

Discussion Paper on Parallel National Action (PNA) as a Potential Model for Policy Harmonization in the SADC Region

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Executive Summary of Specific Recommendations for Achieving Policy Harmonization in the SADC Region

The following recommendation can be distilled from this Discussion Paper:

Given the known paucity of Special Interest Groups and/or Associations across the SADC region, specifically with respect to the role that they could potentially play within a PNA approach to policy harmonization, special attention needs to be given to strengthen those that do exist. In this regard it is recommended that special attention be given to investing some time, intellectual capital and finances into these structures with a view to making them more robust and “cross-pollinating” in nature. Specific attention ought to be given to the following:

- a) The **SADC Parliamentary Forum** (www.sadcpf.org), with a view to encourage the support for PNA as a process by various parliamentary stakeholders across the region. This will lay the foundation for future engagement between the Water Sector, the Mining Sector, the Energy Sector, the Agricultural Sector, the Industrial Sector and the Health Sector.
- b) The **Water Institute of Southern Africa (WISA)** (see their objectives at <http://www.environmentdirectory.com.au/associations/wisa.html>), with a view to encouraging the establishment across the entire SADC region, of a professional Association of water sector specialists. In this regard it is not necessary to expand WISA to embrace the entire region, but rather to encourage professional membership of local versions of WISA-like structures, aimed specifically at building core technical capacity across SADC. (See (d) & (e) below).
- c) **Consider SADC endorsement for the establishment of a regional chapter of the World Water Council (WWC)** (<http://www.worldwatercouncil.org/>), with a view to creating a platform where local technicians, engineers and decision-makers active in the water sector get to meet their global counterparts on a regular basis and exchange ideas as equals. **This will open doors to a regional program within the various World Water Forum platforms.** In this regard it should be an objective to bring a future World Water Forum to the SADC region.
- d) **Consider SADC endorsement for the establishment of a regional chapter of the International Water Resource Association (IWRA)** (see <http://196.36.166.88/iwra/>), with a view to creating a platform where local technicians, engineers and decision-makers active in the water sector get to

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meet their global counterparts on a regular basis and exchange ideas as equals. **This will open doors to a regional program within the various World Water Congress platforms.** In this regard it should be an objective to bring a future World Water Congress to the SADC region. It must be noted that WISA (see (b) above) is currently the Executive Office of the IWRA, so we already have direct access to this avenue, should we collectively decide to support this initiative, and we might be able to negotiate a group concession.

- e) **Consider SADC endorsement for the establishment of a regional chapter of the International Water Association (IWA)** (see <http://www.iwahq.org.uk/>), with a view to creating a platform where local technicians, engineers and decision-makers active in the water sector get to meet their global counterparts on a regular basis and exchange ideas as equals. It must be noted that WISA (see (b) above) has formal links with the IWA, so we already have direct access to this avenue, should we collectively decide to support this initiative, and we might be able to negotiate a group concession.
- f) **Consider sustained support to the various technical institutions across the SADC region, specifically those capable of generating the type of scientific support that will be needed to optimize scarce water resources at different levels of scale.** In this regard specific mention needs to be made to the WARFSA/WATERNET association that already exists. The Global Water Partnership (GWP) component of this cluster should also not be excluded, as they play a potentially important role in promoting PNA as a vehicle for policy harmonization, in addition to their existing role of supporting IWRM. **This support should preferably be in the form of clearly defined Programs with the decision-making stakeholders having fully endorsed the focal point and objective of those Programs,** as this has been shown to be the most effective way of building the type of technical capacity needed to sustain the level of policy harmonization that is likely to ensue (Walwyn & Scholes, 2006).

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Abstract

The Southern African Development Community (SADC) is a regional grouping of sovereign states that have collectively expressed their desire for regional economic integration. Given the uneven pattern of the spatial distribution of water resources across the SADC region, the availability of water at a high assurance of supply can become an impediment to these future economic integration aspirations. This makes the management of water a key element of all economic integration within SADC. The *SADC Regional Water Strategy* thus calls for *inter alia* the harmonization of national policy and legislation. The process of Parallel National Action (PNA), as practiced within the five Nordic states from the mid-nineteenth century until their integration into the European Union (EU), is a potential model for the harmonization of water policy within the SADC region for a variety of reasons. The PNA stated intention of protecting the sovereign integrity of each participating state, is also an added attraction, improving the prognosis for success. This paper presents a brief historic analysis of how the PNA process evolved in the Nordic States, distilling out critical success factors, which are then applied to a possible model that can be considered by SADC Member States with an interest in a stable water sector as a foundation for all future regional economic integration. This paper focuses on policy harmonization as a process rather than a product. The logic underlying this deliberate bias is that a given policy is the product of a given process, so to try and change the policy without understanding the process that lead to that policy, would be futile. Stated simplistically then, the logic is that one needs to change the process by which policy is harmonized in order to arrive at the end product of harmonized policy.

Introduction

“The Parallel National Action (PNA) process differs from **harmonization, coordination** and **co-operation** in the sense that, while it involves all of these processes, it goes beyond them in the degree to which it develops continuously expanding integrative behavioural codes of conduct among the participating states and thereby expands the scope and intensity of common activities into an integrative network” (emphasis and acronym added) (Nielsson, 1990: 78).

The Southern African Development Community (SADC) is a regional grouping of fourteen sovereign states who have collectively expressed their desire to maximize the benefits from economic growth to their respective citizens *via* a regional integration process. This was given a strong impetus when the Cold War ended (Turton, 2007). Associated with this global watershed event, was the outbreak of peace within Southern Africa. This shift from confrontation to peace at a regional level enabled new thinking to be applied to the best possible vehicle for regional economic integration, with the stated objective of bolstering peace and creating a viable economic grouping within which all member states could develop to their maximum potential, while simultaneously promoting equity.

Understanding Policy Harmonization as a Set of Variables

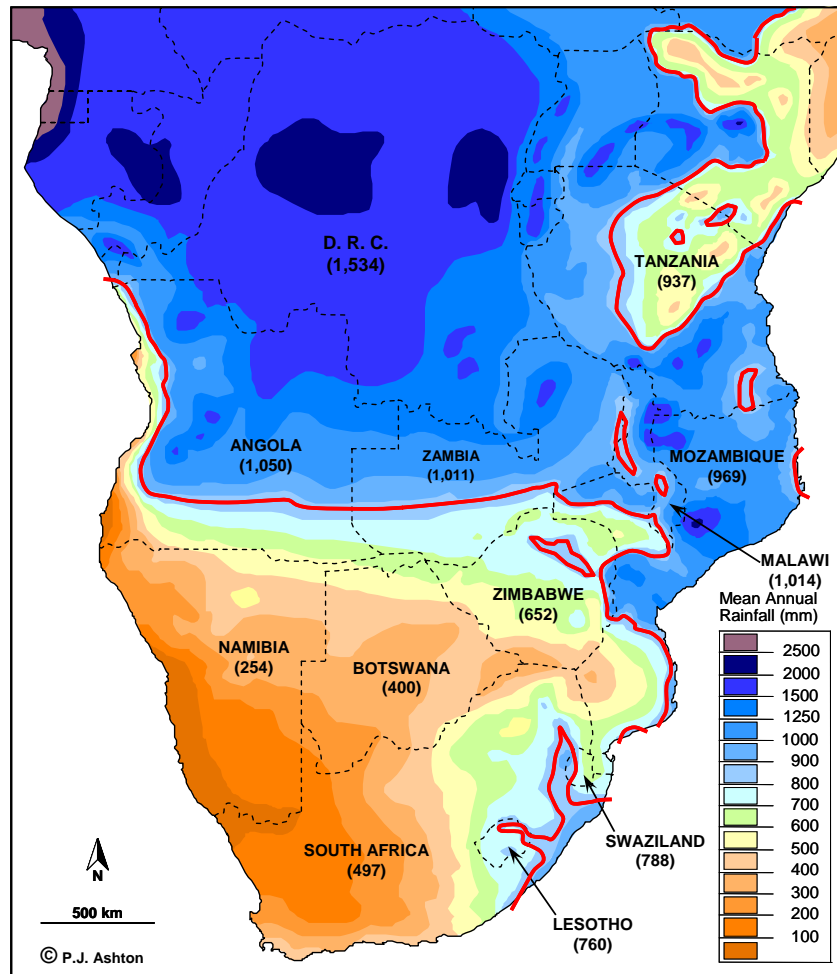
It must be stated from the outset that this paper focuses on policy harmonization as a process rather than a product. The logic underlying this deliberate bias is that a given policy is the product of a given process (or set of processes), so to try and change the policy without understanding the process that led to that policy, would be futile. Seen in this way, **process is the independent variable** while **product (policy) is the dependent variable**. Stated simplistically then, the logic is that **one needs to change the process (independent variable) by which policy is harmonized in order to arrive at the end product of harmonized policy (dependent variable)**.

Part A: Hydrological Drivers of Policy Harmonization

Hydrological Realities of the Mainland SADC Region

The SADC region is now characterised by three important development-related factors that are all relevant to the content of this Discussion Paper:

- **Water resources, both in rivers and aquifers, are spatially and temporally unevenly distributed across the region** (see **Map 1**). This is what the World Bank (2006) refers to as African states being “hostage to hydrology”.



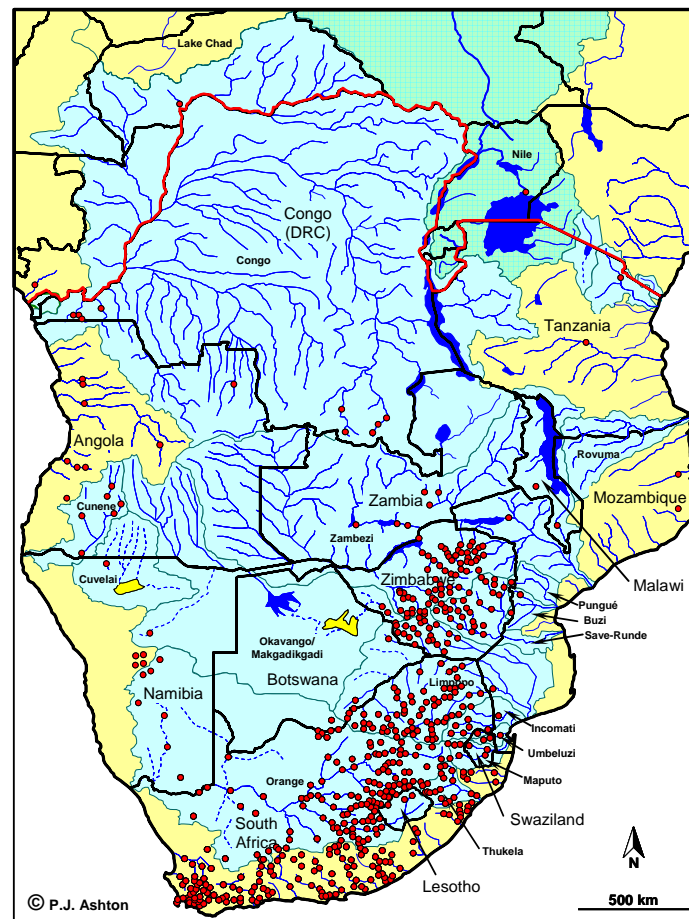
Map 1. The spatial distribution of Mean Annual Precipitation (MAP) across mainland Southern Africa is highly skewed. The global average of 860 mm/yr⁻¹ is shown as a red line, indicating that many of the SADC Member States are on the “wrong side” of that critical isohyet. Water resource availability at a high assurance of supply can pose limitations to regional economic integration aspirations, making the harmonization of water policy among all SADC Member States a high priority (image courtesy of Prof. Peter Ashton at the CSIR).

- **Economic development is unevenly distributed** across the various SADC Member States (see **Map 2** for but one manifestation of this fact).
- The trading patterns of many Member States still reflects a bilateral configuration, with intra-regional trade being somewhat stunted.

The SADC Region has another unique aspect that economic integration strategists and managers need to factor in to their planning processes. For historic reasons beyond the scope of this Discussion Paper, **many of the main centres of economic development, often associated with cities or large urban conurbations, are not situated on rivers, lakes or the seashore – they are found straddling, or adjacent to, major watershed divides instead** (Turton *et al.*, 2006a; Turton *et al.*, 2008a). This means that high levels of investment are needed to build infrastructure in order to pump water uphill to these areas of economic activity. Examples of this are the

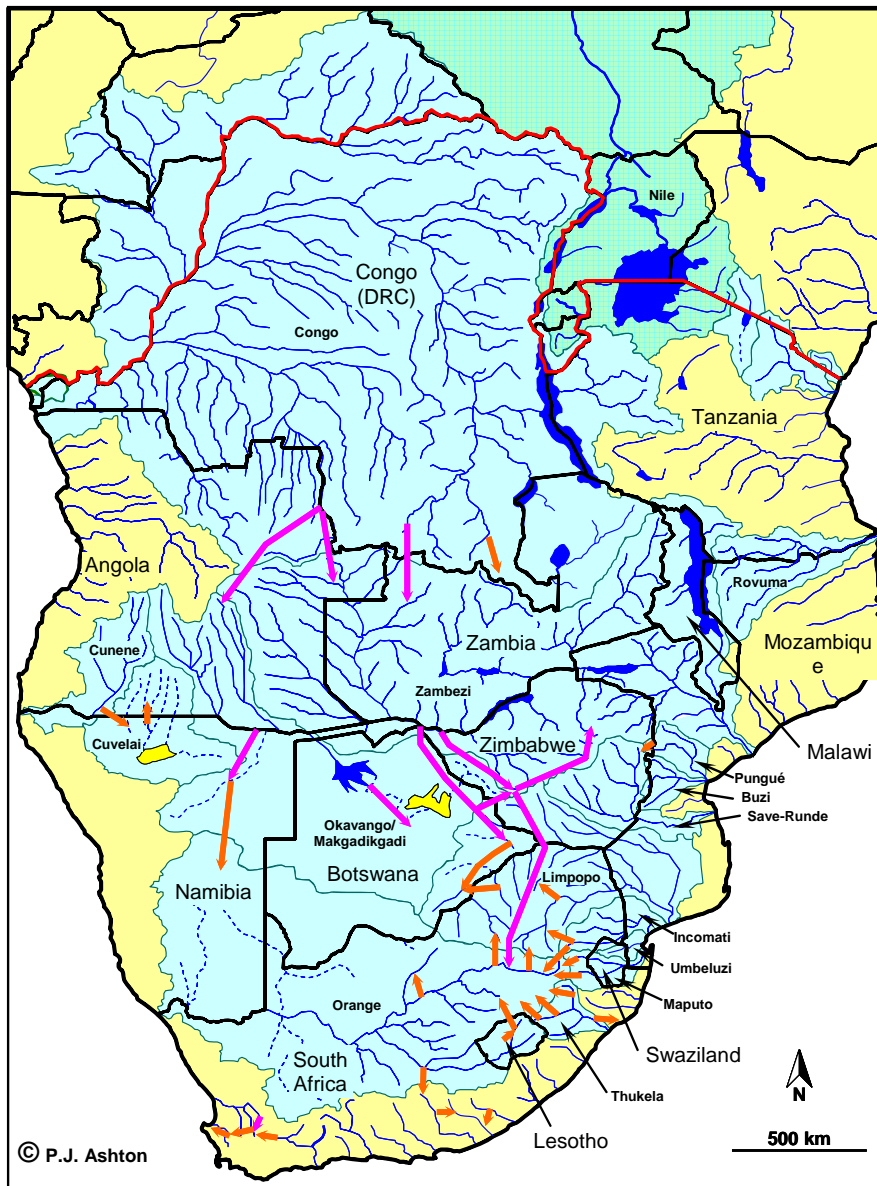
Gauteng industrial complex, Bulawayo, Harare, Gaborone, Francistown and Windhoek. This unusual development pattern has resulted in three complex but unintended consequences that are relevant to the objective of this Discussion Paper. These are:

- **Infrastructure is needed to sustain this economic development**, with the existing patterns giving somewhat of an indication of the skewed nature of economic development in the region (see **Map 2**).



Map 2. The distribution of large dams across mainland Southern Africa reflects the skewed nature of economic development within SADC. These dams are an element of the management of the high assurance of supply level needed to sustain economic development in a water-constrained region (image courtesy of Prof. Peter Ashton at the CSIR).

- **Inter Basin Transfers (IBTs) have been used to manage localized water imbalances** (Heyns, 1995; 2002; 2003; Heyns *et al.*, 2008) (see **Map 3**). It is a matter of fact that the most economically developed portion of the SADC region is the Gauteng Province in South Africa, which produces around 10% of the economic output of the entire African continent, is home to around 25% of all South African citizens and is 100% reliant on IBTs (Basson *et al.*, 1997; Turton *et al.*, 2006a; 2008a). These major infrastructural interventions have knock-on effects given that many of the basins concerned are transboundary in nature, so their potential benefits come at a price (Basson, 1995; Davies & Day, 1998; Snaddon *et al.*, 1999).



Map 3. Inter Basin Transfers (IBTs) are major components underpinning the SADC development agenda, because they create the high assurance of supply level needed to sustain economic growth in a water-constrained region. The orange/red lines are some of the existing IBTs and the purple/pink lines are some of those that have been considered in the past, or are currently under consideration in one form or another. It is inconceivable that development equity could be reached between all SADC member states without this type of major infrastructural investment (image courtesy of Prof. Peter Ashton at the CSIR).

- These centres of economic development all generate significant effluent streams (Hobbs & Cobbing, 2007; Hobbs *et al.*, 2008; Holtzhauzen, 2004; Leaner *et al.*, 2006; 2007a; 2007b; Oelofse, 2008; Oelofse *et al.*, 2007; Slabbert *et al.*, 2005; 2007a; 2007b; 2007c), so **the management of return flows becomes a highly complex problem** (Oberholster & Ashton, 2008; Oberholster *et al.*, 2004; 2005; 2008), because in effect the water storage impoundments for these centres of development are downstream of their users.

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Stated bluntly, water storage infrastructure is often polluted by sewage, industrial, mining and agrochemical sources located upstream of these impoundments (Awofolu & Fatoki, 2003; Bornman *et al.*, 2005; Cobbing, 2008; Coetzee, 1995; Coetzee *et al.*, 2002a; 2002b; 2006; Dalvie *et al.*, 2003; Kempster *et al.*, 1996; Maree *et al.*, 2004; Wade *et al.*, 2002).

The elements presented above provide the background against which water policy harmonization needs to be considered. Given these existing challenges, policy harmonization is no simple matter. This is exacerbated by the fact that **water management is a cross-cutting issue in all major sectors in the region, which means in effect that the processes of policy harmonization need to be robust enough to also engage with other sectors**, the most notable being Energy, Agriculture, Mining and Infrastructure (see **Figure 10**).

It is against this background that the contents of this Discussion Paper on Policy Harmonization should be read and reflected upon. This paper is the start of a journey towards policy harmonization in the water sector, as stipulated by paragraph 3.4.1 of the *Regional Water Policy* (SADC, 2006:14) and mandated by Strategy No. 3.4 of the official SADC *Regional Water Strategy* (SADC, 2007: 11 & 15). The final destination of that journey is in the hands of the stakeholders participating in this process, so it lies firmly within the ambit of the sovereign Member States.

Part B: Definition of the Problem Constraining Policy Harmonization

Statement of the Problem

Despite significant progress being made since the Revised SADC Water Protocol came into effect on 22 September 2003 (Hollingworth *et al.*, 2004), there is still a level of disconnect in the water-related policies of member states (SADC, 2003a; 2004). **There is a high level of understanding of what these specific gaps are, with effluent-related management being a noted example** (SADC, 2003a: 46 & 49). **Agreement already exists on the need for harmonization** (SADC, 2003b: 2-3), **with specific processes having already been discussed** to a point of considerable consensus between Member States (SADC, 2003b: 4-6). So while the absence of policy harmonization is a problem, because economic growth and development across the SADC region is potentially constrained by the availability of water at a high assurance of supply level (Ashton & Turton, 2005; Ashton *et al.*, 2008; Ashton & Turton, 2008; Turton & Ashton, 2004; Turton *et al.*, 2006; Turton & Ashton, 2008), it is not an insurmountable obstacle. There has certainly been considerable progress in the right direction, specifically with regard to the “what” areas of policy – the known areas of harmony and gaps. This shifts the strategic planning to a new focal point – the “how” areas of policy harmonization.

The problem that now arises is how policy can be harmonized to the level needed for all aspects of water resource management (quality, quantity and assurance of supply) to become a robust foundation for the regional economic integration aspirations embodied within SADC?

SADC as an entity consists of an amalgam of Member States, each with a different colonial heritage, resulting in different legal systems, different economic and developmental trajectories, different expectations among their citizens about the use of natural resources and different levels of institutional capacity. This shifts the policy harmonization context to that sensitive issue of sovereignty, which matters considerably, given that the price of national independence has been paid for in blood, often after a protracted period of armed struggle for liberation (Turton, 2002a; Deli-Priscoli & Wolf, 2008).

