

IMPEDIMENTS TO INTER-STATE CO-OPERATION IN INTERNATIONAL RIVER BASIN COMMISSIONS WITHIN ARID REGIONS: CAN EXISTING THEORY ALLOW FOR PREDICTABILITY?

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By
A.R. Turton
art@icon.co.za; at31@soas.ac.uk

INTRODUCTION

A recent definitive study of water and security in Southern Africa, notes that there is an “inherent ambiguity (in) the concept behind the term ‘security’, which allows for attempts (at) twisting it, from its prevalent contemporary meaning of ‘military and national security’, into its more basic meaning ‘social and societal security’” (Ohlsson, 1995:5). This paper then goes on to distinguish between two notions of peace. *Positive peace* focuses on the existence of prospects for social development, whereas *negative peace* exists when there is a mere absence of war (Ohlsson, 1995:5). In terms of this thinking, “water scarcity ... is defined as a threat, not first and foremost to international peace, but to the ability of developing countries to pursue a successful social development policy” (Ohlsson, 1995:6).

How then, can a region move from a paradigm of *negative peace* to one of *positive peace*? Is this possible, or indeed desirable, in the case of Southern Africa? Can existing hydropolitical theory provide an answer?

South Africa has recently emerged from under the jackboot of apartheid rule, during which the entire Southern African region was plunged into a state of heightened tension (Turton & Bernhardt, 1998), erupting into open warfare in places. The region has now moved decidedly into the direction of peaceful co-existence (*negative peace*). Research efforts should thus be focussed on ways to improve regional co-operation. One potential area of closer co-operation is the water sector of SADC. It is therefore distressing to note that of the 19 river basin commissions that were reported on (Heyns, 1995), about half can be classified as being not functioning well, either as listed in Heyns’ manuscript, or as the result of discussions by the author with members of certain commissions. This being the case, it becomes important to understand why states in arid regions seem not to co-operate in international river basin commissions beyond the minimum technical level. This paper is an attempt to propose a hypothesized explanation that could be tested by other researchers. The answer to this research problem is important if Southern Africa is

to move from the state of *negative peace* to one of *positive peace*, in the opinion of the author.

SOME HYDROPOLITICAL THEORY

In the preparation for a recent study completed by the author (Turton, 1998a), various hydropolitical theories were examined for their potential value as an empirical model. Only one theory was found to be relevant. This was Lowi's Theory of Hegemonic Co-operation (Lowi, 1990). Dr. Lowi did a comprehensive study of the hydropolitical dynamics present in four international (shared) river basins where conflict was high. She studied the Euphrates, Indus, Nile and Jordan River basins. This study (Lowi, 1990:4) revealed the following:

- All four cases are located in arid or semi-arid regions.
- In all cases the water is used for productive activities – industry, agriculture and domestic consumption.
- For some, or all of the riparian states in each case, unimpeded access to the water resources is linked to national security concerns.
- In all but the Nile case, protracted political rivalry characterize the relations among some, if not all, of the states.
- In all four cases, efforts have been made to reach a co-operative, basin-wide arrangement for the utilization of the water in the basin.
- In none of these cases has the final result been ***the optimal pattern of river basin development*** via unitary, basin-wide planning and management (emphasis added).

Lowi (1990:386) thus concludes that in all of the river basins studies, a variant of what is generally known as Hegemonic Theory holds true. In all cases the final outcome reflects the *rapport de forces* (balance of power) situation present within the basin. ***Co-operation between riparian states is thus not achieved unless the dominant or hegemonic power in the basin accepts it, or has been induced to do so by an external power.*** The hegemon will take the lead in establishing the regime, and accepting a regime change, will enforce compliance to this regime only if the hegemon serves to gain as a direct result. In the absence of external coercion, this occurs in river basins only if:

- The hegemon's relationship to the resource need is critical and is linked to its national security concerns.
- It is not a high order (upstream) riparian.

Lowi (1990:386-7) sums up what she calls the Theory of Hegemonic Co-operation as follows:

- Co-operation in an international river basin is only brought about by the hegemonic power.

