional development in the water sector by focusing on South Africa and its international river basins. From this analysis a number of conclusions have been drawn, which together can be summarized as follows:

In all cases studied, regime creation was driven primarily by the national security concerns of the hegemonic state (South Africa). The water regime, once having been created, always provided a degree of certainty between riparian states, provided that the non-hegemonic power accepted the terms of the regime in the first place. As such regimes can be considered to be a desecuritizing element when seen in the context of the broader set of high politics issues that confront the riparian states.

The way that actors define the situation, and in particular changes that were made to the definition of the situation over time, were a key determinant of the final outcome. As a result, riparian states that chose to define the situation in terms of national self-interest, have always benefited from the regime with a plus-sum outcome occurring in all cases of this nature. This category includes Lesotho, Swaziland and Botswana during the anti-colonial and anti-apartheid period of hydropolitical history. Namibia can also be included in this category, although it entered into the process of regime creation after these major struggles had been waged. Conversely, riparian states that chose to define the situation in terms of an ideological struggle against colonialism and capitalism, have never benefited from the regime with a zero-sum outcome occurring in all cases of this nature. This includes Zimbabwe and Mozambique, with the latter having been particularly hard hit by virtue of its near total marginalization in all of the international river basins shared with South Africa. Significantly, albeit beyond the scope of this specific analysis, Mozambique has also been marginalized in other international river basins that it shares with Zimbabwe.

Regimes have been remarkably durable once established, surviving intense rivalry of a high politics nature. This means that while a regime such as the TPTC appears to have failed, when viewed over a longer timeframe, the fact that it has survived at all actually

makes it potentially more sophisticated once revitalized. The TPTC is the best example of a dysfunctional regime that was resuscitated and has emerged into what is potentially one of the more sophisticated arrangements in existence, at least when compared with the other regimes in the study area. Along the same lines, it can be said that bilateral regimes, which initially appear to be rather sophisticated, are not subject to the dramatic range of exogenous factors, and consequently evolve in a more narrowly defined way.

Data plays a crucial role in building consensus between otherwise hostile riparian states. In all cases where there is basin-wide data in existence, even if it is contested initially, there has been significant regime evolution. Similarly, in all cases presented, the process of basin-wide data collection was complex, and prone to disruption on occasion. However, once these disruptions had been overcome, and in spite of the existence of other divisive issues, the basin-wide data finally became a central point in achieving consensus. Hydrological data can thus become knowledge in the narrowly defined sense of that concept, and can contribute to the evolution of an institution in the narrowly defined sense of that concept.

Regimes are clearly capable of institutional learning, and the role played by the contestation and ultimate acceptance of basin-wide hydrological data has been patently manifest. The importance of second-order resources in this process is revealing. Riparian states that have a second-order scarcity and that choose to define the situation in terms of an ideological dimension, seem to be incapable of contributing to the institutional learning within the regime concerned. Under these conditions, bilateral regimes have been the approach that has yielded the greatest reward for the participating actors, but this has tended to exclude the defecting state to its long-term detriment.

Regimes cannot be divorced from the humans that negotiate them in the first place. The case study shows that those humans are also capable of learning from experiences gained in other settings. There is consequently strong evidence to show that regimes have become more sophisticated when viewed along a timeline, with the revived TPTC displaying the most evidence of this tendency. It can be concluded that the intensity of the political friction that arose from the persistence of ideological drivers between the riparian states, ultimately gave the actors more exposure to opposing viewpoints, and that this exposure eventually allowed for the regime to take account of the political complexity in which it is embedded.