Statement of the Problem

How can the necessary **incentives** be generated to ensure a high level of **policy harmonization** for the management of a **shared strategic resource** in a regional setting where water-resource constraints can pose limitations to the economic growth and prosperity **in a way that does not challenge state sovereignty**?

Part C: Parallel National Action as a Potential Solution to the Problem of Policy Harmonization

Sovereignty as an Impediment to Policy Harmonization

“The maintenance of autonomous state authority is a basic premise of the Parallel National Action (PNA) approach. Consequently, there is no expectation that it may lead to regional political unification. However, the ... [PNA] process could lead to political integration in the behavioural sense that the states adopt identical or highly similar ... policies as a result of continuous consultation, joint investigation and common deliberation which become constant factors in the national decision-making processes” (emphasis and acronym added) (Nielsson, 1990:78).

Sovereignty is a central issue to all regional integration (Nye, 1971; Mitrany, 1966), with different solutions being apparent, but no consensus as to the most appropriate approach. In regions where there is a high level of integration, such as that found in the European Union (EU), sovereignty remains a sensitive issue, with fear among some Member States about an erosion in areas considered to be intimately linked to national identity. The issue of sovereignty as a potential stumbling block to the evolution of River Basin Organizations (RBOs) in the SADC region was first noted by the author, when he explained why the fear of sovereign erosion mitigates against the emergence of strong centralized River Basin Commissions (RBCs) with independent decision-making powers (Turton, 2002a). This has subsequently been acknowledged by other researchers and practitioners (Deli-Priscoli & Wolf, 2008). Within the Nordic States – Sweden, Norway, Denmark, Finland and Iceland – sovereignty was dealt with in a very simple yet robust manner for more than a century prior to the integration of these individual states into the EU. The approach used by the Nordic States was novel, providing an insight into a potential solution that might be adapted to the SADC situation. That approach was called Parallel National Action.

The Meaning and Origin of Parallel National Action

The concept of PNA is embodied in the three words that describe it.

- “**Parallel**” refers to the core processes by which policy is harmonized in all participating states in tandem and simultaneously.
- “**National**” refers to the core principle that close cooperation does not mean loss of sovereign identity in any way. All policy harmonization falls clearly within the ambit of the sovereign authority of the Member State and is driven as a national issue.
- “**Action**” refers to the fact that the core output of the process of policy harmonization is actionable legislation, policy and strategy in areas that do not threaten state sovereignty and lead to a stronger collective comparative advantage arising from cooperation rather than competition.

PNA originated in the Scandinavian (Nordic) region, where it became the central process by which a significant number of policies were harmonized within all five Member States for over a century, including two World Wars and the emergence of a massive integration bloc adjacent to the geographic central point of the Nordic nations – the European Economic Community (EEC), later to become the EU.

Policy Harmonization and Incentives

In essence, the **process** by which policy is harmonized (independent variable) is nothing more than a quest to find **appropriate incentives** (dependent variable), which in the case of PNA, is about developing those incentives at an appropriate level while protecting the sovereignty of the state.

The process of PNA as it was manifest in the Nordic (Scandinavian) region was driven by two diverse but powerful sets of dynamics that need to be understood:

- **Internally, there was the express need to develop common positions on a number of policies that affected all of the citizens of the five Nordic states.** This included the removal of barriers to interaction between the five sovereign states, as well as the equalization of conditions that were considered to be constraints to the wellbeing of society. **Consequently these issues were clustered around problems such as the harmonization of laws and judgements, social security, the movement of citizens across borders between the Member States, postal services and labour relations, all of which are strictly internal in their focus and origin.**
- **Externally, there was a growing threat to the economic interests of the Nordic States** because of the strong bilateral nature of the trading patterns then in existence. This meant that **while there was an impetus towards cooperation driven from internal dynamics, each Nordic Member State was fiercely competitive in the economic sphere, with limited intra-**

regional trade. Consequently, the emergence of the EU as a direct result of two major world wars fought on European soil (Mitrany, 1966; Nye, 1971), provided a strong external threat that served to focus the attention of the Nordic governments in the direction of finding a way to maximize local comparative advantage by harmonizing policies as far as practically possible. This external dynamic had a long history, punctuated by two world wars, during which policy harmonization was centred on the issue of neutrality.

A Brief Chronology of Nordic Parallel National Action

It is necessary to have a brief but accurate overview of the way that PNA evolved in the Scandinavian region, because this gives some insight into the way that it might later be applied to policy harmonization in the SADC region.

As a point of departure it must be noted that Special Interest Groups and Associations were initiators of the process of policy harmonization (Nielsson, 1990). This must be understood by the reader of this Discussion Paper, because it is central to the viability of PNA as a potential solution to the policy harmonization challenges in the SADC region. The evolution of Special Interest Groups and Associations in the EU was the *result* of regional integration, whereas the economic integration of the Nordic States was *driven* by PNA that was *initiated* by such groups (Nielsson, 1990). The cause-effect linkage is important in this regard, because **in the PNA approach, it is necessary to have strong enough Special Interest Groups and Associations to initiate and sustain the process once it is happening.** The cause-effect linkage in the EU case is consequently different, because Special Interest Groups and Associations arose *after* integration started.

Which Model is Appropriate for SADC?

It has been suggested that the European Union (EU) experience in harmonizing policy is the *best* model for SADC to follow. This is not true, because the EU has a critical mass at the “centre”, with a common currency (in most countries) and common laws (at least the big ones), while on the periphery there are states from former Eastern Europe clamouring to get in. This means that the centre can largely dictate to the periphery what needs to be done to become a member of the club. This is not the case in SADC. On the contrary, the Nordic model, by virtue of the high level of policy harmonization that was achieved, combined with the preservation of sovereignty, is likely to be a more *appropriate* model. In truth, neither model is correct or incorrect. Each has merits. The Nordic model is the most *appropriate* approach in the *professional opinion* of the author, given that **the emphasis in this paper is on independent variables** (policy as process rather than product).

Table 1 gives a partial overview of the nature of the Special Interest Groups and Associations that gave rise to PNA as a process in the Nordic region. From this brief analysis it is evident that an intensive and extensive network of institutions existed, providing a series of linkages, both horizontal and vertical, across a reasonably wide range of areas of common interest to most Scandinavian people. **This is relevant when the reader is later asked to evaluate the appropriateness of a PNA process**

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of policy harmonization in the water sector, because it is clear that such a rich network of institutions is absent in some parts of the SADC region (van Eeden, 2007; 2008).

Nielsson (1990:81-82) notes that the activities of these Special Interest Groups and Associations were all focussed on the following:

- Objectives that were narrow in scope such as the standardization of technical nomenclature and standards.
- Equalization of working conditions for employees.
- The exchange of human capacity and data.
- **The need to establish identical (or highly similar) laws and policies in key areas of common interest** such as commercial activity, trust laws, social welfare, insurance, industrial safety, patents and navigation.
- The coordination of travel schedules for tourists.
- The harmonization of school systems including textbooks in specific areas of common interest.
- Joint radio and television broadcasts designed to support all of the above.

These can be aggregated into three critical areas of relevance to the current Discussion Paper. These activities are:

- All narrow in focus.
- Deal with areas of common interest.
- Supported by a range of activities designed to sustain them over time.

1860's	Nordic Schoolteachers' Congresses
1870's	Nordic Congress of Economists
1872	Nordic Assembly of Jurists
1876	Association of Nordic Railwaymen
1886	Nordic Congress of Trade Unions [sic]
1888	Nordic Shipping Companies' Association
1888	Nordic Agricultural Congress
1907	Nordic Employers' Association
1916	Nordic Trade and Commerce Association
1917	Nordic Council of Craftsmen
1918	Nordic Association of Consumers Co-operative Societies
1918	Nordic Civil Servants' Federation
1919	Norden Association
1922	Nordic Tourist Industry Committee
1925	Nordic Telecommunication Congresses
1925	Nordic Journalists' and Broadcasters' Association
1931	Nordic Organization of Savings and Loan Associations
1935	Nordic Union of Road Techniques
Source: Nielsson (1990:81).	

In the SADC context, it can be argued that because water resource management is of such critical importance to the attainment of the stated objective of regional economic integration, then the water sector is well positioned to drive a PNA process, in the absence of a long history of co-operative behaviour such as that evident in Table 1. This critical assertion is supported by recent evaluations that have been conducted within the SADC regional water sector, all of which give an indication of the high level of cooperation that exists.

These include, but are not limited to, the following key public domain reports (presented chronologically):

- *Interbasin Transfer of Water between SADC Countries: A Development Challenge for the Future* (Heyns, 2002).
- *Water Resources Management in Southern Africa* (Heyns, 2003).
- *SADC Water Sector: RSAP Projects 9 & 10: Review of National Water Policies: Synthesis Report* (SADC, 2003a).
- *SADC Water Sector: RSAP Projects 9 & 10: Guidelines for the Development of National Water Policies and Strategies to Support IWRM* (SADC, 2003b).
- *Report of the Workshop on Guidelines and Support for the Harmonization of National Water Legislation, Policies and Strategies in SADC* (SADC, 2004).
- *Review of Progress on the Implementation of the SADC Water Protocol* (Hollingworth *et al.*, 2004).
- *Regional Strategic Action Plan for Integrated Water Resources Development and Management (RSAP-IWRM). Mid-term Review* (Halcro-Johnston *et al.*, 2004).
- *A Hydropolitical History of South Africa's International River Basins* (Turton *et al.*, 2004).
- *A Critical Assessment of the River Basins at Risk in the Southern African Hydropolitical Complex* (Turton, 2005).
- *A Compilation of all the International Freshwater Agreements entered into by South Africa with other States. Water Research Commission Report No. 1515/1/06* (Ashton *et al.*, 2005).
- *Southern African Development Community: Regional Water Policy* (SADC, 2006).
- *Transboundary Cooperation in SADC: From Concept to Implementation* (Kistin, 2007).
- *Southern African Development Community: Regional Water Strategy* (SADC, 2007).
- *The Southern African Hydropolitical Complex* (Turton, 2008a).
- *Water and Security in Sub-Saharan Africa: Emerging Concepts and their Implications for Effective Water Resource Management in the Southern African Region* (Ashton & Turton, 2008).
- *Basin Closure and Issues of Scale: The Southern African Hydropolitical Complex* (Turton & Ashton, 2008).
- *Transboundary Water Resource Management in Southern Africa: Meeting the Challenges of Joint Planning and Management in the Orange River Basin* (Heyns *et al.*, 2008).
- *Setting the Scene: Hydropolitics and the Development of the South African Economy* (Turton *et al.*, 2008).

Some work has already been done on PNA as a possible approach to policy harmonization in the water sector in an African context. The earliest of this was an assessment of the policy harmonization processes needed to underpin and sustain the Okavango River Basin Water Commission (OKACOM), when funding was made available by the EU *via* what was known as the Water Ecosystem Resources in Rural Development (WERRD) Project (Turton & Earle, 2003a; 2004). Additional funding was later sourced from Green Cross International (GCI) as part of their Water for Peace Program. This enabled a workshop to be held with all riparian states of the Okavango River basin, which found that many levels of compatibility existed in that specific case (Turton, 2002b; Turton *et al.*, 2002; Turton & Earle, 2003b). Simultaneous work was initiated by a South African graduate student studying at the *Kungl Tekniska Högskolan* (KTH) in Sweden, working under the advisory supervision of the author, focussing on the need to harmonize policy between the riparian states of Lake Victoria as a distinct sub-set of the Nile River Basin (Braid, 2003a; 2003b; Braid & Turton, 2004). The problem with all three of these initiatives was that they lacked adequate funding to take the research to the level of sophistication needed to become a viable option for policy harmonization within SADC. This problem has now been overcome with the generous funding by the GTZ, enabling this Discussion Paper to be produced. Stated differently, **the notion of PNA as an approach to policy harmonization has evolved over a period of time and is not entirely a new idea conceived within the context of the current SADC/GTZ project.**

Management Level	Focus Area	Institution	Individual members	Links
Interstate	Sovereign issues – focal point for common basin vision	OKACOM	Commissioners (appointed by national parliaments)	
	Planning and management of basin activities	Technical Committee (OBSC) – Angola, Namibia & Botswana	Technical staff from the various water departments of each country	
	Coordination between government departments	Policy Harmonisation Unit - CP system	Representatives from departments of Energy, Environment, Health, Agriculture & Tourism etc.	
Sub-basin	Sub-sovereign district issues	Council of Provincial Governors	Provincial or district government representatives (from each country) and civil society representatives.	
Villages	Local development needs	Basin-wide Forum	Community representatives, such as traditional leaders, from each of the basin states.	

Figure 1. The existence and structure of a rudimentary PNA approach in the Okavango River Basin as work-shopped with various stakeholders at Gobabeb, Namibia in 2003 (Turton & Earle, 2004:11).

The significance of this work, specifically within the Okavango River basin, is that it was found that, **“the [PNA] model already exists in rudimentary form within the basin, [but] it needs to be strengthened as it is not operating as effectively as possible”** (Turton & Earle, 2004:10). On the contrary, there was some enthusiasm shown by OKACOM stakeholders, for the potential of PNA to take their own

processes forward. These stakeholders even went so far as to assess their existing processes against the PNA model, producing a flow diagram that interprets the former in light of the latter (see **Figure 1**).

How Parallel National Action Worked in the Nordic States

“While implementation of policies occurs through parallel national action by the five political systems, the increased institutionalization of the policy-formulating process demonstrates that the Nordic dimension has penetrated the national political system in every issue area except national security and military alliance policies” (Nielsson, 1990:90).

Having noted that there is a long history of policy harmonization in areas of common interest within the Nordic states (**Table 1**), it becomes instructive to unpack the process in order to understand how it actually worked (see **Figure 2**).

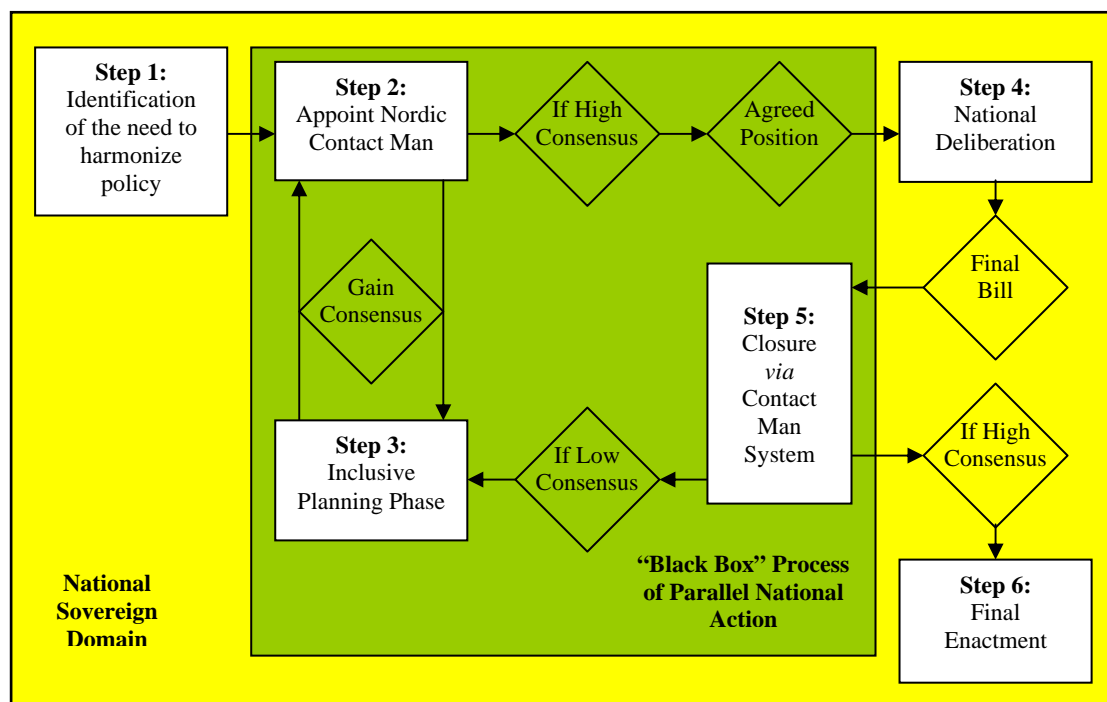


Figure 2. The Parallel National Action process as it was practiced by the Nordic states showing the six Steps and the demarcation of areas of exclusive national sovereign domain, which include the identification of the need to harmonize policy and the final enactment of legislation. The flip-flopping into, and out of the “black box” of PNA, is clearly visible on the right hand side. It is this critical action that is hard-wired into the process, which gives participating Member States the confidence that high levels of policy harmonization do not erode their sovereign authority. Built-in feedback loops foster co-operation and the co-learning needed for adaptive management to occur.

This process is presented graphically in **Figure 2**, showing the six Phases as well as the areas of exclusive national sovereign domain. The deliberate flip-flopping of portions of the process, into and out of the “black box” of PNA, is clearly visible.

These are critical parts of the overall PNA process, because it is in these actions that participating Member States gain the confidence they need to assure them that high levels of policy harmonization do not in any way erode their sovereign authority.

Step 1: Identification of the Need to Harmonize Policy and Legislation

The Nordic version of **the PNA process started when the participating Member States realized that there was the need to harmonize policy in a specific area of common interest**. The identification of a need to harmonize policy and its supporting legislation in a specific area of common interest triggered the PNA process (shown as a “black box” in **Figure 2**). Historically, this was achieved by meetings held by Special Interest Groups and/or Associations as presented in **Table 1**. These represented special interests that were somewhat narrow in focus, identifying the existence of non-harmonized policy and/or legislation as an area of mutual concern.

PNA as Process not Product

With the emphasis of this paper being on policy as process (independent variable), the actual content of the Nordic case is not relevant to SADC. What is relevant is how that process of harmonization occurred, knowing that **what actually drives the desire to harmonize policy is a vested common interest (i.e. incentive)**.

Step 2: Nordic Contact Man

Once an area in need of policy harmonization had been identified, this resulted in the appointment of a senior civil servant, usually at the level of Under-Secretary of State, within the given ministry, to a post that became known formally as the **Nordic Contact Man** (the title was not gender sensitive at that time so this title will be used throughout this paper simply for convenience) (Nielsson, 1990:84-85). The core responsibility of this **Nordic Contact Man** was twofold. Firstly, he had to coordinate all of the cooperation needed within his own country, in order to achieve the desired objective of policy harmonization. Secondly, he had to maintain contact with his counterpart in the other participating Member States. His role thus had two distinct dimensions to it:

- On the vertical plane, the **Nordic Contact Man** was responsible for coordinating all of the relevant stakeholders within his own country, with a view to harmonizing the policy and legislation then under consideration.
- On the horizontal plane, the **Nordic Contact Man** was responsible for coordinating with his counterparts in the other participating Member States, to the level needed to harmonize the policy and legislation then under consideration.

Step 3: Inclusive Planning Phase

A series of actions were then initiated *via* the **Nordic Contact Man** mechanism, all of which were **designed to reach the highest level of consensus before formal legislation was passed** to codify this agreed-upon policy-position (Nielsson,

1990:85). The **Nordic Contact Man** would appoint a designated committee within his own country and ministry, staffed by the appropriate technical people deemed necessary to harmonize the policy under consideration. **These national-level committees would then work within their own country, but in parallel to their counterparts in the other participating Member States.** Contact between these national-level committees and their counterparts in other Member States was encouraged at all times, the purpose being to drive a specific behaviour that was inclusive of all ideas, including sensitivities, with the objective of harmonizing policy. **These different levels of contact are important, because they served to open multiple layers of communication, all purpose-designed to build in redundancy, so that if one communication channel failed, then others would still be in place.** These committees would prepare reports at designated intervals in the process, designed to present their official departmental view on a given issue. These reports were circulated to all of the other national committees *via* the **Nordic Contact Man**, in preparation for joint meetings. These joint meetings then dealt with progress to date, specifically trying to understand individual sensitivities that might have arisen to a given viewpoint, definition, objective etc. **The objective was to avoid controversy by respecting differences, but seeking at all times a compromise solution that all national stakeholders were comfortable with.** The outcome of these periodic meetings of the **Nordic Contact Man** grouping would be a written document stating the joint position reached at that moment in time, which was then presented to each National Minister for further political executive action.

It is important to note that the cut and thrust of consensus-building, allowed for specific national perspectives to be considered, but at no time was consensus clouded by concerns for the protection of sovereignty. **The participating Member States retained the final decision-making authority at all times, and were only presented with an actionable piece of policy or legislation once the desired degree of consensus had been reached.** It is this novel approach to policy harmonization that reduced the risk of sovereign sensitivities from undermining the policy harmonization processes.