- When a riparian dispute in an arid region unfolds within the context of a more comprehensive inter-state rivalry, the former cannot be isolated from the latter.
- Limited agreements on the sharing of water resources cannot be attained because the most needy, or most powerful state, will derive little benefit from co-operation. (In the case of the most needy state, it will benefit from sharing and will thus become stronger in hydropolitical terms. This in turn will not benefit the most powerful state, who would wish to maintain their superior *rapport de forces* position and will consequently do nothing that will strengthen its weaker opponent).
- The neediest and militarily inferior riparian will seek a co-operative arrangement despite the larger inter-state conflict because it has no viable alternatives.
- Where there is a regime creation, it is only when the dominant power either wants it, or has been induced to co-operate. The arrangement is **highly specific** and cannot be regarded as the start of a series of ‘enmeshments’ that can become an avenue towards a political settlement.

This theory, along with a Southern African case study, was presented in a paper by the author to a Conference of the South African Institute of Civil Engineers (Turton, 1997). The response to this paper at the time of presentation, revealed three important aspects that are relevant to a profound understanding of the hydropolitical dynamics of Southern Africa. These aspects have subsequently been found to exist by the author in other consultations that he has had within the water sector. These are:

- Firstly, engineers are very concrete in their approach to problems. Their minds focus on precise issues that are governed by specific and clearly defined parameters. They tend to shun political science theory or research, as it is “too vague” and “non-exact” when compared to their own empirical point of departure.
- Secondly, engineers focus on the solution of technical problems, whereas political scientists focus on political dynamics. Politics usually is at its most vigorous in areas of dissent, which results in conflict between political actors. In this sense, political science can be understood to be a study of conflict, with hydropolitics being a specific species of this genus – namely a study of conflict (or potential conflict resolution mechanisms) that arises from attempts to secure access to water resources by states in arid regions. Engineers avoid conflict. Political scientists understand and make meaning of it.
- Thirdly, Lowi’s Theory of Hegemonic Co-operation has elements of truth in it, but it is premised on a research program that focussed on the Middle East where protracted political rivalry tends to pervade all other inter-state interactions. This is not the case in Southern Africa, so her theory may not be

entirely valid in a regional setting where protracted political rivalry is not the historic norm.

If this is so, then it is necessary to work on the problem of regional co-operation within the water sector of SADC by refining Lowi's theory and by suggesting variations that may be tested by other researchers interested in the subject. It is to this endeavor that we now turn.

IN SEARCH OF AN EMPIRICAL THEORY VALID FOR SOUTHERN AFRICA

Let us start off by summarizing the findings of Heyns (1995) in order to establish whether:

- There is enough information to suggest that additional research is indeed necessary.
- There is any basis to suggest that Lowi's Theory of Hegemonic Co-operation can be adapted for use in a Southern African setting.
- It is in fact possible to suggest that there is a degree of predictability in the way that riparian states behave within international river basin commissions.

The findings of Heyns (1995) are tabulated in Appendix "A". Where there is a variation with the assessment made by Heyns, this is noted in the last column. A cursory analysis of this reveals the following:

- A total of 19 river basin commissions or authorities are listed as being directly related to water (SARCCUS is not directly water-related and the SADC classification is outdated, having been surpassed by recent developments).
- Of these, 17 are truly international, with the remaining 2 (LHDA & TCTA) being subordinated to other authorities.
- Of the 17, 3 can be classified as "functional" but with some or other form of problem being experienced by upstream riparians (ANJCC, JCA, JPWC).
- Of the 17, 4 can be classified as "functional" (JPTC & ZRA) or "functioning well" (Permanent Water Commission & JIA) with no known serious problems. "Functional" does not necessarily imply the absence of internal stresses however, which are assumed to be normal.
- Of the 17, 10 can be classified as being "problematic" in some form or another (PJTC, OKACOM, LBPTC, JPTC, JCC, PCC, PJCC, JPTWC, JPTC, & KOBWA).