Given the complexity of both the political and hydropolitical domains in contemporary Southern Africa, a hydropolitical complex is a useful analytical tool. This hydropolitical complex is being driven by 3 specific factors. Given the persistence of these factors; the high level of complexity that they result in; and the general scarcity of second-order resources in the Southern African region, the demands that are likely to be placed on these water regimes in the future are high. These 3 factors are:

(a) *Heavy reliance on IBTs*: The existence of IBTs as a strategic component in the economic security of the pivotal states is a unique feature of Southern Africa, making local hydropolitical dynamics different to those found elsewhere in the world. While each of the pivotal states already has a number of IBTs, indications are that they are likely to expand in the medium to long-term future, crossing international borders and linking pivotal basins to impacted basins in an increasingly complex web of crosscutting linkages. In this regard the word “embedded” or “enmeshed” becomes a useful way to describe hydropolitics as a specific form of inter-state interaction within the context of a broader regional security complex.

(b) *Clashing national development priorities*: One of the primary drivers of conflict in both pivotal basins and impacted basins in the hydropolitical complex is the clash of national development priorities, which becomes relevant only once closure has occurred and there is insufficient water left to meet the development aspirations of the respective riparian states. In this regard, harmonization of these competing national development plans will be essential if the dynamics of securitization are to be attenuated. This will place great demands on water regimes in general, and on the development of second-order resources in particular.

(c) *Consequences of basin closure*: Given the fact that basin closure is a key feature of both pivotal basins and impacted basins, an increase in the level of complexity that needs to be managed by a water regime will be a logical result. One outcome with possibly grave consequences is the threshold effect of ecosystem collapse. This means that the management of ecosystem integrity within international river basins will become an important function that any water regime will have to perform, and can be regarded as being an indicator of resilience and effectiveness in future analyses of institutional development.

Regimes provide elements of certainty in an otherwise complex and uncertain world. As such they have played an increasingly important role in desecuritization and institutional development in the international river basins under review.

5.7 Assessment of Regimes in the Context of the South African Case Study

Having developed a detailed analysis of the key hydropolitical processes at work within the South African case study, it is now possible to answer the key questions about regimes that were posed in Chapter 1.

(a) How do regimes originate and change?

In the context of the 4 South African international river basins, the water regimes all originated as a result of national security threats to the hegemonic riparian. This means that the water regimes are in fact a form of security regime with the preference structure having been defined by South Africa as the hegemonic state. Significantly, in all cases where the non-hegemonic riparian chose to accept the conditions of the regime, and where they chose to define their situation in terms of national self-interest, the resultant outcome was a greater degree of security for all actors. Once created, the regime always tended to deliver a collective good in the form of certainty or security, at least in terms of the range of issues covered by the regime. This was not the situation when the non-hegemonic riparian chose to reject the conditions of the regime, and in particular when they chose to define the situation in terms of an ideological dimension. Under these circumstances, the non-hegemonic riparian became increasingly marginalized to the point where they were ultimately worse off than had they participated.

When the conditions of overlay changed materially, after the collapse of apartheid and the ending of the Cold War, the non-participating riparians (Zimbabwe and Mozambique) were extremely isolated, but there was a renewed attempt to rejuvenate the regime. In the case of the TPTC this created a more complex regime than before, with every indication that it will function to the mutual benefit of all riparian states, provided that the second-order resource scarcity problems can be overcome. In the case of the LBPTC, this rejuvenation has yet to occur, but indications are that this will follow a similar pattern to the former as a result of experience gained by the respective negotiators, many of who will be the same in both cases. This raises the central question of the policy contingency.

Available data suggests that when the non-hegemonic state chose to define the position in terms of an ideological dimension, the resultant rift was simply too wide for South Africa to develop a position that would induce their co-riparian not to defect. Significantly, when this did occur, the non-hegemonic state ended up in a materially worse off position than before, and within the timeframe of the study, has failed to recover from this situation.

In conclusion therefore, it seems as if water regimes in international river basins facing closure are created by the hegemonic state, and they function to the mutual benefit of all participants provided that a specific threshold at which the policy contingent becomes relevant is maintained within a range that prevents defection.

(b) What structural principles explain regimes?