Step 4: National Deliberation

Once the desired degree of consensus needed had been obtained by means of reiterative deliberation under the coordination of the **Contact Man**, the policy proposal was handed over to the appropriate national-level authorities for deliberation (Nielsson, 1990:85). This took the process out of the “black box” of PNA, back under the sovereign authority of the participating Member State again, which guaranteed that the national government concerned was the final arbiter of policy to be enacted. Importantly however, before each participating Member State took the legislative action needed, the final version of the bill was circulated back to the participating Member States *via* the **Contact Man System**. This ensured that minor changes, which might have occurred during the internal national deliberation processes, would not be construed by other participating Member States as being unacceptable. **From a process perspective, it is necessary to stress the importance of this specific Step, as the mechanism used deliberately takes the piece of policy being harmonized, out of the black box of PNA, back into the exclusive domain of the sovereign Member State. It is this flip-flopping of the process, into and out of the black box of PNA that gives the participating Member States the level of comfort needed to**

ensure that high levels of policy harmonization do not in any way erode their sovereign authority.

Step 5: Closure *via* the Contact Man System

Once the final legislative action agreed by the respective participating national Member States had been sent back to the **Contact Man System** for final closure, the proposed policy and/or legislation was then cleared for enactment. If there were changes made by any of the participating national Member States that were of concern to other participating partners, this would trigger a new round of deliberations within the **Contact Man System**. These would be repeated until final consensus was reached.

Step 6: Final Enactment

The PNA process would conclude with the final enactment into legislation of all the policy elements that had been agreed between the participating Member States during the previous five **Steps** in the process. **The final enactment resulted in legislation that was highly synchronised and harmonized, but still allowed for minor differences to exist, if these reflected areas of sensitivity to any of the participating Member States.** The objective therefore was to have the highest level of harmonization possible, fully respecting nation sovereignty at all times, without ever expecting 100% synchronicity between all Member States (this being a sovereign aspirational imperative).

Types of Actor Involved in the Nordic PNA Process

Typical of the Scandinavian approach to regional integration, the decision on what format a given meeting would take, or indeed whether a given path of policy harmonization would in fact be channelled *via* a Nordic Council of Ministers meeting, would depend on the matter being dealt with (Nielsson, 1990:89). There was consequently a high level of flexibility in both the decision to harmonize policy and the path that this intended harmonization would eventually follow.

The PNA process is actor-driven, with the success of the final outcome being a direct result of the level of commitment and credibility that each actor had. In essence however, the Nordic PNA Process involved four distinct types of actor (Nielsson, 1990:89-90). These were:

- **National Interest Groups** that articulated the interests of specific parties within a given participating Member State.
- **National Political Parties** that had party-specific interests, but were needed to eventually support any proposed legislation that would arise from the policy harmonization process.
- **National Political Executives** that acted through formal structures such as the Nordic Council Plenary Assembly or the Nordic Council of Ministers.
- **National Civil Administrators** that acted through the **Contact Man System**.

The Role of Failure in the PNA Process

A fascinating aspect of the Nordic version of PNA is that failure sometimes occurred, but when it did it was invariably converted into a positive outcome. This means that **the fear of failure never became an impediment to closer cooperation**. Some examples of this are as follows:

- “While the formation of the Nordic Council in 1952 can be viewed as an extension of the Nordic Inter-Parliamentary Union and the evolving practice of inter-Scandinavian meetings of parliamentary committees, the impetus came from the failure to form a Nordic Defence Pact and a Nordic Customs Union, both of which demonstrated a new political division among the Scandinavian states” (Nielsson, 1990:87). In this case a non-divisive outcome was assured when, after a period of clearly divisive negotiations, issues of national sovereignty concern had been exposed over which consensus was impossible. In this case the next-best option was chosen as a logical outcome.
- The proposed Nordic Economic Union (NORDEK) failed when it revealed deeply divisive issues over national comparative advantage in areas of bilateral trade between individual Scandinavian states and their non-Scandinavian partners. “The amendment of the Helsinki Treaty in February 1971 involved a significant reorganization of the Nordic Council, which enhanced the role of the Presidium, established permanent secretariats and a Nordic Council of Ministers. The changes reflected the need to make the Nordic Council organizations more effective and efficient as well as the need to integrate the governing institutions of the proposed Nordic Economic Union (NORDEK) – which failed” (Nielsson, 1990:87). Again the next-best option was adopted in the absence of reaching full consensus on the initially preferred position (at least of some of the key initiating actors).

Aversion to Formal Treaty Drafting

An interesting and significant element of the Nordic form of PNA was the deep-seated aversion to the elevation of agreements between the participating Member States to the level of a formal treaty. **This was done only when absolutely necessary and underpinned the deeply-entrenched view that bureaucracy-creating measures which might erode national sovereignty were to be avoided at all costs.** Thus for example, the formal role of the Nordic Council organizations was not expressed in treaty form until the 1962 Helsinki Treaty of Co-operation, a full decade after the establishment of the Nordic Council. “The decision to elevate the behavioural code of conduct into treaty status was a response to external developments in Europe. With the decision of the Danish and Norwegian governments to apply for membership of the European Communities in 1961 and 1962 respectively, it was felt necessary to demonstrate to the other European states that an integrative network existed” (Nielsson, 1990:87). This gives an insight into the near-invisible nature of the PNA process to any but those who were closely involved in it.

Inventory of Successes for the Nordic PNA Process

So, if the Nordic version of PNA was almost invisible to outsiders, did it actually have an impact? A brief inventory of some of the success gives an insight into the areas of common interest shared by the five participating Member States in which a high level of policy harmonization took place, often to the point of drafting near-identical legislation. This includes:

- Uniform laws have been enacted in virtually all aspects of the legal systems of the five Scandinavian states. In many cases these laws are identical, or at worst are highly similar. These specific areas of policy harmonization include citizenship law, family law, inheritance law, property law, bankruptcy law, laws on purchases, commercial practices, stocks, bonds, insurance, patents, brand names, copyright, maritime law, air travel law, nuclear energy law and penal law. In the period between 1880 and 1965 there were no less than seventy eight cases of PNA in the legal subject areas listed above (Nielsson, 1990:91). One notable output of the PNA process of great value to the common interests of the citizens of the five participating Member States was the *Nordic Collection of Judgements*, which was published annually and served to entrench the harmonized policy positions by introducing a benchmark against which all court judgements could be tested.
- In the field of social welfare, uniformity has been achieved through the establishment of the *Nordic Convention on Social Security*, which came into effect in 1956. This, along with subsequent amendments in 1962, 1967 and 1969, created equality of eligibility by all citizens of the participating Member States for unemployment insurance, industrial accident insurance, partial disability insurance, health insurance, old-age pensions, widow and widower pensions, disability pensions, public assistance during pregnancy and childbirth and child-support. As a direct result of this policy harmonization process, any Scandinavian citizen moving from one Nordic state to another can claim identical benefits in the new country of residence as in the home country where the benefits originally arose (Nielsson, 1990:91).
- A Nordic Passport Union was established in 1955 before such things were evident in other parts of Europe (Nielsson, 1990:92). This allowed for completely free travel between Nordic states of citizens of the participating Member States.
- Uniform rates for all goods transported by railways were achieved to mutual benefit (Nielsson, 1990:92).
- Domestic rates for mail services were harmonized *via* the Nordic Postal Association in 1946 (Nielsson, 1990:92).
- A free market for people was established beyond the degree of movement allowed for by the Nordic Passport Union, when a Common Labour Market for the Danish, Finnish, Norwegian and Swedish industrial work force was established by Nordic Convention in 1954 (Nielsson, 1990:92). An interesting aspect of this specific development is that only four of the five Member States

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were involved, because of slightly different circumstances in the labour market across the entire region. This gives an insight into the degree of flexibility that PNA catered for.

- In the area of transportation, the most significant achievement of PNA was the creation of an integrated air transport capability known as the Scandinavian Airline System (SAS) (Nielsson, 1990:100).
- Joint educational radio and television programmes are produced *via* NORDVISION and administered through the Nordic Telecommunication Council and the Nordic Council for Telesatellites (Nielsson, 1990:100).
- The greatest success in integrating foreign policies happened when in 1966-7, the Nordic states agreed on a common position within the GATT Kennedy Round. One Chief Negotiator was given authority to act on behalf of the five Nordic states. This enabled the Nordic position to be strengthened to the extent that the Nordic bloc was treated the equivalent of a key state throughout these negotiations (Nielsson, 1990:101).

These achievements are not inconsiderable, and when viewed in the context of policy harmonization in SADC, the process of PNA is not entirely implausible. In this regard, the most prominent analyst of Nordic-styled PNA offers some encouragement when he concludes that;

“Economic relations are characterized by recently intensifying Nordic economic integration within a larger Western European economic framework, but based on different national policy positions. ... It is, therefore, not considered pretentious or unrealistic to draw on the Scandinavian experiences as a basis from which to suggest a new conceptual framework. ... The Scandinavian experiences indicate that what has been considered ‘outcome indicators’ of socio-economic integration within the European Communities have been achieved in Scandinavia without the use of supranational institutions and the ‘community method’ of decision-making. ... **The trend in regional cooperation and integration suggests that the Parallel National Action framework, as illustrated by the Scandinavian experiences, might be highly relevant as a model by which to capture the expanding scope of social, economic and political integrative behaviour which is unaccounted for by the neo-functionalist theories with their focus on structural transformation.** ... The Parallel National Action framework could be used as an analytical tool by which to reveal less spectacular, but highly significant increases in co-operative and integrative behavioural patterns within the various regions of the global political system” (Nielsson, 1990: 100 – 104).

Principles of Parallel National Action

The PNA process as practiced by the Nordic Council organizations is based on three core normative principles that are seen to be inviolable (Nielsson, 1990:79). It is these three normative principles, which drive the cooperative behaviour that ultimately

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leads to policy harmonization. These three principles are therefore very important if a PNA approach is to be considered by SADC.

The **three fundamental principles** on which PNA is based are (Nielsson, 1990:102):

- **The avoidance of constitutional fusion.** This means that at no time does cooperation imply an intention to eventually fuse two or more sovereign states together into a new sovereign grouping. This is manifest as a deep-seated aversion to the creation of any new form of bureaucratic structure or measures that would ultimately involve regional supranational authority.
- **The expectation that the autonomous member states would remain the unalterable basis for regional integration** in areas of low politics. This reinforces the first principle noted above, and means that by agreement between all participating states, the nation-state remains the non-negotiable unit of engagement, retaining at all times the authority associated with sovereign independence as a nation-state.
- **The deliberate exclusion of areas of high politics such as national security from policy harmonization processes.** This demarcates areas where consensus is likely to be reached, by deliberately eliminating areas that are known to be divisive, which are typically those that challenge state or national security. It is for this reason that water resource management, if closely linked to national security, is unlikely to be the subject of high levels of policy harmonization (see discussion on desecuritization processes below).

Desecuritization Processes as Applicable to Water Policy

Given the three fundamental principles on which a PNA approach is based, it is vital that water resource management be regarded as an area of low politics if policy harmonization is to be a realistic achievement. This means that where water resource management is deemed to be a direct component of national or state security, then it is unlikely that such water-related policies could be harmonized. The process by which water resource management is stripped of its national security connotations is known as “desecuritization”, which has a long and healthy history in the SADC region (Turton, 2003a). Details of this have been reported as it applies to the SADC region (see Turton, 2003b; 2004; Turton & Earle, 2005; Turton & Patrick, 2005; Turton, 2007; 2008a). The process of desecuritization has been described by the author in some detail and is beyond the scope of this Discussion Paper (Turton, 2003c). The need for the desecuritization of water policy has been recognized in parts of the world where water constraints can drive an escalation in inter-state tension, other than the SADC region (Phillips *et al.*, 2006).

Where the management of such a strategically-important resource as water has the potential to become a national security threat, by virtue of prevailing threat perceptions that might drive such behaviour in a discernable direction, then two possible outcomes are likely. The critical variable in determining the outcome is the behaviour arising from the prevailing threat perception.

- **If the threat perception translates into behaviour that is interpreted by co-riparian states in a given transboundary river basin as potentially hostile, then a Hydropolitical Security Complex emerges**, the most well defined of these being the Tigris-Euphrates Hydropolitical Security Complex (Schulz, 1995). **In such a configuration, policy harmonization is highly unlikely**, because the management of water resources is subsumed to national security interests – i.e it is securitized and the discernable dynamic is one of tension or enmity. The Nile Basin falls into this category by virtue of Egypt’s threat perception based on the notion that “Egypt is the Nile” (Allan, 2000; Collins, 1990; Gleick, 1990; 1991a; 1991b; Hultin, 1995; Lonergan, 1991; Nicol, 2002; Phillips *et al.*, 2006; Sadat, 1985; Waterbury, 1979).
- **If the threat perception translates into behaviour that is interpreted by co-riparian states in a given transboundary river basin as non-hostile, then a Hydropolitical Complex emerges**, the most well defined of these being the Southern African Hydropolitical Complex (Ashton & Turton, 2008; Julien, 2006; Turton, 2003a; 2003b; 2003c; 2004; 2008a; Turton & Ashton, 2008). **In such a configuration, policy harmonization is a logical outcome of a longer-term evolutionary process**, because the best interest of all co-riparian states in a given transboundary river basin configuration is reflected in a cooperative stance – i.e a form of benefit-sharing framework is created, with one of the benefits being increased regional security arising from stable economic growth sustained by the effective management of shared water resources.

It is therefore evident that policy harmonization, irrespective of the vehicle by which it is pursued as an end objective, is closely associated with a normative framework that can best be described as a “Benefit-Sharing Framework” (Turton, 2008b). In the case of SADC, the existence of a strongly articulated desire to harmonize policy in the water sector is a possible counter-balance to the absence of long-standing regional Special Interest Groups and Associations noted elsewhere in this report. In this regard it must be noted that the findings by Gleditsch *et al.*, (2005), that conflict avoidance incentives are high for countries that face endemic water scarcity, inform the author’s viewpoint (see Turton (2005; 2008) for a deeper analysis of this conclusion). **This means that in the absence of a regional history of special interest group engagement, then the existence of endemic water scarcity as a potential constraint to future economic growth and prosperity can act as a powerful enough counterbalance, driving the integrative process of policy harmonization.**

Similarities between Nordic-styled PNA and Existing SADC Processes

“Scandinavia is heavily dependent on foreign trade. However, during the critical stages of their industrialization in the first half of the twentieth century, the Nordic national economies became mutually competitive internationally rather than regionally complimentary. Their trade patterns are based on greater interdependence with states outside the region, especially the United Kingdom and the Federal Republic of Germany, than among each other” (Nielsson, 1990: 94). This is similar to contemporary SADC.

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Having demonstrated that PNA had a remarkably high level of success within Scandinavia, it remains to be seen whether lessons learned from that experience can be used to harmonize policy in the water sector in the SADC region.

Ongoing work by credible researchers indicates the existence of a number of elements in the SADC region, all of which have PNA-like properties. These are:

- There is a strongly-articulated desire among the various SADC Member States to cooperate in the water sector. In this regard Hollingworth *et al.*, (2004:5) found that, “progress with most aspects is regarded as satisfactory. The more favourable dimensions are the willingness to cooperate on projects, the respect of the parties for international water law and the exchange of information”.
- There is a form of **Contact Man (Person) System** already in place, with various manifestations. Within each SADC Member State there is a nodal point clustered around the desire to coordinate activities. Within many of the transboundary river basins of the region, there is a formal River Basin Commission, some of which have permanent Secretariats (Turton, 2004; 2005; 2008a; Turton & Earle, 2004). These form natural clearing-houses through which specific areas of policy harmonization are already being initiated and engaged in by the different riparian states.
- There is an express willingness to embrace PNA principles by some River Basin Commissions in the SADC region (Turton & Earle, 2004). This is underpinned by a strongly manifest desire to cooperate (Ashton *et al.*, 2005; Heyns *et al.*, 2008; Hollingworth *et al.*, 2004; Kistin & Ashton, 2008; Turton *et al.*, 2006b).
- Water resource management has largely been desecuritized, placing the water sector in an area of low politics and thus conducive to policy harmonization (Turton, 2003c; 2007; Turton *et al.*, 2008a). As a result of this a Hydropolitical Complex is emerging in SADC, where there is a discernable trend towards cooperation rather than conflict over scarce waters (Ashton & Turton, 2005; 2008; Turton, 2003a; 2003b; 2005; 2008a; Turton & Ashton, 2008).
- While there is a high level of cooperation already in existence (Kistin, 2007), fears over the erosion of state sovereignty prevent the River Basin Organizations from doing what is expected of them as stipulated within the Revised Protocol on Shared Watercourses in the SADC (Turton, 2002a).
- A high level of consultation between SADC Member States already exists in the water sector (SADC, 2003a:48).
- There is a process of policy harmonization around which a high level of consensus already exists (SADC, 2003b:6).
- Given that major gaps in policy between SADC Member States are less of a problem than gaps between policy and implementation (SADC, 2003a:48), this creates “space” for cooperative behaviour that is non-threatening to state

sovereignty. This cooperative behaviour can later serve to inform more complex processes of policy harmonization that will be needed to mitigate the water quality challenges driven by agriculture, mining and industry across the SADC region (Adler *et al.*, 2007; Bornman *et al.*, 2005; Cobbing, 2008; Coetzee, 1995; Coetzee *et al.*, 2002a; 2002b; 2006; Dalvie *et al.*, 2003; Hattingh & Claassen, 2008; Hobbs & Cobbing, 2007; Hobbs *et al.*, 2008; Holtzhauzen, 2004; Kempster *et al.*, 1996; Leaner *et al.*, 2006; 2007a; 2007b; Maree *et al.*, 2004; 2005; Motaung *et al.*, 2008; Oberholster & Ashton, 2008; Oberholster *et al.*, 2004; 2005; 2008; Oelofse, 2008; Oelofse *et al.*, 2007; Slabbert *et al.*, 2005; 2007a; 2007b; 2007c; Toens *et al.*, 1999; Wade *et al.*, 2002).

- A SADC Parliamentary Forum exists (with Mr. Barney Karuombe as the Regional Integration Officer based in Windhoek) around which future PNA processes can be strengthened as deemed appropriate.
- A high level of knowledge already exists about actual gaps between national policies in the SADC Water Sector (SADC, 2003b; 2004). More importantly however, specific areas where policy harmonization needs to be strengthened have already been identified, most notably around water quality management (SADC, 2003a:49). This provides a focal point for potential PNA-styled policy harmonization activities in the future.

Collectively these are considered by the author to be sufficient to be cautiously optimistic about a potential PNA-styled policy harmonization process within the SADC Water Sector, even if Special Interest Groups are largely absent, because in effect the various water sector actors collectively become such a group by proxy.

Differences between Nordic-Styled PNA and Existing SADC Processes

Having noted areas of possible similarity, it is also necessary to identify key differences between the SADC and the Nordic region, as these need to be understood if policy harmonization is to be successfully engaged in. In this regard there are two significant differences that need to be noted:

- There is clearly an absence of a long history of co-operative behaviour between all member states of SADC, at least to the same extent as that found in the Nordic region. The fore-runner to SADC was the Southern African Development Coordinating Conference (SADCC), which was successful in coordinating donor money during the Cold War era (Turton & Earle, 2005). It therefore remains to be seen whether SADC can continue to foster a strongly articulated desire to coordinate activities within the new configuration of Member States.
- There is an absence of formally-constituted region-wide Special Interest Groups and Associations in the SADC when compared to the Nordic region (Van Eeden, 2007; 2008).

Part D: Proposed Policy Harmonization Process in the SADC Region

How SADC Could Consider PNA as a Policy Harmonization Approach

Incentive as a Process Issue

Having developed the case that PNA provides the necessary structure for the process of policy harmonization, we now need to understand how to develop incentives, because without robust incentives the *status quo* will prevail and policy will remain disjointed. This introduces benefit-sharing as a new dimension to the analysis of how to effectively harmonize policy in SADC, because **it is via the framework of benefit-sharing that incentives are generated** as a new set of resource use optima become apparent through self discovery. Incentive generation is thus a process issue.

Having made a case for the potential viability of PNA-styled policy harmonization within SADC, it now remains to consider exactly how that process might evolve. As a point of departure in this regard, it must be noted that earlier work has already produced a rough blueprint for policy harmonization within the SADC region, at least as far as water resource management in transboundary rivers is concerned (SADC, 2003b:2-7). Therefore, rather than re-inventing the wheel, this is taken as a logical point of departure, with three elements being relevant to this Discussion Paper. These are:

- It is accepted that policy harmonization does not mean having identical water policies and/or legislation in all SADC Member States. It has already been agreed that, “harmonization means improving the compatibility of national policies and strategies with one another (both within and between countries) so that national water policies and strategies do not hinder the sharing of international water resources for mutual benefit” (SADC, 2003b:1). This immediately opens the door to a powerful vehicle of harmonization that will grab the attention of all participating Member States – the quantification of benefits to be potentially shared, because in effect the language being used is already about unlocking benefits through harmonization and cooperation.
- It is accepted that in effect, the focus of policy harmonization within the SADC region is to be water resources found in shared aquatic ecosystems (both surface and subterranean), and *not* water services or water resources that are not shared (which is the clear ambit of the sovereign nation-state alone). This means that the focus of policy harmonization is narrowly defined, within areas of known common interest, where in all cases existing inter-state engagement has already taken place, albeit to different levels of institutionalization. This immediately places the subject of harmonization within the realm of PNA, specifically with respect to the fact that (a) issues are framed as narrowly as possible, (b) being driven by Special Interest Groups or Associations that have technical capacity and a common interest to find a solution that is shared, and (c) is of sufficient salience to broader questions of economic integration that there will be a high enough level of political support

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in each Member State to “go the distance” in negotiating a cooperative solution.