In summary then, of the 17 international structures that existed at the time of the study (Heyns, 1995), the following tentative conclusions can be reached:

- 24% can be broadly classified as being "functional".
- 17% can be broadly classified as being "functional" but with some form of problem being experienced with / by the upstream riparian. The nature of

these problems is such that they are likely to be resolved however, in the opinion of the author, provided that a political will exists.

- 59% can be classified as being “problematic”.

If this crude analysis is anything to go by, then the majority of international water-related co-operative structures (almost 60%) in Southern Africa are flawed in such a way that the transition from a prevailing situation of *negative peace* to one of *positive peace* seems to be unlikely (at least in the current opinion of the author). In order to gain a better understanding of the relevance of this, let us turn our attention to the “problematic” cases. Of these:

- Insufficient information is known about 3 to make an informed judgement (JCC, PCC & PJCC).
- The primary nature of the problem being a lack of capacity by the state can be considered to prevail in only 1 case (PJTC). In this case, the war depleted Angolan government simply lacks the resources needed both in terms of capital and human expertise. Namibia on the other hand, is also under major resource based pressure, which is even more pressing due to the high level of water stress that it has experienced since independence. Both can be regarded as a classic case of the existence of a “social resource scarcity” in terms of Ohlsson’s (1998) thinking, showing the value of his concept. This capacity problem is exacerbated by the fact that the Epupa Falls Dam is highly problematic and is thus likely to evoke an emotive response from a wide range of International NGO’s.
- In 6 cases, the basic nature of the problem could be classified as being a riparian state within the system that seems intent to undermine the overall legitimacy of the structure, as a strong structure could go against their perceived national interests.
- In OKACOM, the problematic upstream riparian (at least at this stage) is Namibia, who have bypassed OKACOM in their planned development of a pipeline from Rundu on the Kavango River to the Eastern National Water Carrier (ENWC). In this regard, Ramberg (1997) has noted that “there are grave doubts about the future of OKACOM”. In other words, the existence of an agreement based on the understanding that “all planned uses of the river water would be discussed within OKACOM and agreed by all three member states” was “suddenly made a paper tiger” (Ramberg, 1997) by Namibia.
- In the LBPTC, South Africa is an upstream riparian relative to Mozambique, whereas Botswana is upstream to South Africa. Conley (1996a:35) notes that the “Limpopo is close to being fully committed by the upstream riparians” (Botswana and South Africa) leaving relatively little over for Mozambique. The two stronger states have thus marginalized the weaker one. In terms of the new South African Water Law, this is illegal, as downstream riparians

have now to be considered and international agreements for downstream riparians honored before domestic allocations can be made (Turton, 1998b). There is thus a tension between the historic past and the constitutional requirements of the future type of co-operation required, at least from a South African legal perspective.

- In the JPTC, the downstream riparian (South Africa) is the hegemon. The upstream riparian (Botswana) is known to want to improve the relationship in their favour, but this is not happening. In a personal interview with one Botswana official (Turton, 1998c), he noted specifically that they wanted more water from the basin, but that South Africa “seemed reluctant to talk to them” about it.
- In the JPTWC, the upstream riparian (Swaziland) needs the water (and is also the hegemon within this configuration) and is reluctant to allow Mozambique to lay claims to too much of the resource.
- In the JPTC, the upstream riparian (South Africa) is the hegemon, which tends to have monopolized access to the resource historically. The downstream riparians (Swaziland and Mozambique) are both hydropolitically very weak, so the *rapport de forces* relationship is impossible to balance out. Mozambique also has a significant capacity problem, and is reported to be difficult to deal with “because they are suspicious of all water-related joint-agreements, due to their historic experience with South Africa (Turton, 1998d). In terms of the new South African water law, this will have to change and downstream riparians will be afforded more equitability (Turton, 1998b), at least in theory.
- In the case of KOBWA, this is a binational agency to implement the joint development of the Driekoppies and Maguga dams (Conley, 1996a:51). This is actually only a very small portion of the basin, which in fact includes Mozambique (who is excluded from KOBWA). There are clear indications that the natural flows in the dry season have been greatly reduced through upstream abstractions (Conley, 1996a:50).