In the South African case study, interdependence became the price to be paid for the degree of security needed by the hegemonic state. In all cases where the regime functioned after being established, there were definite material benefits to the non-hegemonic actor. While these benefits were of a mutual nature, it can be argued exactly to what extent the non-hegemon benefited. Where the regime persisted in delivering the required services (mutual security in whatever form needed by the specific riparian), the non-hegemon decided through their definition of the situation, whether to defect or not. In all cases where the basin-wide regime fell into dysfunction, it was replaced by a bilateral arrangement, which benefited the participating non-hegemon and served to further marginalize the defecting actor, often with long-term implications. It can therefore be concluded that the water regimes under review saw a delicate balance between hegemony and coalition, with the exact balance being defined in terms of the policy contingency threshold. That threshold in turn, was related to the way that the non-hegemonic actor defined the situation, with 2 possible outcomes. A plus-sum outcome resulted when the non-hegemon chose to define the situation in terms of national self-interest, whereas a zero-sum outcome occurred when the non-hegemon chose to define the situation in terms of ideology.

(c) How do regimes work?

In the case of the water regimes under review, all of the participating actors benefited materially, even if their range of self-help was curtailed as a result. In fact it can be

concluded that while the non-hegemon was always in a weaker position, they were not entirely powerless and they could maximize their benefits through bargaining and negotiating. The specific case of Botswana in the Orange River basin presents a unique example of benefit maximization through goal-directed negotiation and potential coalition formation. This also raises the relevance of second-order resources, with Mozambique being an excellent example. Mozambique chose to define its situation in terms of an ideological dimension and therefore tended to defect from agreement on the broader issues of national security that were outside the domain of the water regime, but which were one of the fundamental drivers of the process. Mozambique has very limited institutional capacity as a result of the protracted conflict on its own soil, but it is also the only non-English speaking state in the study area. The combination of critical shortfalls in technical expertise and the weaker negotiating skills caused by language barriers, served to systematically marginalize Mozambique and frustrate South African negotiators, who often misinterpreted this as being deliberate obstructionism. Perceptions thus play a role in regime creation and maintenance in a number of forms, and not only at the level of threat perception.

(d) What purposes do regimes serve?

This depends on the way that individual actors define their situation. In all cases, the hegemonic power defined the strategic situation in terms of national security concerns, which subordinated all subsequent negotiations in the water sector to this overriding issue. Significantly, the engineers who actually negotiated the specific agreements, tended to view the regime in more narrowly defined terms of water resource management. Where non-hegemon actors chose to define the situation in terms of non-ideological national self-interest, then the resultant water regime enabled sufficient range for negotiation to develop a solution to the mutual benefit of both actors. In the case of Botswana, Swaziland and Lesotho, the regime has served as a useful vehicle through which national economic development has been stimulated. In the specific case of Botswana in the Orange River basin, participation in the regime has opened up a wider range of strategic options than it previously enjoyed, with potential benefit in future negotiations over water resources from the Zambezi and Okavango in terms of the hydropolitical complex being highly likely. In this regard Botswana can be considered a balancer of hydropolitical power because one of the possible strategic outcomes of this process is that they succeed in changing their status as a water recipient from South Africa (a vulnerable position to be in), to a water donor to South Africa (see Map 15).

Seen in this light, the specific regime will have increased Botswana's overall power position in the Southern African Regional Security Complex.

5.8 Conclusion

The analysis of the key hydropolitical processes in the South African case study has provided deep insight into the political dynamics of institutional development in the water sector. A useful way of understanding these processes is through the conceptual lens of a hydropolitical complex, which is seen as a specific set of inter-state relationships occurring between states and the regional security complex centered on the control of access to strategic water resources. Seen in this light, the political aspects of institutional development are intimately linked with high politics, magnified through the prevailing threat perception, and manifesting ultimately as a pattern of amity and enmity over the distribution of water resources found in international river basins. Regime creation has been an active element of the South African case, even during the height of the securitization period. Significantly, once created regimes have been somewhat durable, and have allowed the zero-sum outcome of basin closure to be transformed to a plus-sum outcome, thereby attenuating the effects of other issues of a high politics nature. Regimes are consequently a powerful tool in the desecuritization of water resource management.