- It is accepted that policy harmonization will be done incrementally and over time (SADC, 2003b:4), with a specific process already agreed to in principle (SADC, 2003b:7). Significantly, this agreement recognizes that harmonization can be either vision-oriented, or problem-oriented (SADC, 2003b:4-5), with a number of areas for potential immediate attention having already been defined, the most notable of which is centred on effluent-related issues such as standards, charges and mitigation strategies (SADC, 2003a:49). This immediately defines a point of departure for this Discussion Paper by laying a foundation that is reasonably robust and uncontested, albeit it somewhat simplistic at this stage.

We therefore have, as a point of departure, an *agreed upon process*, with *PNA as a potentially viable vehicle*, set against the background of *benefit-sharing as an ordering framework* capable of framing narrow technical issues (most notably about water quality) within the “bigger picture”. These are presented schematically as a form of funnel in Figure 3.

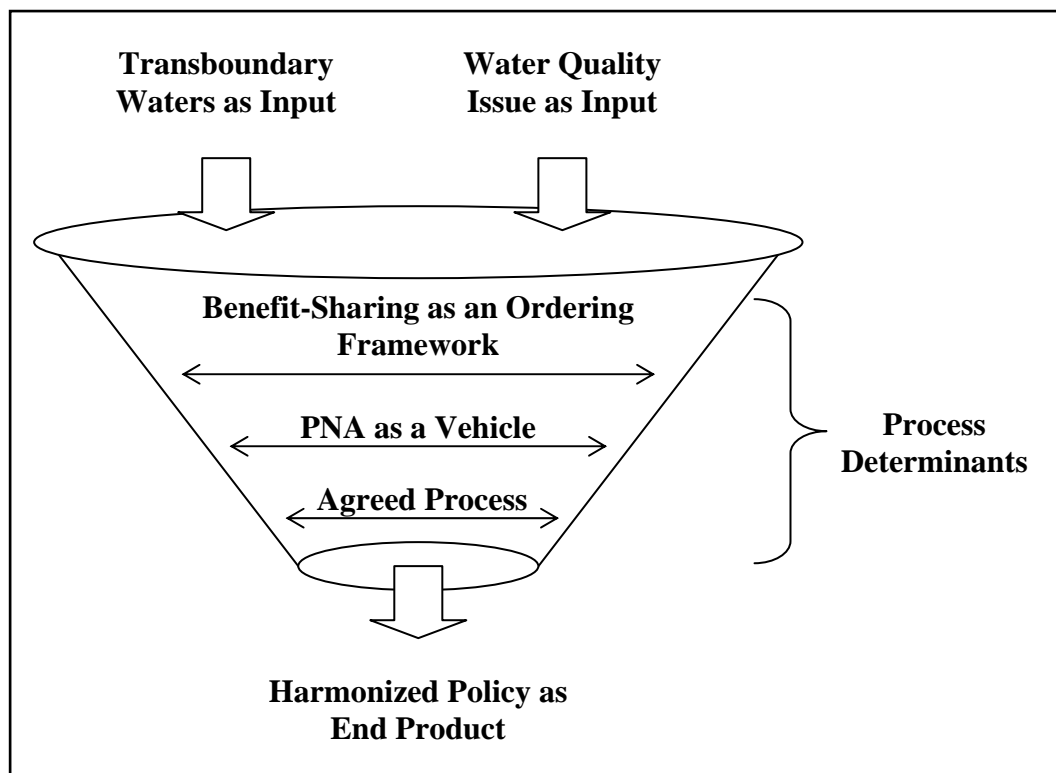


Figure 3. Schematic representation of the way that the three **Process Determinants** convert narrowly-defined input issues into harmonized policy as an end product by generating incentives to change the *status quo*.

This “funnel” consists of the **Process Determinants** which provide different levels of “filter” (or lens) that define the overall mechanism by which narrowly-defined inputs (transboundary waters and water quality) are converted to an end product (harmonized policy). The existence of these three critical elements is extremely

helpful, because it means that much of the hard work has already been done, with only refinement needed with respect to actual process-related decisions that will need to be made to initiate the next level of harmonization.

Having developed the overall framework for policy harmonization, it is now necessary to understand the three key **Process Determinants** presented in **Figure 3**. These will be presented from the top down in the explanatory text below.

Benefit-Sharing as an Ordering Framework

In order to create sufficient incentive for the more powerful states within a given hydro-political configuration to cooperate by changing their entrenched positions, a new framework is needed. A paradigm is a powerful thing because it provides an ordering logic that filters all the incoming information to a given decision-making entity. It is this process of filtering that is central to the threat perceptions that underpin securitization and desecuritization processes (Turton, 2003a; 2003c; 2008b). Frameworks order the logic that structures the process of decision-making, so they influence the outcomes by actively selecting inputs and by providing specific criteria to various processes of selection between potential future outcomes. The current paradigm is one of Integrated Water Resource Management (IWRM), which has as its ordering logic, two elements that are critical to the understanding of any process of policy harmonization. These are as follows:

- The river basin is universally accepted as the unit for management.
- Decision-making is cascaded down to the lowest appropriate level commensurate with the principle of subsidiarity.

These two principles can be thought of as boundary conditions that set in place specific obstacles that a given set of inputs need to negotiate and overcome if they are to be converted into outputs that are useful. However, these two principles of IWRM are not the only potential obstacle to policy harmonization – something that the original inventors of the concept of IWRM clearly never intended. There is one more powerful element of the current paradigm under which water resource management is practiced in shared international river basins, and it is this third element that renders the previous two IWRM principles potentially problematic in water-constrained regions like SADC. This is the age-old issue of sovereignty (Aron, 1981; Morgenthau & Thompson, 1985), which determines in effect what the power is that any given state can hope to wield over a given resource or issue. For classical scholars of International Relations like Aron (1981:719), sovereignty is all pervasive and cannot be limited even by international law, because that law is based on the logic of integration rather than subordination. This means in effect that states cannot be forced to cooperate – they have to be induced to cooperate – a fact that has been overlooked by the framers of policy harmonization within the SADC region to date.

Stated bluntly, carrots are needed if sticks are not big enough. It is here that the issue of incentives becomes crucial, specifically where powerful states in a given hydro-political configuration – what some call hydro-hegemony (Zeitoun & Warner, 2006) – are reluctant to give up what they perceive to be something that they have by right.

It is against this background that the author has developed what he has called ten elements of a benefit-sharing framework (Turton, 2008b), which makes a case for the evolution over time away from the current rights-based approach favoured by earlier international law (the so-called Harmon Doctrine that was 100% rights-based) (Akweenda, 2002), to a “softer” model that is potentially more amenable to the development of inducements based on perceptions of benefit to be shared arising from a re-negotiation of the current *status quo*. Critical elements of this proposed new Benefit-sharing Framework are the following:

- **Optimization under conditions of resource constraint needs to be shifted up to a higher level than the river basin, into what is known as the Hydropolitical Complex** (Ashton & Turton, 2008; Turton, 2003a; 2003b; 2003c; 2004; 2008a; Turton & Ashton, 2008). This is what Allan (2000; 2002) refers to as shifting the solution-thinking *upwards* from the watershed where localized scarcity occurs, into the higher-level problemshed where solutions to localized water scarcity are found (Earle, 2003). **It is this upward cascading of the decision-making in water-constrained regions that flies in the face of the core principles of IWRM, which tend to cascade that decision-making downwards instead.** It is also this upwards movement of solution-thinking that places a major burden on technical and scientific institutions, which need to develop methodologies and processes by which solutions can be generated. It is precisely the weakness of such institutions that becomes a driver for developing countries to fail (Barbier & Homer-Dixon, 1996; Homer-Dixon, 1994; 1995; 1996; 2000), becoming a second-order scarcity (Ohlsson, 1999; Ohlsson & Lundqvist, 2000; Ohlsson & Turton, 1999; Turton & Ohlsson, 1999; Turton, 2003a). It is the existence of a second-order scarcity that has caused policy-harmonization within SADC to fail thus far.
- **Scale is relevant, because the higher one goes above the level of the river basin, specifically when being additionally confined by the sovereign nation state, the larger is the Basket of Potential Benefits that can be generated** (Turton, 2008b). This in turn opens the whole issue of quantifying benefits, which is a highly complex issue, but one that is currently receiving a lot of attention (Phillips *et al.*, 2006; Turton *et al.*, 2008b), with work currently in progress being designed specifically to provide a powerful tool to participating partners as they engage in negotiations about a new and hopefully better future.

This means that a potentially useful ordering framework with which to take policy harmonization within SADC to new levels of sophistication is that of Benefit-Sharing rather than one of Water-Sharing. The reason for this is that the former opens up a wider range of potential solutions by seeking to create new optima at a level of scale *above* the river basin, but within the regional Hydropolitical Complex.

It is known that some reservations exist with respect to Benefit-Sharing, specifically where perceptions abound that this is a new way for hydro-hegemony to merely entrench the *status quo* (Phillips *et al.*, 2006), which means that the migration from the old to the new framework cannot be forced, but must be driven by inducement or incentive instead. It is here that the next **Process Determinant** plays a crucial role. Parallel National Action, with its core capacity to place sovereign control firmly in the

hands of those negotiating new outcomes, potentially has the capacity to allay fears of the weaker states in a given hydropolitical configuration.

Parallel National Action as a Vehicle

In order to create the necessary incentive for more powerful states in a given hydropolitical configuration to wish to negotiate a new policy dispensation, it is vital that “space” must be created in which two critical objectives are achieved:

- **Learning must be fostered in order that the core problem being managed can be redefined to the point where a high level of unanimity exists** (Turton, 2003a). It is this learning process that slowly institutionalizes data and the rules by which those data are eventually interpreted into a final decision. This is fully consistent with the concept of incrementality already agreed to within the context of policy harmonization in the SADC region (SADC, 2003b:4). This iterative aspect of the PNA process, specifically where consensus-seeking is the central dynamic as illustrated in **Figure 2**, is highly conducive to the need for institutions and actors to learn by doing. This is a core element of what is being dubbed adaptive management (see Biggs *et al.*, 2008 for an example).
- **Confidence must be fostered among all participating Member States interested in a given harmonization outcome, that they are still in control of the process, even when it is a joint effort.** It is here that the core process of flip-flopping into and out of the black box of PNA described in **Figure 2** becomes a powerful tool. This hard-wired process gives the participating Member States the full confidence that in the final analysis they remain in exclusive control of the outcome where it affects areas of critical national interest. **It is this aspect that gives the PNA process the advantage over earlier attempts at policy harmonization within the SADC region.**

It is therefore the professional opinion of the author that PNA as a vehicle provides the necessary incentives to all participating Member States engaged in the process of policy harmonization, specifically when it is used within the context of a higher-level Benefit-Sharing Framework as illustrated in **Figure 3**.

Agreed Process of Harmonization as a Point of Departure

The prognosis for a successful outcome to any policy harmonization endeavour is greatly enhanced if there is an agreed process, even if that process is only crudely defined. In this regard it is deeply encouraging to know the extent to which this process has already been agreed to (SADC, 2003b: 4-7). For the purposes of this Discussion Paper, the process as stipulated in Box 1 of the document entitled *SADC Water Sector: RSAP Projects 9 & 10: Guidelines for the Development of National Water Policies and Strategies to Support IWRM* (SADC, 2003b:7) will be used as a point of departure and will be called the **Agreed Process of Harmonization**. This is reproduced as **Figure 4**.

Box 1: Typical steps towards harmonisation – a problem-oriented approach

- 1 Develop compatible information systems which facilitate information exchange.
- 2 Develop a common understanding of the problem.
- 3 Agree on desirable end state (informed by a common vision):
 - Set water quantity targets.
 - Set water quality targets.
 - Agree on allocations.
- 4 Agree on actions to achieve end state (informed by common principles):
 - Develop a water demand management plan.
 - Develop a water resource development plan (infrastructure projects, operation of river and infrastructure).
 - Develop a water quality management plan.
- 5 Plan to achieve end state (informed by commitment to integrated water resource management):
 - Develop an integrated catchment management plan or strategy.
 - Integrate the financial resource requirements and economic incentives in the planning.
 - Assess policy and legislative impediments.
- 6 Put in place the necessary institutional mechanisms.
- 7 Amend policies and legislation as necessary.
- 8 Enact the plan in a flexible and strategic way, refining and amending as necessary along the way.

Figure 4. The Agreed Process of Harmonization as already accepted by key SADC water sector stakeholders (SADC, 2003b:7). This acts as a powerful point of departure that this Discussion Paper now seeks to take to a new level of sophistication. The linear nature of this process means that it is unlikely to succeed as is presented here, so it will need to be reconfigured to allow for parallel processes of iterative co-evolution.

The most striking feature of this process is that it is linear in configuration, with eight specific **Steps** that feed into one another. This is problematic for the simple reason that lessons learned from the Nordic PNA experience indicate that policy harmonization is best achieved by means of many iterative processes, some running simultaneously, all managed in such a way as to be parallel and non-linear. The **Agreed Process of Harmonization** presented in **Figure 4** starts off with **Step 1**, which is about the development of a compatible information technology (IT) system that facilitates the exchange of data. This is actually one of the most complex processes of all, with research completed by the author (Turton, 2003a) indicating that the *final* outcome of institutional development in transboundary river basins is a mutually agreed-upon data management system. **The IT platform is therefore an outcome of a process entailing a large number of smaller iterative steps, so if it is framed as Step 1 in a linear process, it is unlikely to succeed** for two basic reasons. Firstly, the IT platform designers do not yet know what data and processing methodologies will be needed by the decision-makers it will be designed to serve. Secondly, some states are reluctant to share data before confidence has been built between all participating Member States. Combined these two factors suggest that

failure is the likely outcome, which means that **Step 1** becomes a massive stumbling block to the launching of **Step 2** and subsequent processes, simply because of the linear configuration of the process. **It is therefore strongly recommended by the author that this linear approach be adapted slightly in order to allow for the co-evolution of the IT platforms alongside the evolution of growing consensus about what data is actually needed** and how that data is to be stored, managed and processed.

Another weakness of this **Agreed Process of Harmonization** is the fact that institutional mechanisms and policy amendments are placed at the end of the line and are assumed to be logical outcomes. Again the same logic holds true – if there is a blockage in any of the earlier **Steps**, then the participating Member States will never get to the point where they are in a position to know what institutional changes are needed, or how policy and legislation has to be amended in order to facilitate the effective joint management of a shared resource. This is clearly evident from the flow diagram derived from **Figure 4** and presented as **Figure 5**.

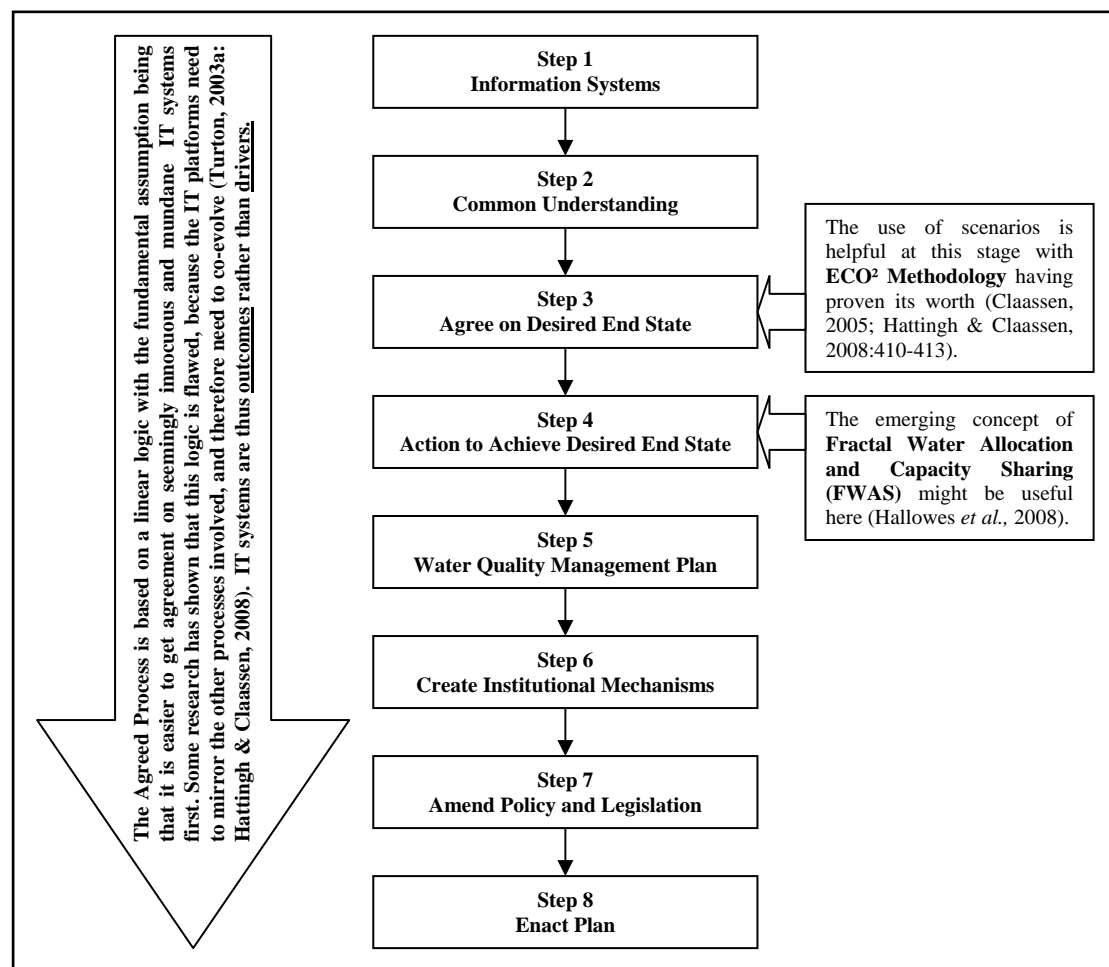


Figure 5. Schematic representation of the Agreed Process of Harmonization (SADC, 2003b:7) illustrating the linear logic on which it is based. The comments on the right hand side give some suggestions of where methodologies currently under development elsewhere in the SADC region might be relevant.

It must be noted that this linear logic is based on the notion that agreement on seemingly mundane technical issues like IT platforms is easier to achieve, and is therefore placed upstream of the more complex processes of policy harmonization. This is a fallacious argument in the professional opinion of the author, and if this ordering logic is allowed to prevail, then the prognosis for policy harmonization in the SADC region will remain poor.

Having noted these concerns, it does not mean to say that the **Agreed Process of Harmonization** has no value. On the contrary, the very fact that it has already been agreed has great intrinsic value. It must also be noted that the **Steps** in that process are not necessarily incorrect. All of these **Steps** are needed if a final successful outcome is to arise. These **Steps** are all necessary conditions for success. **The critique offered here by the author is that while they are all necessary conditions, they are not sufficient conditions for success, with the sequencing logic being the weak link rather than the existence of the Steps themselves.** It is therefore considered prudent by the author to keep these **Steps** as **Essential Elements of Success (EES)**, but to re-order their connective logic in order to make them consistent with a PNA type of approach.

This is done in **Figure 6**, which shows the exact same **Steps** that are found in the **Agreed Process** presented in **Figure 4** (SADC, 2003b:7), but given a new cascading logic that is based on Benefit-Sharing as an ordering framework and PNA as a vehicle, consistent with **Figure 3**. The left hand side indicates the evolution of the IT platforms to mirror the needs of the iterative negotiation processes in the centre, with the PNA processes needed to support both of these processes illustrated on the right hand side.