While it is acknowledged that the above analysis is extremely crude and simplistic, it does give an indication that hegemony seems to play a role in the functioning of a river basin commission. In this regard, there seems to be sufficient evidence, albeit of a cursory nature, to suggest that where the hegemonic power will benefit from an agreement, then the regime functions better than when the hegemon will not benefit.

CAN THE ORIGINAL QUESTIONS BE ANSWERED?

Having completed the above analysis, albeit rather crudely, we can now try to address the original three questions posed in the introduction.

- How can we move from a paradigm of *negative peace* to one of *positive peace*?

The existence of a condition of *negative peace* is a necessary pre-condition to regional co-operation. This condition is thus welcomed and will obviously be beneficial within a regional context. The existence of *negative peace* is not a sufficient condition for economic growth and prosperity however. For this to occur, something more is needed. *Positive peace* requires more than just the existence of relative peace – it needs a higher normative order as a foundation, and this normative dimension should have as a basic tenet, the desire to meet joint developmental targets and needs. In other words, it supposes the existence of a fundamental paradigm shift away from one of national self-sufficiency based on the zero-sum principle, to a more inclusive co-operative paradigm based on a win-win approach.

In simple terms, Southern Africa must co-operate or else face the threat of economic stagnation. One reason for this need to co-operate is the fact that water is scarce within the region. Without sufficient water, the respective economies of most states cannot function. For the economies to work at an optimal level, water needs to:

- Be mobilized from the existing shared drainage basins.
- Be distributed equitably between riparian states or other users.
- Have the conflict potential caused by prevailing suspicions and allocation mechanisms removed or reduced.

The problem is that “the international rivers on the borders of the basin states are widely spaced and remotely located from centers of development in the interior of countries. This situation places limitations on the use of the water simply on account of the huge capital investment required for infrastructure development over long distances to convey water from the source to the consumer” (Conley, 1996b). In other words, this is the fundamental developmental problem facing the region from a water perspective.

- Is it possible / desirable to make this paradigm shift?

Having identified the fundamental water-related developmental problem facing the region, it becomes reasonable to conclude that the only way to solve it is to co-operate. There is no sustainable alternative in the opinion of the author. Therefore to move from a condition of *negative peace* to one of *positive peace*, is not only desirable but also necessary, if sustainable development is ever to be achieved.

What then are the impediments to this co-operation? From other work that he has done, the author (Turton, 1999) has concluded that:

- “There is an underlying fear that River Basin Commissions may eventually erode the sovereignty of the state, so officials do not allow co-operation to develop to a level beyond the minimum that is absolutely necessary”.

There is evidence of this. One example that immediately springs to mind is the Namibian case within the context of OKACOM. After initially reaching an agreement that “all planned uses of the river water should be discussed within the OKACOM and agreed by all three member states” (Ramberg, 1997), Namibia decided to bypass the structure when they announced their planned pipeline from Rundu in 1996. Why? Probably because the existence of an agreement limited their options as a sovereign entity under those specific conditions. In fact, Namibia even chose to refer the matter of their abstraction rights to the International Court of Justice (Electronic Mail & Guardian, 28 January 1997). This suggests that when an international water-sharing regime is seen to limit the strategic options open to a state, they will tend to undermine the regime. Another example is the weak or malfunctioning series of regimes involving South Africa. In these cases, an agreement with weaker states would limit the options open to what is arguably the regional hegemon. South Africa certainly has the capacity to make these structures function well, but this seems not to be the case, except when it is to the benefit of South Africa. This was certainly the case with the “old South Africa” and may be different now.

The answer to this specific question is therefore, that it is indeed desirable to make the paradigm shift, because this is the only way that the potential of the shared watercourse systems will be unlocked in an equitable way. The existing hydropolitical dynamics suggest that it is not likely to easily happen however. The impediment to this taking place is the underlying and prevailing fear that the states concerned would encourage an erosion of their sovereignty if they co-operated too closely (Turton, 1999).

- Can existing hydropolitical theory provide useful answers?

The argument in favour of the need for well developed hydropolitical theory, capable of providing both explanation and prediction requirements, can be developed as follows:

- The best interest of the region is to meet joint developmental needs in order to achieve sustainability.
- Co-operation is the only way to achieve this.
- A major stumbling block is known to exist (fear of sovereignty erosion).
- A need therefore exists for a profound understanding of hydropolitical theory in order to find a way around this problem.

Existing theory is weakly developed however. This is where political scientists can play a significant role in the water sector – by developing and testing hydropolitical theory. As a point of departure, let us briefly examine Lowi’s Theory of Hegemonic Co-operation against the empirical fact that almost 60% of the region’s river basin commissions are known to be “problematic”.

It is necessary to note that the empirical analysis at this stage is not in any way deep enough for a definitive conclusion to be drawn. The purpose of this superficial analysis was simply to see if there is sufficient evidence to suggest that additional research should be done. The evidence presented suggests that this is indeed the case. Let us now turn to

Lowi's theory in order to determine if there are elements of it that are useful in a Southern African context.

- Evidence does exist that co-operation between riparian states is not achieved unless the dominant power in the basin accepts or wants it. This is in keeping with Lowi's theory. In other words, states seem on balance to function from a national interest perspective.
- There is evidence to tentatively suggest that co-operation takes place to a point where the needs of the hegemonic riparian have been met, but not beyond. There is thus some evidence of an internal dynamic that serves to naturally limit the development of a regime, impacting on the "spillover" potential and inhibiting long-term "enmeshment". This is consistent with Lowi's theory.
- There is evidence to suggest that the neediest riparian will tend to prefer a co-operative solution. An aspect relevant to the definition of this need is linked to the relative riparian position within a basin. An inferior riparian position is downstream, limiting the strategic options open to a state. Invariably, co-operation is the most viable option open to such states, which will favour a regime creation. This is consistent with Lowi's theory.
- There is tentative evidence to suggest that an upstream riparian is always stronger in strictly hydropolitical terms. This more favorable position gives such states a wider range of strategic options, so co-operation may not be the most attractive option at the time. This is consistent with Lowi's theory.
- There is limited evidence to suggest that military power is relevant in a hydropolitical context. This evidence is not found within Heyns' classification, but can be seen elsewhere. Examples of this are noted in Turton (1999). In general the evidence that military force can be linked to gaining access to water is open to varied interpretation however. War as the direct result of water seems unlikely, but water-related issues could be found as underlying aspects related to a states' willingness to go to war. For example, both Namibia and Zimbabwe are currently part of an allied military force in the Democratic Republic of the Congo (DRC), along with Angola. The major reasons for this are not water-related, but water-related rewards could be anticipated if the outcome of the armed conflict goes in favour of Laurent Kabila. Namibia could be granted permission to build the mooted Congo-Okavango pipeline (Star, 1997), and Zimbabwe could gain strategic access to the Congo River, thereby reaching its reported goal of becoming a water exporter (Turton, 1999). In the case of Lesotho, South Africa led the SADC military formation that was mobilized to ostensibly stabilize the deteriorating political situation within the small mountain kingdom. Again, water was not a predominant reason, but could be seen to be an underlying reason for the

intervention (Turton, 1999). This is reasonably consistent with Lowi's theory, but Southern African evidence suggests a potential refinement.

- There is evidence to suggest that economic power is more relevant than military power. The only way that the potential of the regional water resources can be effectively unlocked, is to embark on joint ventures. In strictly engineering terms, water transfer schemes are highly costly, and their viability is limited by economic considerations. Economically more powerful states could thus make such schemes more viable. This gives strategic options to these states, who may not necessarily be within a given basin configuration, but who could negotiate access to the water by offers of joint funding. This is absent from Lowi's theory.
- Linked to the notion of economic power, it must be noted that engineering solutions are not the only ones that are suited to the solution of water scarcities for developing states in arid regions. An economic re-distribution within a regional context, with trade in "virtual water" could in fact be more viable than building pipelines, but needs an economic base to generate the foreign currency needed to purchase food staples (Turton, 1998a:256). This is absent from Lowi's theory.
- Regimes, as they now stand, are in fact highly specific. This is in keeping with Lowi's theory.
- For regimes to become more generalized, there will have to be a change to the prevailing normative order that exists. The most important aspect of this would be a change in paradigm from one of national self-sufficiency, to one of a co-operative nature. Tentative evidence exists that this may be taking place, but the evidence is not yet strong enough. This is generally absent from Lowi's theory.