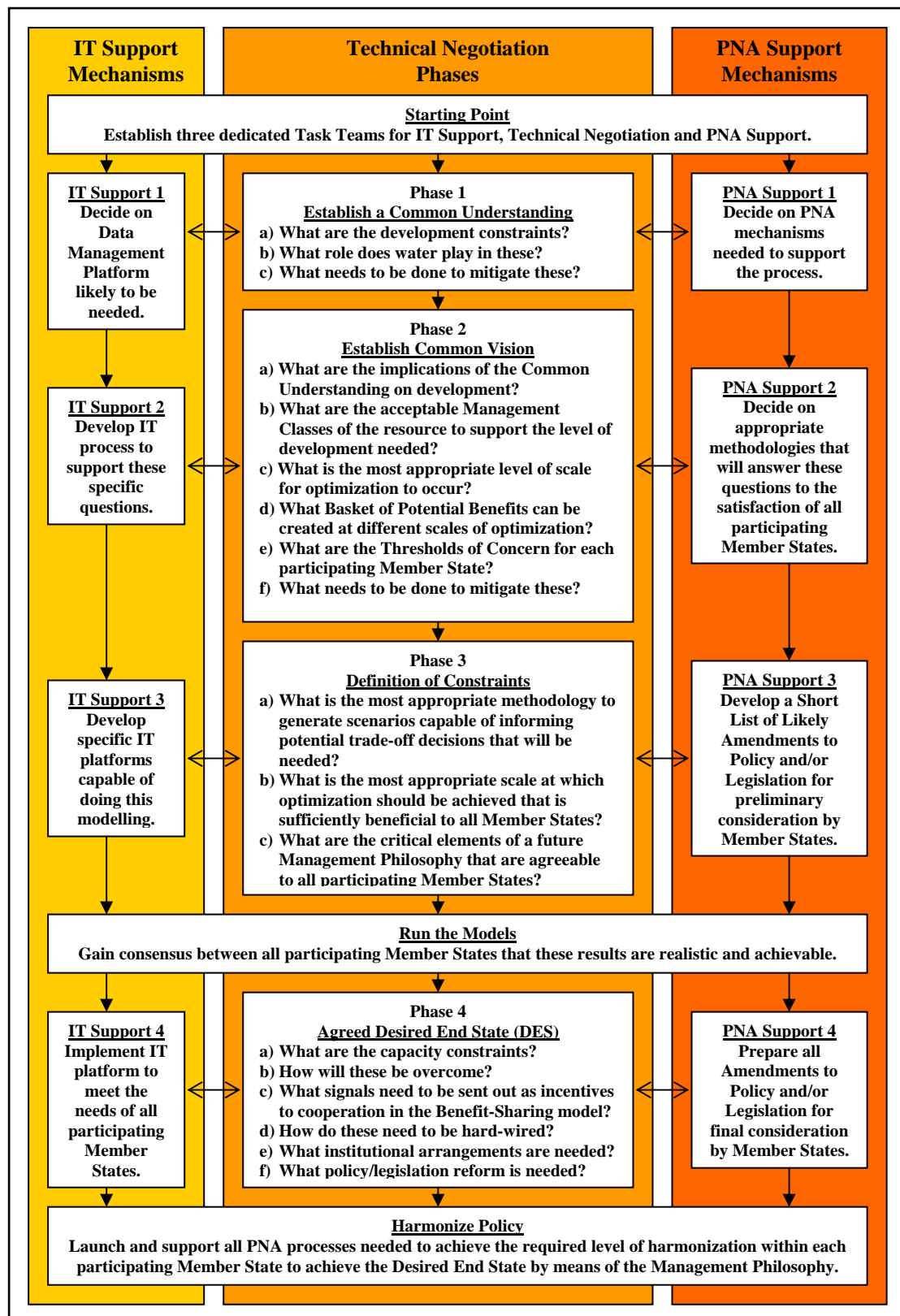


Figure 6. Schematic layout of the Agreed Process of Harmonization (SADC, 2003b:7) adapted to the use of Parallel National Action as a vehicle within a Benefit-Sharing Ordering Framework. For the purposes of this Discussion Paper this is now called the Adapted Process of Harmonization.

It is evident from this **Adapted Process of Harmonization** that there are three parallel processes each happening concurrently. This is very important because it is the parallel nature of these processes that allows for the type of incremental learning and confidence-building that is needed to make each of the participating Member States comfortable with the final outcome. The revised process is triggered by the agreement between a given set of Member States that they wish to proceed with such a course of action. At that moment of agreement – called the **Starting Point in Figure 6** – three task teams are created. Each of these task teams is made up of people with the necessary technical insight to deal with the relevant matter at hand, from each of the participating Member States. These three Task Teams are mandated as follows:

- The **IT Task Team** is charged with the responsibility of starting to develop the necessary capacity that will eventually lead to the installation, management and maintenance of data storage and processing systems that will meet the needs of the Technical Negotiation Task Team. The primary objective of the IT Task Team is to serve the needs of the Technical Negotiation Team, so they must not be allowed to run ahead of themselves by developing solutions before these have been requested by the latter.
- The **Technical Negotiation Task Team** is the main forum for gaining consensus between the participating Member States. This team is made up of water resource management specialists from all of the Member States, and their core responsibility is to gain consensus in a systematic but methodical and transparent manner over a series of issues that evolve according to a pre-agreed sequence. This Technical Negotiation Task Team instructs the IT Task Team to develop specific data management processes and platforms as and when needed. This Technical Negotiation Task Team also keeps their principles fully informed of progress at all times *via* the PNA Support Task Team that sustains them.
- The **PNA Support Task Team** is established in the relevant Ministry of each participating Member State under the direct control of the Contact Person (referred to as the **Nordic Contact Man** in the Scandinavian model presented earlier). The core responsibility of this PNA Support Task Team is to mobilize the support that is needed to sustain the Technical Negotiation Task Team, but they also have as a significant function, the preparation within their respective Ministry, of all aspects that will eventually be needed to achieve the level of policy harmonization that results (see **Step 2** for more details).

These three Task Teams work separately but in parallel and at all times maintaining close contact with each other. Neither of these Task Teams can function in isolation. The importance of this is twofold. Firstly, redundancy is built in to the overall architecture, so when a given stumbling block is encountered, this will not cause the entire initiative to be derailed, because the parallel processes will be brought to bear on the matter at hand. Secondly, this iterative process establishes a management environment in which co-learning is possible. It is this co-learning that drives eventual policy harmonization, so everything must be done to support this aspect.

Phase 1 Processes

Once established these three Task Teams need to answer the following specific questions:

- **IT Task Team** – what data management platform is likely to be needed, how will it probably function and where could it be potentially sourced from?
- **Technical Negotiation Task Team** – sets about gaining consensus on what the nature of the problem is that is being jointly managed. The final objective of **Phase 1** of their work is to establish a **Common Understanding** that is published as a printed document to which all participating Member States subscribe. This is done by answering the following questions through a series of meetings:
 - a) What are the constraints to social and economic development that the specific water resource management unit (river basin authority) will be dealing with in future?
 - b) What role does water resource management play in these specific development constraints?
 - c) What needs to be done in order to mitigate these?
 - d) What other issue stands in the way of achieving a common understanding of the problem being managed?
- **PNA Support Task Team** – what processes and mechanisms are needed inside the Ministry to support the achievement of a **Common Understanding**?

Phase 1 ends when the Technical Negotiation Task Team has reached a **Common Understanding** of the problem being managed. This is published in a formal document that is sent to the **PNA Contact Person** in order to get ratification within each Ministry. **Nothing is signed off until each of the participating Member States have agreed on this Common Understanding commensurate with the fundamental PNA process principles.** This means that **Phase 1** takes as long as is needed to gain consensus and should not be given artificial timelines by third party actors. Once the **Common Understanding** has been published, this is made available to the IT Task Team as this informs the next Phase of their work. It must be noted that at this stage, the IT Task Team has not yet done a lot of technical development work. Their work will remain mainly exploratory at this stage.

Phase 2 Processes

Phase 2 starts when the **Common Understanding** has been signed off by the participating Member States, which triggers a new agenda for the Technical Negotiation Team. At this moment in time the three Task Teams need to apply their minds to answering the following core questions:

- **IT Task Team** – what data management processes and platforms will be needed to answer the *specific* questions that the Technical Negotiation Task Team is *currently* dealing with?

- **Technical Negotiation Task Team** – sets about moving ahead from the **Common Understanding to a new consensus-based Common Vision**. This is done by answering the following questions through a series of meetings:
 - a) What are the implications of this **Common Understanding** on social and economic development?
 - b) What are the acceptable **Management Classes** of the resource in order to support the level of development needed?
 - c) What is the most appropriate level of scale for optimization to occur?
 - d) What **Basket of Potential Benefits** can be created at different scales of optimization?
 - e) What are the **Thresholds for Concern** for each participating Member State?
 - f) What needs to be done to mitigate these?
 - g) What other issue needs attention at this stage if policy harmonization is to be realistically achievable?

- **PNA Support Task Team** – what methodologies are *acceptable* that can answer these questions in a robust way to the satisfaction of the Member State concerned?

Phase 2 is a complex one, because it is here that the real nitty-gritty of a future harmonized policy is negotiated. This process is complex and cannot be rushed because each participating Member State must *feel* that their interests are being addressed, and more importantly, they must *believe* that they are not being bulldozed by a hegemonic power or an outside Third Party. **This Phase is where a critical new element enters the negotiating forum – the whole notion of Benefit-Sharing – that generates the incentives needed to change the *status quo*.** It is therefore necessary that robust methodologies be adopted for the calculation of costs and benefits, because these will be needed to later inform decisions around trade-off's that may have to be made. It is for this reason that the decision as to which methodology will be finally acceptable is left to the PNA Support Task Team, working in close concert with the Technical Negotiation Task Team, which means that in effect this is left to the participating Member State. Certain methodologies do already exist. All of these are currently experimental and are consequently undergoing a vigorous process of development, which means that some limitations still exist on their capabilities. These new methodologies include (but are not limited to) the following:

- The **Inter-SEDE** approach that was pioneered by Phillips Robinson and Associates (PRA) in Namibia develops an understanding of the relationships between three clusters of issue – national security, economic development and the environment (Phillips *et al.*, 2006). This is a relatively easy to use methodology that has been applied successfully to a Southern African situation in order to see if it is robust enough (Turton *et al.*, 2008a). The Southern African “ground-truthing” has resulted in a new set of Decision Support Tools that is currently under development in conjunction with the Stockholm International Water Institute (SIWI), Phillips, Robinson & Associates (PRA) in Namibia and the South African Council for Scientific and Industrial Research (CSIR), provisionally called the **Transboundary Water**

Opportunities (TWO) Methodology, which is about to be used by the Global Environment Facility (GEF). This is still experimental at the time of writing.

- The **Transcend-TB3** approach is currently being developed further by Dr. David Phillips of Phillips, Robinson & Associates in Namibia. This has not yet resulted in citable references, but is known to be reasonably advanced in its development for the Swedish Foreign Ministry, who are the clients in this case. This is closely associated with the **Transboundary Water Opportunities (TWO) Methodology** noted above.
- The **ECO² Model** was pioneered by the CSIR, working in close collaboration with the Department of Water Affairs and Forestry (DWAFF) and the South African Paper and Pulp Industry (SAPPI) (Claassen, 2005; Hattingh & Claassen, 2008). This methodology develops a series of scenarios that are based on categorizing the resource in terms of biophysical surveys and socio-economic activities that the resource is required to sustain (Hattingh & Claassen, 2008:411). This results in the capacity to compare resource management options (called scenarios), specifically as it relates to specific socio-economic activities and macro-economic development. The value of this methodology is that it develops a set of scenarios and **Management Classes** of the resource, which then become the basis for a negotiated process by empowering all negotiating parties with the information that they need to make a decision *vis-à-vis* their specific position on any given issue. In this regard the **ECO² Model** was specifically designed to address the persistent problem that debate about resource use is often characterized by the lack of awareness of the implications of a decision (or non-decision) (Hattingh & Claassen, 2008:411). This is also currently still an experimental methodology.

It must be noted that Phase 2 embeds the concept of Benefit-Sharing from which incentives are generated, which in turn introduces the whole issue of the most appropriate scale for optimization. It is likely that the level of scale yielding the greatest **Basket of Potential Benefits** is above the level of the river basin (Turton, 2008b). This in turn opens a new dimension that needs to be addressed if policy harmonization is to be a logical outcome. This new dimension is what is being called the **Threshold of Concern** in this Discussion Paper, which defines a threshold beyond which a specific participating Member State is no longer willing to negotiate for whatever reason they deem to be important. In negotiations this is a critical piece of information that is needed, because many talks fail when they try to go beyond this threshold. **It is therefore vital that the Technical Negotiation Task Team identify these Thresholds of Concern, and report them to the PNA Support Task Team, because it is the latter that will have to deal with the sensitivities arising from these thresholds within their respective Ministry.** It is also vital that this matter should not be rushed, because it is here that the desire to negotiate further either ends or not. The PNA Support Task Team, under the leadership of the Contact Person, really has a major role to play at this specific moment in time by seeking solutions to allay fears arising from specific **Thresholds of Concern**.

Phase 2 ends when a Common Vision has been established and signed off, along with the identification of specific Thresholds of Concern that are to be dealt with by each participating Member State in the spirit of the PNA process as direct issues over

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which sovereign jurisdiction is non-negotiable. Central to **Phase 2** is the creation of a level of consensus that will eventually feed into the **Management Philosophy** that will be generated in **Phase 3**.

Phase 3 Processes

Phase 3 is triggered when the Common Vision has been fully signed off and endorsed by each of the participating Member States commensurate with the PNA processes noted earlier. During this third Phase, the respective Task Teams are now required to shift the focus of their work to deal with the following key questions:

- **IT Task Team** – what is the specific IT platform needed to do the modelling that is required by the Technical Negotiation Task Team and where can it be sourced from? These platforms must then be installed in preparation for the modelling work that they will be required to do in the near future.
- **Technical Negotiation Task Team** – sets about a formal **Definition of Constraints that impact on the attainment of the Common Vision that was developed in Phase 2**. This is done by answering the following questions through a series of meetings:
 - a) What is the most appropriate methodology to generate scenarios capable of informing potential trade-off decisions that will be needed? In this regard instructions will be taken from the PNA Support Task Team that will already have formulated an opinion on this issue.
 - b) What is the most appropriate scale at which optimization should be achieved that is sufficiently beneficial to each of the participating Member States?
 - c) What are the critical elements of a future **Management Philosophy** that will be agreeable to all participating Member States given their respective known position on each of the **Thresholds of Concern** identified in **Phase 2**?
- **PNA Support Task Team** – what are the likely amendments to policy and/or legislation that might be needed to achieve the level of policy harmonization that is desired? From this they produce a formal document entitled **List of Likely Amendments to Policy and/or Legislation** that is submitted to the participating Member State, with a copy being sent across to the Technical Negotiation Task Team in order that they can comment as appropriate.

During **Phase 3** participating Member States should have a growing sense of comfort that their own respective interests will not be bulldozed by closer co-operation in the management of a given shared resource. This is important if there is to be a realistic chance of policy harmonization in the future. The PNA system is by now deeply embedded in each Ministry and the IT platforms are well underway with their development being driven by the specific needs identified by the Technical Negotiation Task Team. During **Phase 3** the complex issue of constraints are dealt with. This is done by means of two processes embedded in this Phase. The first of these is an in-depth analysis of the **levels of scale** at which different forms of resource optimization are achievable. This lays the foundation for future thinking about how to

balance resource need with resource availability at the river basin level. **It is here that the power of Benefit-Sharing is unleashed, because this opens the door to the reframing of the Common Understanding that was generated at the conclusion of Phase 1.** This of necessity creates a feedback loop to those earlier processes, with a possible reframing of the earlier problem in a different way based on the more powerful logic of the positive-sum dynamics inherent to the Benefit-Sharing Framework (Phillips *et al.*, 2006; Turton, 2008b; Turton *et al.*, 2008b). The second of these is the development of consensus around the critical elements of a future **Management Philosophy**. Recent work in the field of water quality management has shown that principles are critical elements of such a **Management Philosophy**.

“Not only are the principles identified but they are also individually defined to be as mutually exclusive as possible. The principles capture a value system appropriate for consistent ... water quality management ultimately aimed at improved quality of life for all Each principle is also associated with its underlying values-based assumption to help decision makers [sic] and stakeholders understand why the principle is regarded as important” (Murray, 2006 in Hattingh & Claassen, 2008:406).

This **Management Philosophy** provides the solid foundation for consensus between all participating Member States by taking their own position *vis-à-vis* **Thresholds of Concern** into account, but it also makes future decision-making more robust by providing the normative framework to guide that process.

Phase 3 comes to a climax when a series of models are run to test these different assumptions and ideas that have been built into each of the scenarios under consideration. It is at this stage that the data management platforms will be tested for the first time, which is the reason why the IT Task Team has been given such a long lead-in time to develop the degree of robustness needed. **These scenarios are a critical moment, because it is here that the consensus that has been growing will be tested for the first time. It is also here that shifts in thinking are likely to occur as earlier assumptions are shown to be flawed, and new levels of cooperation are driven by the creation of an expanded Basket of Potential Benefits.** The running of these models will also inform the Contact Person and the PNA Support Task Team whether their **List of Likely Amendments to Policy and/or Legislation** will need additional refinement. Yet again an iterative process is hard-wired into the overall procedure to cultivate co-learning and consensus-building.

Phase 3 comes to a formal end once the scenarios have been run and the results have been accepted by all participating Member States as being the foundation on which the next Phase of Policy Harmonization will be based.

Phase 4 Processes

Phase 4 is triggered when the various scenarios that have arisen from the model-running exercise that occurred just prior to the end of the previous Phase, are accepted by all participating Member States as the basis for the development of an agreed-upon **Desired End State (DES)**. In the quest for the attainment of this **DES**, each of the three Task Teams deals with the following key questions or tasks:

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- **IT Task Team** – implementation of the IT platform that has evolved over time to meet the now relatively well known future needs of the formal institution that will arise (or has already arisen) as a direct result of policy harmonization.
- **Technical Negotiation Task Team** – sets about developing a formal consensus document that will be called the **Desired End State (DES)**, which in effect will define the parameters that the future joint-management of the resource will be dependent on. This embodies the **Common Vision** (Output of **Phase 2**) (which might have been re-defined at this time) and recognizes the **Constraints** as mediated through the **Benefit-Sharing Framework** and represented as a series of scenarios (output of **Phase 3**). The development of the **Desired End State** is done by answering the following questions through a series of meetings:
 - a) What are the capacity constraints?
 - b) How will these be overcome?
 - c) What signals need to be sent out as incentives to co-operation in the Benefit-Sharing model that has been agreed to?
 - d) How will these signals be hard-wired into the system?
 - e) What institutional arrangements are needed to achieve this?
 - f) What policy/legislation reform is needed to achieve this?
- **PNA Support Task Team** – preparation of all the final policy and/or legislation that will be needed for the full implementation of the agreed-upon plan.

Phase 4 in essence wraps up all of the loose ends that the earlier Phases have created by specifically focussing on the development of one coherent output – the formal agreement on the Desired End State. This becomes a specific input into the two parallel processes of IT Support and PNA Support, with both of these Task Teams now taking over responsibility for specific implementation actions.

The questions to be dealt with by the Technical Negotiation Task Team have been developed in such a way as to achieve specific elements of a detailed **Plan of Action**. These are briefly dealt with below:

- The first question deals with capacity and defines the technical, human and financial constraints that will need to be addressed if the common goal is to be achievable.
- **The second question deals with converting these identified constraints into a firm Plan of Action that will later evolve into a Program.** In this regard it must be noted that a highly credible recent review of six decades of the CSIR, specifically with respect to the development of core skills and technical capacity, has shown that this capacity has evolved in direct response to the presence of **Programs** rather than **Projects** (Walwyn & Scholes, 2006) (see **Figure 7**). The reason for this is that projects tend to be shorter in duration and have limited funding, which means that staff turnover is high. This translates over time into the nett loss of human capacity. Conversely,

Programs are more focussed on specific but clearly defined end goals, with the resource needs from both a human and a financial perspective being synergised to the point where over time capacity is created and retained. **This is an important consideration in the context of this Discussion Paper, because the long-term viability of policy harmonization will ultimately be determined by the extent to which technical capacity is created and retained.** The reason for this is that higher levels of complexity emerge as one cascades the management of water resources *upwards*, so unless this complexity can be adequately understood in a way that is credible to all stakeholders, the potential benefits arising from this higher level of scale will not be unlocked *via* a positive-sum outcome. For this reason it is highly recommended that Programs be considered rather than Projects, with appropriate partnerships forming the spokes of those Programs, the hub of which will be the need to sustain the newly invigorated institutions that will emerge *via* the PNA approach to policy harmonization presented in this Discussion Paper.