A critical aspect that seems to be missing from Lowi's theory is the distinction between water as a direct cause for conflict, as opposed to water as an indirect cause. To this end the work done by Ohlsson (1998) offers a valuable contribution to the development of theory. He suggests a distinction between what he calls a *first* and *second-order conflict*. A ***first-order conflict*** could be understood as a conflict that arises as the direct result of competition for access to water as a basic resource. A ***second-order conflict***, on the other hand, can be understood to arise as the consequence of attempts to regulate access to water in the first place. Within the context of Ohlsson's current thinking, this seems to be limited to an understanding of how conflict arises from competition for water. The notion of *first* and *second-order conflicts* can be expanded however, if one thinks of them as being the potential explanation for why states go to war, where water is only a secondary issue. This can broaden the whole resource scarcity discourse, if it holds any degree of validity, in the opinion of the author. This argument is developed as follows:

- In the Southern African context, a *first-order conflict* is difficult to find in “hard” empirical terms. This can lead to the erroneous view that water wars will not happen, because there is no evidence that they do in fact happen. In other words, there is no direct evidence of water-related inter-state conflict of the *first order* as a pure form at present.
- There is evidence of *second-order conflicts* however. In this sense, such conflicts can be understood to be related to international river basin commissions, which try to develop a set of rules for the apportionment of water. Where such commissions fail to meet the aspirations of one or more of the riparian states *at a specific moment in time*, they may seek to opt out of the original agreement. This is what happened in OKACOM when Namibia chose to develop the Okavango pipeline. Initially Namibia had agreed that OKACOM would be the forum in which co-operation would happen, until the circumstances changed. The *second-order conflict* thus becomes focussed on the “rules of the game” which have now been unilaterally changed.
- If this notion is expanded a little further, it can serve to explain how water can be a subtle or underlying issue in inter-state relations by becoming a *second-order issue*. In this sense a *first-order issue* could be seen as an issue that is the direct cause of inter-state conflict (being both a necessary and sufficient condition), whereas a *second-order issue* is one that exists, but not as a direct cause of conflict (being a necessary but not a sufficient condition). An example would be the Namibian and Zimbabwean involvement as part of the Allied Forces in the DRC. The *first-order issue* as to why they are there is clearly not related to water. In other words, neither state is there to gain access to water as a primary objective, however in both cases, the states concerned could benefit by being rewarded with agreements that would grant them future access to the resource. It could thus be argued that long-term access to water could be seen as a *second-order* motivation for military involvement.
- In the opinion of the author, this aspect is missing from Lowi’s theory. The notion of a distinction between *first* and *second-order issues* is in fact relevant to the hydropolitical discourse as it explains the subtle nuances that seem to exist in the real world.

To conclude this section then, it can be said that existing hydropolitical theory is not sufficiently developed. Efforts should thus be made to rectify this matter in the opinion of the author.

CONCLUSION

The direct purpose of this current paper is to present aspects of the current discourse in an attempt to attract support or criticism, and thereby contribute to the long-term