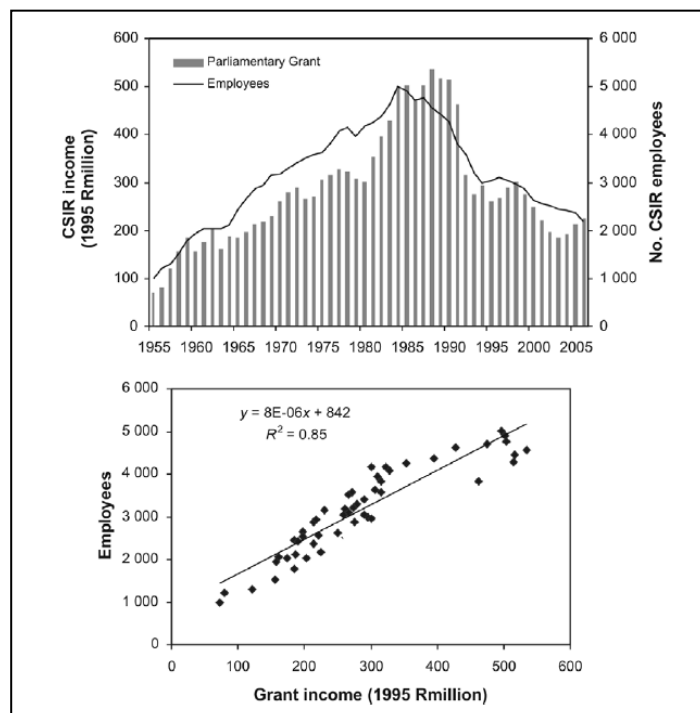


Figure 7. A review of the performance of the South African Council for Scientific and Industrial Research conducted over six decades shows that human capacity correlates with the type of financial instrument used to fund technical work. Contract income does not retain technical capacity (Walwyn & Scholes, 2006:241), but Program income does. This has significant implications for policy harmonization where long-term technical support is needed to sustain those processes.

- The third question deals with signals that need to be sent out as inducement to co-operate. This feeds into the policy and legislation harmonization that will be needed to meet the agreed objective. In this regard it must be remembered that in essence we are trying to drive new behaviour as a direct result of policy harmonization. That new behaviour by definition means that the *status quo*

will be challenged. This will need robust incentives, many of which will have to be hard-wired into the policy and legislation that will need to be reformed if the **Desired End State** is to be achievable in the first place (see Barbier & Homer-Dixon, 1996; Homer-Dixon, 1994; 1995; 1996; 2000; Ohlsson, 1999; Ohlsson & Lundqvist, 2000; Ohlsson & Turton, 1999; Turton & Ohlsson, 1999 for implications of failing to do this adequately).

- The fourth question deals with specific recommendations that will be made to the Contact Person and the PNA Task Team to consider during their policy and legislation harmonization that will be needed to meet the agreed objective. In keeping with the PNA spirit however, these will be recommendations only and not prescriptions, with the final decision at all times being left to the individual sovereignty of the participating Member State.
- The fifth question deals with the institutional arrangements that harmonization will demand if the agreed objective is to be reached.
- The sixth and final question overlaps the previous one by feeding into the policy and legislation harmonization that will be needed to meet the agreed objective.

Phase 4 comes to an end when the Desired End State has been formally adopted by the emerging institution and has been signed off by all of the participating Member States commensurate with the PNA approach presented earlier. This triggers the implementation Phase when all of the policy harmonization will be finalized. Given the specific design of this **Adapted Process of Harmonization (Figure 6)** it is quite possible that the participating Member States will be fully supportive of the need for policy reform, and in some cases might already have commenced with early stages of that reform process. This is an optimal situation, where the respective bureaucracies have been adequately prepared to deal with the policy harmonization process and are both willing and capable of doing this as needed to meet the **Desired End State**. It is this incrementality that builds confidence and ensures that the correct decisions are made over time, because this reform is done at the same pace as the institutional capacity to support that reform is developed – a factor considered by Aron Wolf and his team to be vitally important (Turton, 2005; 2008a; Wolf, 2006; Wolf *et al.*, 2003; Yoffe *et al.*, 2003).

Is the Adapted Process of Harmonization Consistent with the Agreed Process of Harmonization?

Given that the intention of this Discussion Paper is to build on processes that have already been agreed to by key SADC stakeholders, it is important that the **Adapted Process** should not deviate too far from that earlier process. **Figure 8** shows the basic structure of the **Adapted Process of Harmonization** (as originally presented in **Figure 6**), with direct comparison to the **Agreed Process of Harmonization** (as originally presented in **Figure 4**) (SADC, 2003b:7). For ease of comparison the different **Steps** inherent to the latter are shown as balloons superimposed on a simplified version of the former in **Figure 8**. From this evaluation it is evident that **all of the Steps of the Agreed Process of Harmonization are present within the Adapted Process of Harmonization, but the structural linkage and ordering logic**

differs somewhat. It is this reconfiguration into a series of parallel processes that is likely to improve the prognosis for successful policy harmonization considerably, at least in the professional opinion of the author.

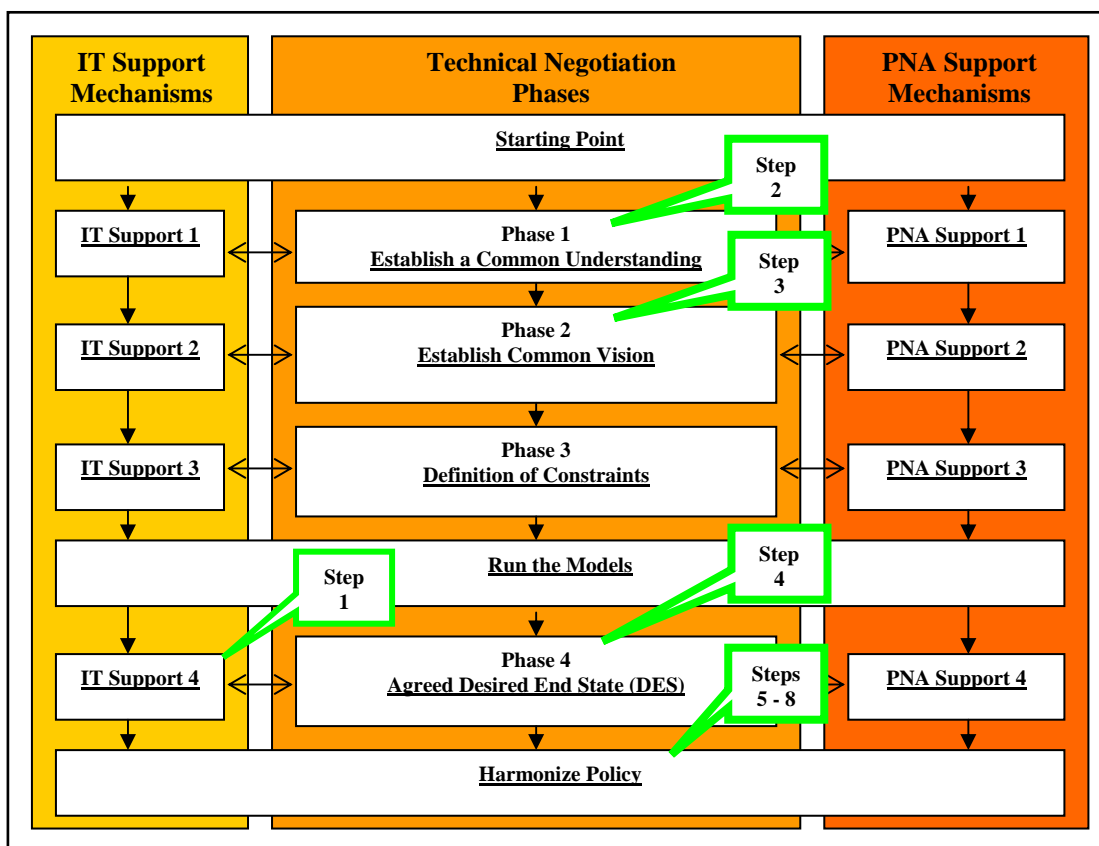


Figure 8. Comparison of the Agreed Process of Harmonization (as shown in Figures 4 & 5) with the Adapted Process of Harmonization (as shown in Figure 6). The green balloons represent specific Steps in the Agreed Process of Harmonization superimposed on their counterparts in the Adapted Process of Harmonization.

It is evident from this comparison that the **Adapted Process of Harmonization** pays greater attention to the incremental achievement of consensus than the **Agreed Process of Harmonization**. For this reason the former separates **Step 1** by making it a parallel process with a longer lead time, and it breaks up **Step 3** into a number of different **Phases**, providing a carefully structured procedure by which iterative processes are designed to generate consensus that is driven by co-learning, specifically as new questions are asked sequentially. **It is this adapted sequencing that builds in the incrementality that will ultimately allow for a redefinition of the core problem**, specifically by framing the quest for solutions in the larger **Basket of Potential Benefits** that accrues at a level of scale above the individual river basin.

How Might a Future SADC-wide PNA Model Look?

Given the fact that the SADC region has a vision for future economic integration that is constrained in a fundamental way by the maldistribution of water resources (**Map 1**) and the hydraulic infrastructure with which to generate a high assurance of supply needed to sustain that economic growth (see **Maps 2 & 3**), it is logically impossible to

see a future vaguely close to this vision that does not involve two necessary conditions for success. These are:

- A high level of policy harmonization that takes these hydrological constraints into consideration.
- A concerted joint effort at redistributing some of these water resources in a way that generates the high assurance of supply needed to sustain economic growth. This of necessity will entail a joint investment in the type of hydraulic infrastructure needed to attain that high assurance of supply level (see **Maps 2 & 3** that indicates some elements of this assertion), which will only be viable if a high level of cooperation exists between all participating Member States.

Combined these two necessary conditions for success will logically drive co-operation across sectors over time. This begs the question, which of the sectors are the most critical for harmonization if future economic growth is to be assured? An answer to this question is informed by a version of the **WEALTH Model** originally developed by the author and presented in Phillips *et al.*, (2006:175), shown here as **Figure 9** in an adapted format. The **WEALTH Model** is potentially useful in guiding thinking around the need to harmonize policy, because it illustrates many of the **Essential Elements of Success** for sustained economic growth and hence regional integration, helping us to target key Sectors. It can be argued that each of the components of the **WEALTH Model** are key drivers of successful economic integration, so logically the Sectors that they are closely linked to would become targets for policy harmonization attempts in the future.

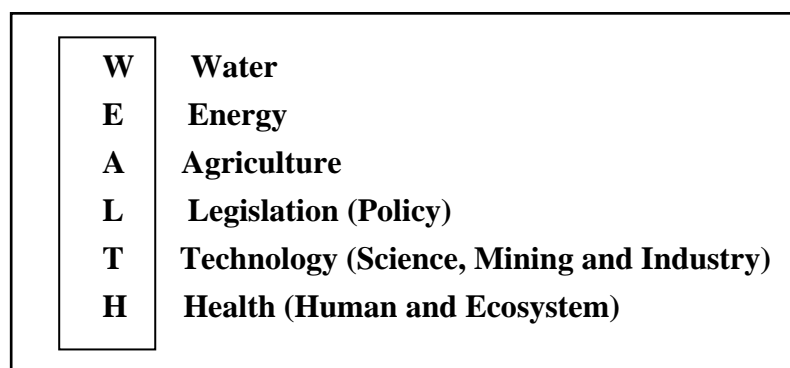


Figure 9. A simplified and adapted version of the WEALTH Model (Phillips *et al.*, 2006:175) that indicates the Essential Elements of Success (EES) for policy harmonization if sustained economic integration is to take place within the SADC region. Each of these EES represents a Sector (or Sectors) that is a key driver of economic development and hence of policy harmonization in a water-constrained environment.

From the simplified version of the **WEALTH Model** shown in **Figure 9**, it is evident that there are four key sectors, all of which have a close link to water, but none of which are currently the subject of policy harmonization initiatives at present. These are as follows:

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- **Energy** – is a stable foundation for all economic activity. This requires massive infrastructural investments and is best managed at a level of scale above the sovereign nation state given the unequal distribution of oil, coal, natural gas and water across the SADC region. While energy is a foundation for the economy, it is also a critical component for pumping water uphill to the existing centres of economic development across the SADC region, which as previously indicated are not situated on rivers, lakes or seafronts, but are on watersheds instead (Turton *et al.*, 2006a; 2008b). If water is to be physically redistributed in any way as shown in **Map 3**, then close cooperation with the Energy Sector will be a necessary pre-condition. The Energy Sector also generates significant pollution streams, some of which are airborne and some of which are waterborne, both covering a wide geographic footprint (Blignaut & King, 2002; Hobbs *et al.*, 2008; Leaner *et al.*, 2006; 2007a; 2007b; Maree *et al.*, 2004; Scholes & Biggs, 2004).
- **Agriculture** – is the largest single sectoral user of water in non-industrialized countries (Allan, 2000; 2002; Turton *et al.*, 2003). Where perceptions of food insecurity persist, this is likely to drive the desire for national self-sufficiency in food, which is known to exacerbate the problems associated with the harmonization of water policy in water-constrained regions. Elements of this national food-security paradigm are known to exist in the SADC region. It is also known that these are extremely sensitive issues over which direct sovereign control is virtually non-negotiable. It is also known that such strongly articulated views drive water scarcity as each country attempts to maximize food production from their limited and dwindling resources (Allan, 2000; 2002; Turton *et al.*, 2003). If scarce water resource availability is to be balanced with actual needs, then policy harmonization between the Water and Agricultural Sector is vital if solutions are to be sustainable over time. This is currently not within the Terms of Reference (ToR) for the Discussion Paper.
- **Industry** – has the most efficient conversion ratio of a given unit of water to a given unit of GDP and/or employment level in society (Turton *et al.*, 2003). It is logical that an element of the solution to the SADC *problematique* of having a water-constrained economic growth potential will therefore seek to unlock the higher Sectoral Water Efficiency (SWE) of the Industrial Sector, by slowly reallocating water from the lower SWE inherent to the Agricultural Sector. This is known to be effective, but it is also known to be highly sensitive (Allan, 2000; 2002), so this is probably going to become a driver of harmonization in future. This is currently not within the ToR for the Discussion Paper.
 - a) A significant sub-set of this category will be the economic development that will arise from the treatment of existing pollution to produce a new series of economically-useful end products (Hobbs *et al.*, 2008; Maree *et al.*, 2004; 2005; Motaung *et al.*, 2008).
- **Environment** – is a critical sector, specifically in terms of aquatic ecosystems that are pushed to their limits of sustainability as a result of demand for water exceeding the capacity of the ecosystem to sustain that level of supply (Claassen *et al.*, 2001). This is what Ken Conca calls “pushing rivers around”

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(Conca, 2006), which typically involves the construction of massive hydraulic infrastructure, such as that shown in Map's 2 and 3. We now know that some environmental thresholds are being crossed because of this with potential devastating consequences. These are directly related to the following areas of common interest to SADC Member States in the context of this Discussion Paper, even if this is excluded from the ToR:

- a) The **Mining Sector**, which is now known to be generating significant return flows of heavy metals, radionuclides and sulphates into the transboundary rivers that are shared by so many Member States (Adler *et al.*, 2007; Cobbing, 2008; Coetzee, 1995; Coetzee *et al.*, 2002a; 2002b; 2006; Hobbs & Cobbing, 2007; Hobbs *et al.*, 2008; Holtzhausen, 2004; Kempster *et al.*, 1996; Maree *et al.*, 2004; 2005; Oelofse *et al.*, 2007; Wade *et al.*, 2002).
- b) The **Agricultural Sector**, which is now known to be generating significant return flows that have endocrine disruptive characteristics into rivers (Awofolu & Fatoki, 2003; Dalvie *et al.*, 2003), which are potentially shared by so many Member States.
- c) The **Water Sector**, which has used large dams and IBTs as preferred solutions to the management of localized water deficits in the past, with many implications for the transboundary rivers that are shared by so many Member States, specifically by altering the normal hydrograph and localized hydraulic conditions on which ecosystem functioning has come to depend (Basson, 1995; Davies & Day, 1998; Heyns, 1995; 2002; 2003; Heyns *et al.*, 2008; Junk *et al.*, 1989; Murray, 2006; Snaddon *et al.*, 1999).
- d) The **Health Sector**, which in many cases has relied on chemical control of malaria and other endemic diseases, with many implications for the transboundary rivers that are shared by so many Member States (Bornman *et al.*, 2005; Oberholster *et al.*, 2004; 2005; 2008; Slabbert *et al.*, 2005; 2007a; 2007b; 2007c; Toens *et al.*, 1999).
- e) The **Industrial Sector**, which in many cases has generated high levels of heavy metal and other detrimental return flows (Maree *et al.*, 2005; Leaner *et al.*, 2006; 2007a; 2007b; Oelofse, 2008).

It is therefore a logical conclusion that the future of SADC economic integration will require policy harmonization across all of these Sectors at a minimum.

How could a future SADC look where the necessary level of harmonization has been achieved across these critical sectors?

From **Figure 10** we can get a glimpse of what things might look like in two or more decades in the future, if the SADC economic integration processes evolve to a level where this vision is to be realistically achievable. Two elements of this future architecture of harmonization need to be understood by the reader of this Discussion Paper.

- The red dots represent **Sectoral Contact Persons** as described earlier in this Discussion Paper. Their role would be to coordinate all policy *within* each SADC Member State, with the one specific objective of arriving at a coherent

position on the **National Interest** of the given state. **That National Interest would link together all of the different sectors within the Member State, achieving trade-off's at the national level** without the interference of any Third Party.

- The blue ovals represent **Technical Bilateral Commissions**, such as those currently in existence to manage transboundary river basins. These **Technical Bilateral Commissions** (they could be multilateral dependent on the number of participating Member States), exist outside of the sovereign competence of the individual participating Member States, but are driven by those Member States. **The role of these Technical Bilateral Commissions would be different to what it is today, because they would be tasked with developing a coherent technical position reflecting the Sectoral Interest.** Significantly, these **Sectoral Interests** would be defined by the rationalized **National Interest** that the **Sectoral Contact Person** would aim towards, so those interests would not necessarily be the same as currently being reflected in various River Basin Commissions like KOBWA, ORASECOM, OKACOM or ZAMCOM (to name but a few).

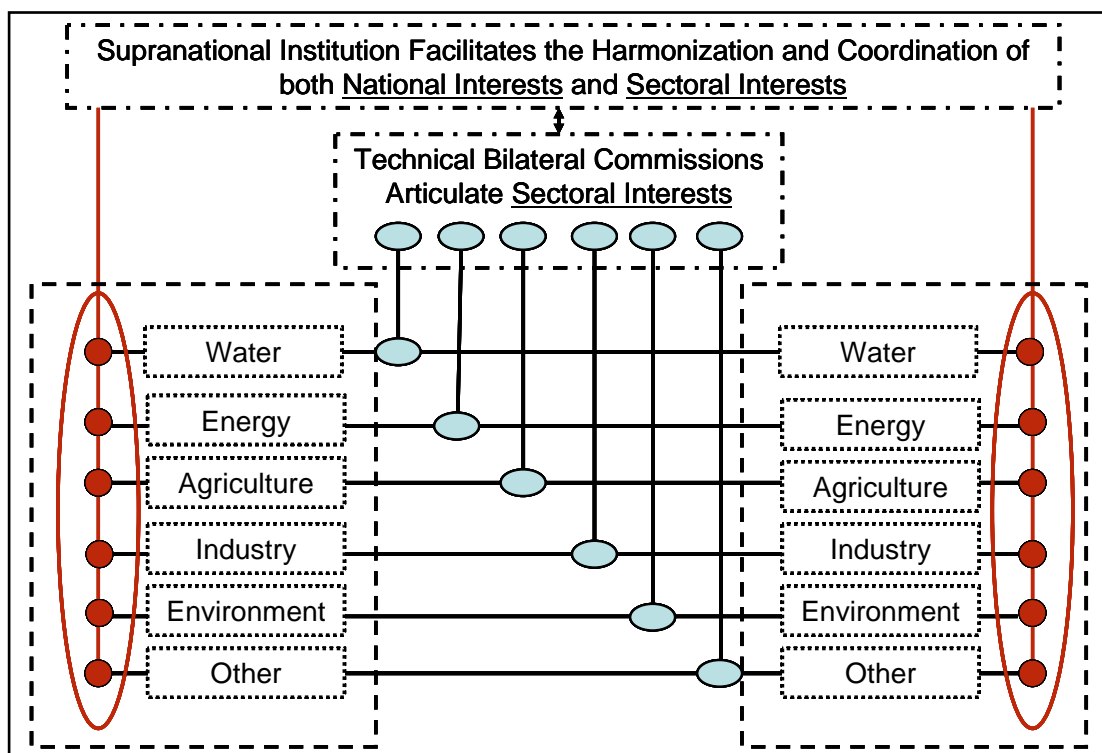


Figure 10. Schematic representation of how policy harmonization might look in the year 2025, driven by the need to achieve economic integration within SADC, based on the PNA approach presented in this Discussion Paper.

The core process embedded within this future PNA model is centred on a formalized structure that exists alongside the **Technical Bilateral Commissions** (shown *above* those structures in **Figure 10** merely because of limitations to the illustrative capacity of the author), which would be tasked with the responsibility of achieving a balance between the various competing **National Interests** of the Member States, and the **Sectoral Interests**.

Is this far fetched?