development of workable hydropolitical theory. The existing basis of theory has been examined. It has been shown that Lowi's Theory of Hegemonic Co-operation has some relevance to Southern Africa, but that it is too crude as it currently stands. A suggestion has been made as to how this theory can be improved. What certainly seems to be the case is that states seem to do whatever supports their national interest at that moment in time. Persons actively promoting a regional co-operative or integrative approach should thus take heed of this fundamental fact. A basic reason for this is the fact that states wish to have the freedom to choose from strategic options, and anything that inhibits this freedom is likely to be countered by those states. Co-operation will thus only happen to the extent that states want it, or to the extent that they perceive it to be advantageous. Perceptions are thus highly relevant. The way forward is thus to stimulate a regional debate about relative advantage and disadvantage to co-operation. On balance, it seems safe to assume that if the states within a region that enjoy a dominant *rapport de forces* position would benefit from co-operation, then this would probably be the future development. The trick is to define the "rules of the co-operative game" in such terms that the weaker states also benefit. A change from a win-lose (zero sum) principle to a win-win (regional co-operative) approach requires a fundamental paradigm shift. This is what is needed if a prevailing condition of *negative peace* is to change into one of *positive peace*. The latter is a necessary condition for sustainable development to exist in the opinion of the author. Additional research into this matter would be advantageous because existing theory, as it currently stands, does not allow for sufficient predictability. The purpose of this new research would be to gain a greater understanding of how River Basin Commissions function. An approach would be to isolate the variables that exist as well as determining reasons for the degree of success or failure of the regime from the perspective of each participant. River Basin Commissions can be used as a vehicle for a greater understanding of how states interact in arid regions, specifically regarding the potential for regional co-operation.

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Appendix “A”
Summary of the Findings of Heyns (1995)

Name	States	Assessment
ANJCC Angola Namibian Joint Commission of Co-operation	Angola Namibia	Classified as “functional” by Heyns. The author knows that Angola has a critical capacity problem however.
PJTC Permanent Joint Technical Commission	Angola Namibia	Unclassified by Heyns. Known capacity problem exists with Angola, and the subject of co-operation (Epupa Dam) is highly controversial.
JCA Joint Operating Authority	Angola Namibia	Classified as “functional” by Heyns. Known capacity problem with Angola.
OKACOM Permanent Okavango River Basin Water Commission	Angola Botswana Namibia	Classified as “new” by Heyns. Classified to be problematic by Ramberg (1997). Known to be problematic by author.
LBPTC Limpopo Basin Permanent Technical Committee	Botswana Mozambique South Africa	Classified as “not functioning well” by Heyns. Known to be problematic by author.
JPTC Joint Permanent Technical Committee	Botswana South Africa	Unclassified by Heyns. Known to be problematic by author from a Botswana perspective.
JPWC Joint Permanent Water Commission	Botswana Namibia	Classified as “functional” by Heyns. Possibly problematic due to unresolved Okavango issue in author’s opinion.
JPTC Joint Permanent Technical Commission	Lesotho South Africa	Unclassified by Heyns. Known by the author to be functional.
LHDA Lesotho Highlands Development Authority	Lesotho	Classified as “functioning well” by Heyns. This is not an international authority however, being subordinated to the JPTC.
TCTA Trans-Caledon Tunnel Authority	South Africa	Classified as “functioning well” by Heyns. This is not an international authority however, being subordinated to the JPTC.
JCC Joint Commission of Co-operation	Malawi Tanzania	Classified as “not functioning well” by Heyns.
PCC Permanent Commission of Co-operation	Malawi Zambia	Classified as “not functioning well” by Heyns.

Appendix “A” (Continued)
Summary of the Findings of Heyns (1995)

Name	States	Assessment
PJCC Permanent Joint Commission of Co- operation	Malawi Mozambique	Classified as “not functioning well” by Heyns.
JPTWC Joint Permanent Technical Water Commission	Mozambique Swaziland	Classified as “not functioning well” by Heyns.
JPTC Tripartite Permanent Technical Committee	Mozambique South Africa Swaziland	Classified as “having not functioned well” by Heyns.
Permanent Water Commission	Namibia South Africa	Classified as “functioning satisfactorily” by Heyns.
JIA Joint Irrigation Authority	Namibia South Africa	Classified as “functioning well” by Heyns.
KOBWA Komati Basin Water Authority	South Africa Swaziland	Unclassified by Heyns. Known to be problematic from a Swaziland perspective.
ZRA Zambezi River Authority	Zambia Zimbabwe	Unclassified by Heyns. Functioning reasonably well, but dominated by Zimbabwe, which is known by the author to be resented by Zambia, especially regarding the Batoka Gorge Dam.