The simple answer is no. There are elements of this already in existence within the SADC region, but as yet invisible to all but the few analysts interested in such matters. A few examples include the following non-exhaustive list:

- The bilateral agreement reached between South Africa and Botswana in 1997 that established the **Joint Permanent Commission of Cooperation (JPCC)** is an enabling instrument, covering a range of issues from crime to migration, but significantly also including water resource management (Ashton *et al.*, 2005; Treaty, 1997; Turton, 2008a; Turton *et al.*, 2004:403). This means that while the management of water resources is left to various Bilateral Commissions that have been established between South Africa and Botswana, the need has been recognized to foster cooperative processes in other sectors as well, if the full benefits of cooperation are to be realized over time. **This is a rudimentary form of PNA that links the water sector to other sectors, at least at bilateral level.**
- The bilateral **Angolan/Namibian Joint Commission of Cooperation (ANJCC)** fosters cooperation between the Angolan and Namibian Governments (Turton, 2008a).
- The multilateral **Southern African Regional Commission for the Conservation and Utilization of the Soil (SARCCUS)** that was signed in 1948 (Ashton *et al.*, 2005; Turton, 2004:268), has ten standing committees, one of which deals with water (Ohlsson, 1995; Turton, 2008a). This creates a rudimentary structure similar to that presented in **Figure 10**.

So, in conclusion, it is not too far fetched to envisage the level of harmonization depicted in **Figure 10**. It is highly possible, indeed probable, that the successful implementation of the core elements presented in this Discussion Paper would ultimately evolve into the level of policy harmonization that has been mooted.

Part E: Specific Recommendations for Achieving Policy Harmonization in the SADC Region

Specific Recommendations

The following recommendation can be distilled from this Discussion Paper:

Given the known paucity of Special Interest Groups and/or Associations across the SADC region, specifically with respect to the role that they could potentially play within a PNA approach to policy harmonization, special attention needs to be given to strengthen those that do exist. In this regard it is recommended that special attention be given to investing some time, intellectual capital and finances into these structures with a view to making them more robust and “cross-pollinating” in nature. Specific attention ought to be given to the following:

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- a) The **SADC Parliamentary Forum** (www.sadcpf.org), with a view to encourage the support for PNA as a process by various parliamentary stakeholders across the region. This will lay the foundation for future engagement between the Water Sector, the Mining Sector, the Energy Sector, the Agricultural Sector, the Industrial Sector and the Health Sector.
- b) The **Water Institute of Southern Africa (WISA)** (see their objectives at <http://www.environmentdirectory.com.au/associations/wisa.html>), with a view to encouraging the establishment across the entire SADC region, of a professional Association of water sector specialists. In this regard it is not necessary to expand WISA to embrace the entire region, but rather to encourage professional membership of local versions of WISA-like structures, aimed specifically at building core technical capacity across SADC. (See (d) & (e) below).
- c) **Consider SADC endorsement for the establishment of a regional chapter of the World Water Council (WWC)** (<http://www.worldwatercouncil.org/>), with a view to creating a platform where local technicians, engineers and decision-makers active in the water sector get to meet their global counterparts on a regular basis and exchange ideas as equals. **This will open doors to a regional program within the various World Water Forum platforms.** In this regard it should be an objective to bring a future World Water Forum to the SADC region.
- d) **Consider SADC endorsement for the establishment of a regional chapter of the International Water Resource Association (IWRA)** (see <http://196.36.166.88/iwra/>), with a view to creating a platform where local technicians, engineers and decision-makers active in the water sector get to meet their global counterparts on a regular basis and exchange ideas as equals. **This will open doors to a regional program within the various World Water Congress platforms.** In this regard it should be an objective to bring a future World Water Congress to the SADC region. It must be noted that WISA (see (b) above) is currently the Executive Office of the IWRA, so we already have direct access to this avenue, should we collectively decide to support this initiative, and we might be able to negotiate a group concession.
- e) **Consider SADC endorsement for the establishment of a regional chapter of the International Water Association (IWA)** (see <http://www.iwahq.org.uk/>), with a view to creating a platform where local technicians, engineers and decision-makers active in the water sector get to meet their global counterparts on a regular basis and exchange ideas as equals. It must be noted that WISA (see (b) above) has formal links with the IWA, so we already have direct access to this avenue, should we collectively decide to support this initiative, and we might be able to negotiate a group concession.
- f) **Consider sustained support to the various technical institutions across the SADC region, specifically those capable of generating the type of scientific support that will be needed to optimize scarce water resources at different levels of scale.** In this regard specific mention needs to be made to the WARFSA/WATERNET association that already exists. The Global Water Partnership (GWP) component of this cluster should also not be excluded, as they play a potentially important role in promoting PNA as a vehicle for policy harmonization, in addition to their existing role of supporting IWRM. **This support should preferably be in the form of**

clearly defined Programs with the decision-making stakeholders having fully endorsed the focal point and objective of those Programs, as this has been shown to be the most effective way of building the type of technical capacity needed to sustain the level of policy harmonization that is likely to ensue (Walwyn & Scholes, 2006).

Conclusion

This Discussion Paper makes no claim at being the final word on policy harmonization in the water sector across the SADC region. What it has tried to do however, is to suggest a process by which this can be achieved in a more satisfactory manner than is currently the case. This suggested process is a fusion of what has been highly successful in the Scandinavian region from the 1800's until the various Nordic states were incorporated into the EU; and processes that have already been agreed to in the SADC context by key stakeholders in the field of water policy harmonization. **This hybrid version of Parallel National Action can be fully Africanized, because it is based on fundamental principles, which are not culturally far removed from localized conditions within the SADC region.** It is certain that whatever solution is finally agreed to, that the protection of the sovereignty of the state from creeping erosion will be a necessary condition for success, irrespective of the exact nature of the final process that will have been agreed upon. The Water Sector has always been well organized in the region, and it is quite possible that pioneering work done in the field of policy harmonization in that sector could become a blueprint for integration across the entire SADC sphere of influence. **Given the fact that the economic integration aspirations of SADC are potentially constrained by water availability in terms of quantity, quality and assurance of supply, there is certainly a strong enough incentive to get this process of policy harmonization right.** It is highly probable that the solution ultimately found will define a new level of scale at which optimization of the resource could be found. That is likely to be above the level of the river basin in what has been described as the Southern African Hydropolitical Complex, which means that cooperation across sectors and between member states will have to be taken to a level of sophistication unprecedented in the African context. This means that the PNA approach to policy harmonization in the Water Sector is not only a water resource management issue, but is potentially applicable to the entire SADC sphere of interest, and will need a robust scientific capacity at the regional level to inform and sustain these processes.

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Ultimately it is the people of the SADC region that will benefit from these collective efforts, so these people and organizations are gratefully acknowledged for their support.

Bibliography

- Adler, R.A., Claassen, M., Godfrey, L. & Turton, A.R.** 2007. Water, Mining and Waste: An Historical and Economic Perspective on Conflict Management in South Africa. In *The Economics of Peace and Security Journal*, (2)2. Pp 32 – 41.
- Akweenda, S.** 2002. From Harmon to Helsinki and Beyond: The Evolution of Key Principles in International Water Law. In **Turton, A.R. & Henwood, R.** (Eds.) 2002. *Hydropolitics in the Developing World: A Southern African Perspective*. Pp 97-104. Pretoria: African Water Issues Research Unit (AWIRU).
- Allan, J.A.** 2000. *The Middle East Water Question: Hydropolitics and the Global Economy*. London: IB Tauris.
- Allan, J.A.** 2002. Water Resources in Semi-Arid Regions: Real Deficits and Economically Invisible and Politically Silent Solutions, in **Turton, A.R. & Henwood, R.** (Eds.) *Hydropolitics in the Developing World: A Southern African Perspective*. Pretoria: African Water Issues Research Unit (AWIRU). Pp 23 – 36.
- Aron, R.** 1981. *Peace and War: A Theory of International Relations*. Malabar: Robert Krieger Publishing.
- Ashton, P.J., Earle, A., Malzbender, D., Moloi, M.B.H., Patrick, M.J. & Turton, A.R.** 2005. *A Compilation of all the International Freshwater Agreements entered into by South Africa with other States. Water Research Commission Report No. 1515/1/06*. Pretoria: Water Research Commission (WRC).
- Ashton, P.J., Hardwick, D. & Breen, C.M.** (In press - 2008). Changes in water availability and demand within South Africa's shared river basins as determinants of regional social-ecological resilience. In: **Burns, M.J. & Weaver, A.v.B.** (Eds.) *Advancing Sustainability Science in South Africa*. Stellenbosch: Stellenbosch University Press.
- Ashton, P. & Turton, A.R.** 2005. Transboundary Water Resource Management in Southern Africa: Opportunities, Challenges and Lessons Learned. In **Wirkus, L.** (Ed.) *Water, Development and Cooperation – Comparative Perspectives: Euphrates-Tigris and Southern Africa*. Bonn: Bonn International Centre for Conversion (BICC). Pp 5 – 32. Available online at www.bicc.de
- Ashton, P.J. & Turton, A.R.** (2008, in press). Water and security in sub-Saharan Africa: Emerging concepts and their implications for effective water Resource management in the southern African region. In: **H.-G. Brauch, J. Grin, C. Mesjasz, H. Krummenacher, N.C. Behera, B. Chourou, U.O. Spring, P.H. Liotta and P. Kameri-Mbote** (Eds), *Facing Global Environmental Change: Environmental, Human, Energy, Food, Health and Water Security Concepts – Volume IV*. Berlin: Springer-Verlag. Pp 665 – 678.
- Awofolu, R.O. & Fatoki, O.S.** 2003. Persistent organochlorine pesticide residues in freshwater systems and sediments from the Eastern Cape, South Africa. *Water SA*. (29)3. Pp. 323 – 320.
- Barbier, E. & Homer-Dixon, T.F.** 1996. *Resource Scarcity, Institutional Adaptation, and Technical Innovation: Can Poor Countries Attain Endogenous Growth?* Washington, D.C.: American Association for the Advancement of Science.

- Basson, M.S.** 1995. South African Water Transfer Schemes and their Impact on the Southern African Region, in **Matiza, T., Craft, S. & Dale, P.** (Eds.) *Water Resource Use in the Zambezi Basin. Proceedings of a Workshop held in Kasane, Botswana, 28 April - 2 May 1993*. Gland, Switzerland: IUCN.
- Basson, M.S., van Niekerk, P.H. & van Rooyen, J.A.** 1997. *Overview of Water Resources Availability and Utilization in South Africa*. Pretoria: Department of Water Affairs and Forestry.
- Beach, H.L., Hamner, J., Hewitt, J.J., Kaufman, E., Kurki, A., Oppenehimer, J.A. & Wolf, A.T.** 2000. *Transboundary Freshwater Dispute Resolution: Theory, Practice and Annotated References*. Tokyo, New York, Paris: United Nations University Press.
- Biggs, H.C., Breen, C.M. & Palmer, C.G.** 2008. Engaging a Window of Opportunity: Synchronicity between a Regional River Conservation Initiative and Broader Water Law Reform in South Africa. In **Patrick, M.J., Rascher, J. & Turton, A.R.** (Eds.) *Reflections on Water in South Africa*, Special Edition of *International Journal of Water Resource Development*. (24)3. Pp 329-344.
- Blignaut, J.N. & King, N.A.** 2002. The externality cost of coal combustion in South Africa. Paper presented at the First Annual Conference of the Forum for Economics and the Environment, Cape Town, 2002.
- Bornman, M.S., Delpont, R., Becker, P., Risenga, S.S. & de Jager, C.P.** 2005. Urogenital birth defects in neonates from a high-risk malaria area in Limpopo Province, South Africa. *Epidemiology*. (16)5. S126 – 127.
- Claassen, M.** 2005. *Elands Catchment Reserve Assessment Study, Mpumalanga Province. The Ecological Reserve and the Economic Value of the Aquatic Ecosystem in the Elands River*. Pretoria: Department of Water Affairs and Forestry (DWAFF) & Council for Scientific and Industrial Research (CSIR).
- Claassen, M., Strydom, W., Murray, K. & Jooste, S.** 2001. *Ecological Risk Assessment Guidelines*. Pretoria: Water Research Commission.
- Cobbing, J.E.** 2008. Institutional Linkages and Acid Mine Drainage: The Case of the Western Basin in South Africa. In **Patrick, M.J., Rascher, J. & Turton, A.R.** (Eds.) *Reflections on Water in South Africa*, Special Edition of *International Journal of Water Resource Development*. (24)3. Pp 451-462.
- Coetzee, H.** 1995. Radioactivity and the Leakage of Radioactive Waste Associated with Witwatersrand Gold and Uranium Mining. In **Merkel, B. J., Hurst S., Löhnert E.P. & Struckmeier W.** (Eds.) *Proceedings Uranium Mining and Hydrogeology 1995*, Freiberg, Germany: *GeoCongress* (1)583. Köln: von Loga. ISBN 3-87361-256-9.
- Coetzee, H., Wade, P. & Winde, F.** 2002(a). Reliance on Existing Wetlands for Pollution Control Around the Witwatersrand Gold/Uranium Mines in South Africa – Are They Sufficient? In **Merkel, B.J., Planer-Friederich, B. & Wolkersdorfer, C.** (Eds.) 2002. *Uranium in the Aquatic Environment*. Berlin: Springer. Pp 59-65.
- Coetzee, H., Wade, P., Ntsume, G. & Jordaan, W.** 2002(b). *Radioactivity Study on Sediments in a Dam in the Wonderfonteinspruit Catchment. DWAFF Report*. Pretoria: Department of Water Affairs and Forestry.
- Coetzee, H., Winde, F. & Wade, P.W.** 2006. *An Assessment of Sources, Pathways, Mechanisms and Risks of Current and Potential Future Pollution of Water and Sediments in Gold-Mining Areas of the Wonderfonteinspruit Catchment*. WRC Report No. 1214/1/06. Pretoria: Water Research Commission.

- Collins, R.O.** 1990. *The Waters of the Nile: Hydropolitics and the Jonglei Canal, 1900-1988*. Oxford: Clarendon Press.
- Conca, K.** 2006. *Governing Water: Contentious Transnational Politics and Global Institution Building* Cambridge, MA.: MIT Press.
- Dalvie, M.A., Cairncross, E., Solomon, A. & London, L.** 2003. Contamination of rural surface and ground water by endosulfan in farming areas of the Western Cape, South Africa. *Environ Health*, (2)1. Pp 1.
- Davies, B.R. & Day, J.** 1998. *Vanishing Waters*. Cape Town: University of Cape Town Press.
- Deli-Priscoli, J. & Wolf, A.T.** 2008. *Managing and Transforming Water Conflicts*. New York: Cambridge University Press.
- Earle, A.** 2003. Watersheds and Problemsheds: A Strategic Perspective on the Water/Food/Trade Nexus in Southern Africa. In **Turton, A.R., Ashton, P.J. & Cloete, T.E.** (Eds.) *Transboundary Rivers, Sovereignty and Development: Hydropolitical Drivers in the Okavango River Basin*. Pretoria & Geneva: AWIRU & Green Cross International. Pp. 229-249.
- Gleditsch, N.P., Furlong, K., Hegre, H., Lacina, B. & Owen, T.** 2005. *Conflicts over Shared Rivers: Resource Scarcity or Fuzzy Boundaries?* Oslo: International Peace Research Institute (PRIO).
- Gleick, P.H.** 1990. Climate Changes, International Rivers, and International Security: The Nile and the Colorado, in **Redford, R. & Minger, T.J.** (Eds.) *Greenhouse Glasnost*. New York: The Ecco Press.
- Gleick, P.H.** 1991(a). The Vulnerability of Runoff in the Nile Basin to Climatic Changes, in *The Environmental Professional*, (13)1. 66-73.
- Gleick, P.H.** 1991(b). Environment and Security: The Clear Connections, in *Bulletin of the Atomic Scientists*, (47). Pp 17-21.
- Halcro-Johnston, J., Schoeman, G., Manzungu, E. & Turton, A.R.** 2004. *Regional Strategic Action Plan for Integrated Water Resources Development and Management (RSAP-IWRM). Mid-term Review*. Gaborone: SADC Secretariat.
- Hattingh, J. & Claassen, M.** 2008. Securing Water Quality for Life. In **Patrick, M.J., Rascher, J. & Turton, A.R.** (Eds.) Reflections on Water in South Africa, Special Edition of *International Journal of Water Resource Development*. (24)3. Pp 401-417.
- Heyns, P.S.** 1995. Existing and Planned Development Projects on International Rivers within the SADC Region. In *Proceedings of the Conference of SADC Ministers Responsible for Water Resources Management*. Pretoria, 23-24 November 1995.
- Heyns, P.** 2002. Interbasin Transfer of Water between SADC Countries: A Development Challenge for the Future. In **Turton, A.R. & Henwood, R.** (Eds.) *Hydropolitics in the Developing World: A Southern African Perspective*. Pretoria: African Water Issues Research Unit (AWIRU). Pp157-176.
- Heyns, P.** 2003. Water Resources Management in Southern Africa. In **Nakayama, M.** (Ed.) *International Waters in Southern Africa*. Tokyo: United Nations University (UNU) Press.
- Heyns, P.S.V., Patrick, M.J. & Turton, A.R.** 2008. Transboundary Water Resource Management in Southern Africa: Meeting the Challenges of Joint Planning and Management in the Orange River Basin. In **Patrick, M.J., Rascher, J. & Turton, A.R.** (Eds.) Reflections on Water in South Africa, Special Edition of *International Journal of Water Resource Development*. (24)3. Pp 371-384.

- Hobbs, P.J. & Cobbing, J.E., 2007.** A Hydrogeological Assessment of Acid Mine Drainage Impacts in the West Rand Basin, Gauteng Province. Rep. no. CSIR/NRE/WR/ER/2007/0097/C. CSIR/THRIP. Pretoria: Republic of South Africa.
- Hobbs, P., Oelofse, S.H.H. & Rascher, J. 2008.** Management of Environmental Impacts from Coal Mining in the Upper Olifants River Catchment as a Function of Age and Scale. In **Patrick, M.J., Rascher, J. & Turton, A.R.** (Eds.) Reflections on Water in South Africa, Special Edition of *International Journal of Water Resource Development*. (24)3. Pp 417-432.
- Hollingworth, B., Nyirenda, K., Hall, D. & Ipsen, N. 2004.** *Review of Progress on the Implementation of the SADC Water Protocol*. Gaborone: Infrastructure and Services Directorate of the SADC Secretariat.
- Holtzhausen, L. 2004.** Decanting Minewater: Solving a 100-year-old Problem. In *Water, Sewage and Effluent*. (24)4. Pp 18-20.
- Homer-Dixon, T.F. 1994.** The Ingenuity Gap: Can Developing Countries Adapt to Environmental Scarcity? In *Population and Development Review*. (21)3. Pp 587-612.
- Homer-Dixon, T. 1995.** The Ingenuity Gap: Can Poor Countries Adapt to Resource Scarcity? In *Population and Development*, (21)3. Pp 587-612.
- Homer-Dixon, T.F. 1996.** Environmental Scarcity, Mass Violence and the Limits to Ingenuity, in *Current History*. (95). Pp 359-365.
- Homer-Dixon, T.F. 2000.** *The Ingenuity Gap*. London: Jonathan Cape.
- Hultin, J. 1995.** The Nile: Source of Life, Source of Conflict, in **Ohlsson, L.** (Ed.) *Hydropolitics: Conflicts over Water as a Development Constraint*. London: Zed Books.
- Julien, F. 2006.** Maîtrise de l'Eau et Développement Durable en Afrique de l'Ouest: de la Nécessité d'une Cooopération Régionale Autour des Systèmes Hydrologiques Transfrontaliers. In *VertigO*, Vol. 17. No. 2; September 2006.
- Junk, W.J., Bayley, P.B. & Sparks, R.E. 1989.** The Flood Pulse Concept in River-floodplain Systems, in **Dodge, D.P.** (Ed.) *Proceedings of the International Large Rivers Symposium (LARS), Canadian Special Publication of Fisheries and Aquatic Sciences*, No.106; 110-127.
- Kempster, P.L., Van Vliet, H.R., Looser, U., Parker, I., Silberbauer, M.J. & Du Toit, P. 1996.** Overview of Radioactivity in Water Sources: Uranium, Radium and Thorium. Final Report, IWQS-No:N/0000/00/RPQ/0196. Pretoria: Institute for Water Quality Studies.
- Kistin, E.J. 2007.** Transboundary Cooperation in SADC: From Concept to Implementation. Paper presented at the 8th WaterNet/WARFSA/GWP-SA Symposium, Lusaka, Zambia, 30 October to 3 November 2007.
- Kistin, E.J. & Ashton, P.J. 2008.** Adapting to Changes in Transboundary Rivers: An Analysis of Treaty Flexibility on the Orange-Senqu River Basin. In **Patrick, M.J., Rascher, J. & Turton, A.R.** (Eds.) Reflections on Water in South Africa, Special Edition of *International Journal of Water Resource Development*. (24)3. Pp 385-400.
- Leaner, J., Ashton, P., Claassen M. & Eloff, E. 2006.** South African mercury assessment (SAMA) programme. Pp 96. (Publication number: CSIR/NRE/WR/IR/2006/0056/C).
- Leaner, J.J., Manson, R.P., Ashton, P.J., Murray, K., Claassen, M., Zunckel, M., Oosthuizen, R. & Crouch, A. 2007(a).** Towards developing mercury policies

- and legislation in South Africa. Pp 30. (Publication number: CSIR/NRE/WR/EXP/2007/0038/A).
- Leaner, J.J., Kim, E.H., Mason, R.P., Hendricks, M., MacMillan, P., Hendricks, D.T., Dabrowski, J., Murray, K. & Ashton, P.J.** 2007(b). Preliminary assessment of total mercury and methylmercury levels in selected rivers of the Western Cape and Mpumalanga provinces, South Africa. (Publication number: CSIR/NRE/WR/EXP/2007/0040/A).
- Lonergan, S.C.** 1991. Climate warming, water resources and geopolitical conflict: A study of nations dependent on the Nile, Litani and Jordan River systems, in *ORAE Extra Mural Paper No. 55*, Ottawa: Operational Research and Analysis Establishment, Canadian Department of National Defence, March 1991.
- Maree, J. P., Strobos, G., Greben, H., Netshidaulu. E., Steyn, E., Christie, A., Günther, P. & Waanders F B.** 2004 Treatment of Acid Leachate from Coal Discard using Calcium Carbonate and Biological Sulphate Removal, in *Mine Water and the Environment*, 23(3). Pp 144 - 151.
- Maree, J.P., Theron, D., Nengovhela, R. & Hlabela, P.** 2005 Sulphur from smelter gasses and sulphate-rich effluents, in *The Journal of the South African Institute of Mining and Metallurgy*, (105). Pp 1-4.
- Motaung, S., Maree, J., de Beer, M., Bologo, L., Theron, D. & Baloyi, J.** 2008. Recovery of Drinking Water and By-products from Gold Mine Effluents. In **Patrick, M.J., Rascher, J. & Turton, A.R.** (Eds.) *Reflections on Water in South Africa*, Special Edition of *International Journal of Water Resource Development*. (24)3. Pp 433-450.
- Mitrany, D.** 1966. *A Working Peace System*. Quadrangle Books: Chicago.
- Morgenthau, H. & Thompson, K.W.** 1985. *Politics amongst Nations*. New York: Alfred Knopf.
- Murray, K.** 2006. Resource Directed Management of Water Quality: Volume 1.2: Policy, in **Hattingh, J., Stassen, R. and van Wyk, J.** (Eds.) *Water Resource Planning System Series, Sub-Series No. WQP 1.4.2, Edition 1*. Pretoria: Department of Water Affairs and Forestry (DWAf).
- Nicol, A.** 2002. The Dynamics of River Basin Cooperation: The Nile and Okavango Basins. In **Turton, A.R., Ashton, P.J. & Cloete, E.** (Eds.) *Transboundary Rivers, Sovereignty and Development: Hydropolitical Drivers in the Okavango River Basin*. Pretoria & Geneva: African Water Issues Research Unit (AWIRU) and Green Cross International (GCI). Pp 167 – 186.
- Nielsson, G.** 1990. The Parallel National Action Process. In **Groom, A.J.R. & Taylor, P.** (Eds.) *Frameworks for International Cooperation*. London: Pinter Publishers. Pp 78-108.
- Nye, J.** 1971. *Peace in Parts: Integration and Conflict in Regional Organisation*. Little, Brown & Co: Boston.
- Oberholster, P.J. & Ashton, P.J.** 2008. *State of the Nation Report: An Overview of the Current Status of Water Quality and Eutrophication in South African Rivers and Reservoirs*. Parliamentary Grant Deliverable. Pretoria: Council for Scientific and Industrial Research (CSIR).
- Oberholster, P.J., Botha, A-M. & Grobbelaar, J.U.** 2004 *Microcystis aeruginosa*: Source of toxic microcystins in drinking water. *Africa Journal of Biotechnology* (3). Pp 159-168.
- Oberholster, P.J., Botha, A-M. & Cloete, T.E.** 2005 An overview of toxic freshwater cyanobacteria in South Africa with special reference to risk, impact and detection by molecular marker tools. *Biokem* (17). Pp 57-71.

- Oberholster, P.J., Cloete, T.E., van Ginkel, C., Botha, A-M. & Ashton, P.J.** 2008. *The use of remote sensing and molecular markers as early warning indicators of the development of cyanobacterial hyperscum crust and microcystin-producing genotypes in the hypertrophic Lake Hartebeespoort, South Africa.* Pretoria: Council for Scientific and Industrial Research (CSIR).
- Oelofse, S.H.H.** 2008. Protecting a Vulnerable Groundwater Resource from the Impacts of Waste Disposal: A Southern African Waste Governance Perspective. In **Patrick, M.J., Rascher, J. & Turton, A.R.** (Eds.) *Reflections on Water in South Africa*, Special Edition of *International Journal of Water Resource Development*. (24)3. Pp 477-490.
- Oelofse, S.H.H., Hobbs, P.J., Rascher, J. & Cobbing, J.** 2007. The Pollution and Destruction Threat of Gold Mining Waste on the Witwatersrand: A West Rand Case Study. Paper presented at the 10th International Symposium on Environmental Issues and Waste Management in Energy and Mineral Production (SWEMP, 2007), Bangkok 11-13 December 2007.
- Ohlsson, L.** 1995. *Water and Security in Southern Africa.* Publications on Water Resources: No. 1. SIDA: Department for Natural Resources and the Environment.
- Ohlsson, L.** 1999. *Environment, Scarcity and Conflict: A Study of Malthusian Concerns.* Department of Peace and Development Research. University of Göteborg.
- Ohlsson, L. & Lundqvist, J.** 2000. The Turning of a Screw - Social Adaptation to Water Scarcity, Part 3 of Falkenmark, *et al.*, *New Dimensions in Water Security - A Study Prepared for FAO, AGLW, Rome.*
- Ohlsson, L. & Turton, A.R.** 1999. The Turning of a Screw. Paper presented in the Plenary Session of the 9th Stockholm Water Symposium "Urban Stability through Integrated Water-Related Management", hosted on 9-12 August by the Stockholm International Water Institute (SIWI) in Sweden. Also available as *MEWREW Occasional Paper No. 19* from Website <http://www.soas.ac.uk/Geography/WaterIssues/OccasionalPapers/home.html>
- Phillips, D., Daoudy, M., Mc Caffrey, S., Öjendal, J. & Turton, A.R.** 2006. *Transboundary Water Cooperation as a Tool for Conflict Prevention and Broader Benefit-Sharing.* Stockholm: Ministry for Foreign Affairs Expert Group on Development Issues (EGDI). (Available from egdi.secretariat@foreign.ministry.se).
- Sadat, A.** 1985. Egypt: Threat to Nile Water, in *African Recorder*, (19)5. Pp 396
- SADC.** 2003(a). *SADC Water Sector: RSAP Projects 9 & 10: Review of National Water Policies: Synthesis Report.* Gaborone: Infrastructure and Services Directorate of the SADC Secretariat.
- SADC.** 2003(b). *SADC Water Sector: RSAP Projects 9 & 10: Guidelines for the Development of National Water Policies and Strategies to Support IWRM.* Gaborone: Infrastructure and Services Directorate of the SADC Secretariat.
- SADC.** 2004. *Report of the Workshop on Guidelines and Support for the Harmonization of National Water Legislation, Policies and Strategies in SADC.* Indaba Hotel, Johannesburg, 26-27 July 2004. Gaborone: Infrastructure and Services Directorate of the SADC Secretariat.
- SADC.** 2006. *Southern African Development Community: Regional Water Policy.* Gaborone: Infrastructure and Services Directorate of the SADC Secretariat. ISBN 99912-431-9-4.

- SADC.** 2007. *Southern African Development Community: Regional Water Strategy*. Gaborone: Infrastructure and Services Directorate of the SADC Secretariat. ISBN 978 99912-445-4-6.
- Scholes, R.J. & Biggs, R.** 2004. *Ecosystem Services in Southern Africa: A Regional Assessment*. Pretoria: CSIR.
- Schulz, M.** 1995. Turkey, Syria and Iraq: A Hydropolitical Security Complex, in **Ohlsson, L.** (Ed.) *Hydropolitics: Conflicts over Water as a Development Constraint*. London: Zed Books. Pp 99-122.
- Slabbert, J.L., Venter, E.A., Verslyke, B., Versonnen, B. & Arijs, K.** 2005. Detection of estrogenic activity in South African surface waters and sediments using a recombinant yeast screen. Twelfth International Symposium on Toxicity Assessment, Skiathos, Greece, 12-17 June.
- Slabbert, J. L., Venter, E. A., Motsepe, A. & Moletsane, M.** 2007(a). Method development for biochemical procedures related to estrogen and androgen screening of water and sediment samples: 2002-2003. Biological/biochemical methods and the establishment of *in vivo* techniques for the detection of endocrine disruptors in water systems: 2003-2005. In **Burger, A.E.C.** (Ed.), 2007. *Implementation of a Research Programme for Investigating Endocrine Disrupting Contaminants in South African Water Systems*. Vol. 2, Appendixes 3A+B. WRC Report No. 1402/1/07. Pretoria. ix + 34 pages.
- Slabbert, J. L., Venter, E. A., Moletsane, M., van Wyk, J. H., Schillack, V., Aneck-Hahn, N. H. & Marais, P.** 2007(b). An investigation into the occurrence of steroidal hormones (estrogens) in sewage effluent using biological/biochemical and chemical techniques: 2003-2005. In **Burger, A.E.C.** (Ed.), 2007. *Implementation of a Research Programme for Investigating Endocrine Disrupting Contaminants in South African Water Systems*. Vol. 2, Appendix 3C. WRC Report No. 1402/1/07. Pretoria. v + 20 pages.
- Slabbert, J. L., Venter, E. A., Moletsane, M., van Wyk, J. H., Blaise, C. & Aneck-Hahn, N. H.** 2007(c). An investigation of the estrogenic activity in water from selected drinking water treatment processes. Report to the Water Research Commission by CSIR Natural Resources and the Environment. Report Number 1532/1/07. xvii + 52 pages.
- Snaddon, C.D., Davies, B.R. & Wishart, M.J.** 1999. *A Global Overview of Inter-Basin Water Transfer Schemes, with an Appraisal of their Ecological, Socio-Economic and Socio-Political Implications, and Recommendations for Their Management*. Water Research Commission Report No. TT120/00. Pretoria: Water Research Commission.
- Toens, P. D., Stadler, W. & Wullschleger, N. J.** 1999. *The Association of Groundwater Chemistry and Geology with Atypical Lymphocytes (as a Biological Indicator) in the Pofadder Area, North Western Cape, South Africa*. Water Research Commission, Report Number: 839/1/98. Pretoria: Water Research Commission.
- Treaty.** 1997. Agreement Between the Government of the Republic of South Africa and the Government of the Republic of Botswana for the Establishment of a Joint Permanent Commission for Cooperation. 4pp.
- Turton, A.R.** 2002(a). Water and State Sovereignty: The Hydropolitical Challenge for States in Arid Regions. In **Wolf, A.** (Ed.) *Conflict Prevention and Resolution in Water Systems*. Cheltenham: Edward Elgar. Pp 516-533.
- Turton, A.R.** 2002(b). The Hydropolitical Dynamics of Cooperation in Southern Africa: A Strategic Perspective on Institutional Development in International River Basins. Paper presented at the Okavango Pilot Project Workshop held in Maun, 9-11 September 2002. Pretoria & Geneva: AWIRU & Green Cross International.

- Turton, A.R.** 2003(a). The Political Aspects of Institutional Development in the Water Sector: South Africa and its International River Basins. Unpublished draft of a D.Phil. Thesis. Department of Political Science. Pretoria: University of Pretoria.
- Turton, A.R.** 2003(b). An Introduction to the Hydropolitical Dynamics of the Orange River Basin. In **Nakayama, M.** (Ed.) *International Waters in Southern Africa*. Tokyo: United Nations University Press. Pp 136 – 163.
- Turton, A.R.** 2003(c). The Hydropolitical Dynamics of Cooperation in Southern Africa: A Strategic Perspective on Institutional Development in International River Basins. In **Turton, A.R., Ashton, P.J. & Cloete, T.E.** (Eds.) *Transboundary Rivers, Sovereignty and Development: Hydropolitical Drivers in the Okavango River Basin*. Pretoria & Geneva: AWIRU & Green Cross International. Pp 83-103.
- Turton, A.R.** 2004. The Evolution of Water Management Institutions in Select Southern African International River Basins. In **Biswas, A.K., Unver, O. & Tortajada, C.** (Eds.) *Water as a Focus for Regional Development*. London: Oxford University Press. Pp 251-289.
- Turton, A.R.** 2005. A Critical Assessment of the River Basins at Risk in the Southern African Hydropolitical Complex. Paper presented at the Workshop on the Management of International Rivers and Lakes, hosted by the Third World Centre for Water Management and the Helsinki University of Technology. 17-19 August 2005. Helsinki, Finland. CSIR Report No. ENV-P-CONF 2005-001.
- Turton, A.R.** 2007. The Hydropolitics of Cooperation: South Africa during the Cold War. In **Grover, V.E.** (Ed.) *Water: A Source of Conflict or Cooperation?* Enfield, NH: Science Publishers. Pp 125 – 143. ISBN 978-1-57808-511-8. Formerly CSIR Report No: ENV-P-R 2005-008.
- Turton, A.R.** 2008(a). The Southern African Hydropolitical Complex. In **Varis, O., Tortajada, C. & Biswas, A.J.** (Eds.) *Management of Transboundary Rivers and Lakes*. Berlin: Springer Verlag. Pp 21 – 80.
- Turton, A.R.** 2008(b). A South African Perspective on a Possible Benefit-Sharing Approach for Transboundary Waters in the SADC Region. In *Water Alternatives*. (1)2. Pp 1 – 21. Paper originally presented at the First African Water Week, hosted by AMCOW and the African Development Bank, Tunis, Tunisia, 26-28 March 2008.
- Turton, A.R. & Ashton, P.J.** 2004. An Assessment of Strategic Issues in the Policy Field Relating to Water Resource Management in Southern Africa. In the *Proceedings of the Workshop on Water and Politics: Understanding the Role of Politics in Water Management*, Marseilles, 26-27 February 2004, Marseilles, France. Marseilles: World Water Council. Pp 51 – 70. Available online at (<http://www.worldwatercouncil.org/publications.shtml>).
- Turton, A.R. & Ashton, P.J.** 2008. Basin Closure and Issues of Scale: The Southern African Hydropolitical Complex. *International Journal of Water Resources Development*. (24)2. Pp 305 - 318.
- Turton, A.R., Claassen, M. & Patrick, M.J.** (In Preparation - 2008(b)). *A Regional Assessment for Positive Sum Outcomes for Transboundary Waters: A Southern African Application*. Pretoria: Water Research Commission.
- Turton, A.R., Earle, A. & Lai, E.** 2002. *Okavango Pilot Project: Detailed Planning Report*. Geneva and Pretoria: Green Cross International and African Water Issues Research Unit (AWIRU).

- Turton, A.R. & Earle, A.** 2003(a). *Discussion Document on the Implications of International Treaties on the Development of a Management Regime for the Okavango River Basin*. Deliverable D 6.2 of the Water and Ecosystem Resources in Rural Development (WERRD) Project. African Water Issues Research Unit (AWIRU). Pretoria University.
- Turton, A.R. & Earle, A.** 2003(b). An Assessment of the Hydropolitical Dynamics of the Okavango River Basin. Paper presented at the 2nd Workshop of the Green Cross International Water for Peace Project on the Okavango River Basin, held at the Desert Research Foundation of Namibia, Gobabeb, Namibia from 23-25 February.
- Turton, A.R. & Earle, A.** 2004. An Assessment of the Parallel National Action Model as a Possible Approach for the Integrated Management of the Okavango River Basin. Deliverable D6.2 of the Water Ecosystem Resources in Rural Development (WERRD) Project funded by the European Union.
- Turton, A.R., & Earle, A.** 2005. Post-Apartheid Institutional Development in Selected Southern African International River Basins. In **Gopalakrishnan, C., Tortajada, C. & Biswas, A.K.** (Eds.) *Water Institutions: Policies, Performance & Prospects*. Berlin: Springer-Verlag. Pp 154-173.
- Turton, A.R., Meissner, R., Mampane, P.M. & Seremo, O.** 2004. *A Hydropolitical History of South Africa's International River Basins*. Report No. 1220/1/04 to the Water Research Commission. Pretoria: Water Research Commission.
- Turton, A.R., Nicol, A. & Alan, J.A.** 2003. *Policy Options for Water Stressed States: Emerging Lessons from the Middle East and Southern Africa*. Pretoria & London: African Water Issues Research Unit & Overseas Development Institute.
- Turton, A.R. & Ohlsson, L.** 1999. Water Scarcity and Social Adaptive Capacity: Towards an Understanding of the Social Dynamics of Managing Water Scarcity in Developing Countries. Paper presented in the Workshop No. 4: Water and Social Stability of the 9th Stockholm Water Symposium "Urban Stability through Integrated Water-Related Management", hosted on 9-12 August by the Stockholm International Water Institute (SIWI) in Sweden. Also available as *MEWREW Occasional Paper No. 18* from Website <http://www.soas.ac.uk/Geography/WaterIssues/OccasionalPapers/home.html>
- Turton, A.R. & Patrick, M.J.** 2005. Water as a Source of Conflict or Cooperation: The Case of South Africa and its Transboundary Rivers. Paper presented at a Conference on Oil and Water, Tufts University, Boston, USA. CSIR Report No: ENV-P-CONF 2005-002.
- Turton, A.R., Patrick, M.J. & Julien, F.** 2006(b). Transboundary Water Resources in Southern Africa: Conflict or Cooperation? In *Development*, 2006, (49)3. Pp 22-31.
- Turton, A.R., Patrick, M.J. & Rascher, J.** 2008(a). Setting the Scene: Hydropolitics and the Development of the South African Economy. In **Patrick, M.J., Rascher, J. & Turton, A.R.** (Eds.) *Reflections on Water in South Africa*, Special Edition of *International Journal of Water Resource Development*. (24)3. Pp 319-323.
- Turton, A.R., Schultz, C., Buckle, H., Kgomongoe, M., Malungani, T. & Drackner, M.** 2006(a). Gold, Scorched Earth and Water: The Hydropolitics of Johannesburg. In *Water Resources Development*, (22)2. Pp 313-335.

- van Eeden, E.S.** 2007. An Historical Assessment of NGO Efficiency in Progressing Towards a Sustainable Environmental Heritage Focus, with as Case Study the Wonderfontein Spruit Catchment, Gauteng. *New Contree* (53). Pp. 55 – 78.
- van Eeden, E.S.** 2008. Weaknesses in Environmental Action in Southern Africa: A Historical Glance on the West Rand (Gauteng Province). In **Patrick, M.J., Rascher, J. & Turton, A.R.** (Eds.) Reflections on Water in South Africa, Special Edition of *International Journal of Water Resource Development*. (24)3. Pp 463-476.
- Wade, P.W., Woodbourne, S., Morris, W.M., Vos, P. & Jarvis, N.W.** 2002. *Tier 1 Risk Assessment of Selected Radionuclides in Sediments of the Mooi River Catchment*. WRC Project No. K5/1095. Pretoria: Water Research Commission.
- Walwyn, D. & Scholes, R.J.** 2006. The Impact of a Mixed Income Model on the South African CSIR: A Recipe for Success or Disaster? In *South African Journal of Science*. (102). Pp 239-243.
- Waterbury, J.** 1979. *Hydropolitics of the Nile Valley*. New York: Syracuse University Press.
- Wolf, A.T.** 2006. Hydropolitical Vulnerability and Resilience: Series Introduction. In **Wolf, A.T.** (Ed.). *Hydropolitical Vulnerability and Resilience along International Waters: Africa*. Nairobi: United Nations Environment Program (UNEP). Pp 3 – 17.
- Wolf, A.T., Yoffe, S.B. & Giordano, M.** 2003. International Waters: Identifying Basins at Risk, in *Water Policy*, (5)1. Pp 29-60.
- World Bank.** 2006. *Water for Responsible Growth*. Washington, DC: World Bank.
- Yoffe, S., Wolf, A.T. & Giordano, M.** 2003. Conflict and Cooperation over International Freshwater Resources: Indicators of Basins at Risk, in *Journal of the American Water Resources Association*, 39(5). Pp 1109-1125.
- Zeitoun, M. & Warner, J.** 2006. Hydro-Hegemony: A Framework for Analysis of Transboundary Water Conflicts, in *Water Policy* (8). Pp 435-460.