The Impact and Implications of the Adoption of the 1997 UN Watercourse Convention for Countries in Southern Africa

By

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Executive Summary

The United Nations Convention on the Law of the Non-Navigational Uses of International Watercourses ("UN Convention") is a global instrument to promote the equitable and sustainable development and management of river basins shared by two or more states. The convention was passed by the UN General Assembly in 1997 by a 103-3 vote, but still requires 20 additional ratifications out of 35 that are needed for entry into force. When the Convention was passed by the UN Assembly all votes among SADC member states were in favour, except for the abstention from Tanzania and the absence from the Democratic Republic of the Congo, Swaziland and Zimbabwe (UNEP, 2005) No SADC country voted against the Convention. Of the SADC Member States to date only Namibia and South Africa are parties to it.

WWF has embarked on an initiative to facilitate dialogue among governments, UN bodies, NGOs, and other actors to promote further ratifications. As part of this initiative, WWF has commissioned regional assessments that analyze the benefits and implications for basin countries of adopting the UN Convention, in light of existing water-related agreements or arrangements or of their absence. This paper focuses on the Southern African Development Community (SADC) and its member states.

The paper provides an overview of the shared watercourses in the SADC region, providing information on climate, population, economic uses of the water resources and environmental issues in the basins. Following an overview description of current legal and institutional management frameworks for shared watercourses in the SADC region an analysis of the value of the adoption of the UN Convention for SADC states is conducted.

The analysis provides a comparison between the UN Convention and the SADC Protocol on Shared Watercourses (the regional framework agreement for the management of shared watercourses concluded by SADC Member States), highlighting similarities and differences between the two instruments. The paper continues with assessing the potential benefits for SADC states of adopting the UN Convention with respect to basins shared between SADC states only and basins shared with neighbouring non-SADC states.

The paper makes the point that with respect to basins shared between SADC states only, the value of adopting the UN Convention for SADC states would merely lie in interpretational guidance for some SADC Protocol provisions) rather than creating a new or more comprehensive legal framework. It would, however, provide SADC states with a number of tangible benefits in relation to neighbouring non-SADC states they share basins with. The paper therefore concludes that it seems to be in the interest of SADC states as well as their neighbours, to adopt the UN Convention and extend the harmonised legal framework that SADC states have created among themselves to basins that are shared with non-SADC neighbours.

1 Introduction

The countries of southern Africa, in this report taken to refer to the 14 Southern African Development Community (SADC) countries, depend to a large extent on shared rivers to meet their water needs. Water resources have been and will continue to be developed and managed in the region to promote agriculture, industry, mining and power generation, thus contributing to regional socio-economic development. Increasingly it is recognized that water needs to be secured to sustain biodiversity and natural ecosystems, including wetlands, which are the basis for rural livelihoods and for tourism (SADC, 2005).

Figure 1: Countries of the SADC

In order to achieve a balance between the different water uses within as well as between countries and ensure the sustainable development of the region's water resources, a comprehensive legal and institutional management framework is required. International water law, whether as customary international law or as treaty law, provides countries with a framework of rights and obligations with respect to the development and management of their shared water resources.

Arguably the most prominent codification of international water law at present is the UN Convention on the Law of the Non-navigational Uses of International Watercourses

(hereafter UN Convention). While most SADC countries have voted in favour of the UN Convention (see figure 2 below), few (such as Namibia and South Africa) have gone ahead and ratified it. As it stands, the UN Convention is not in force as an international agreement since it still awaits a number of ratifications to reach the required number of 35.

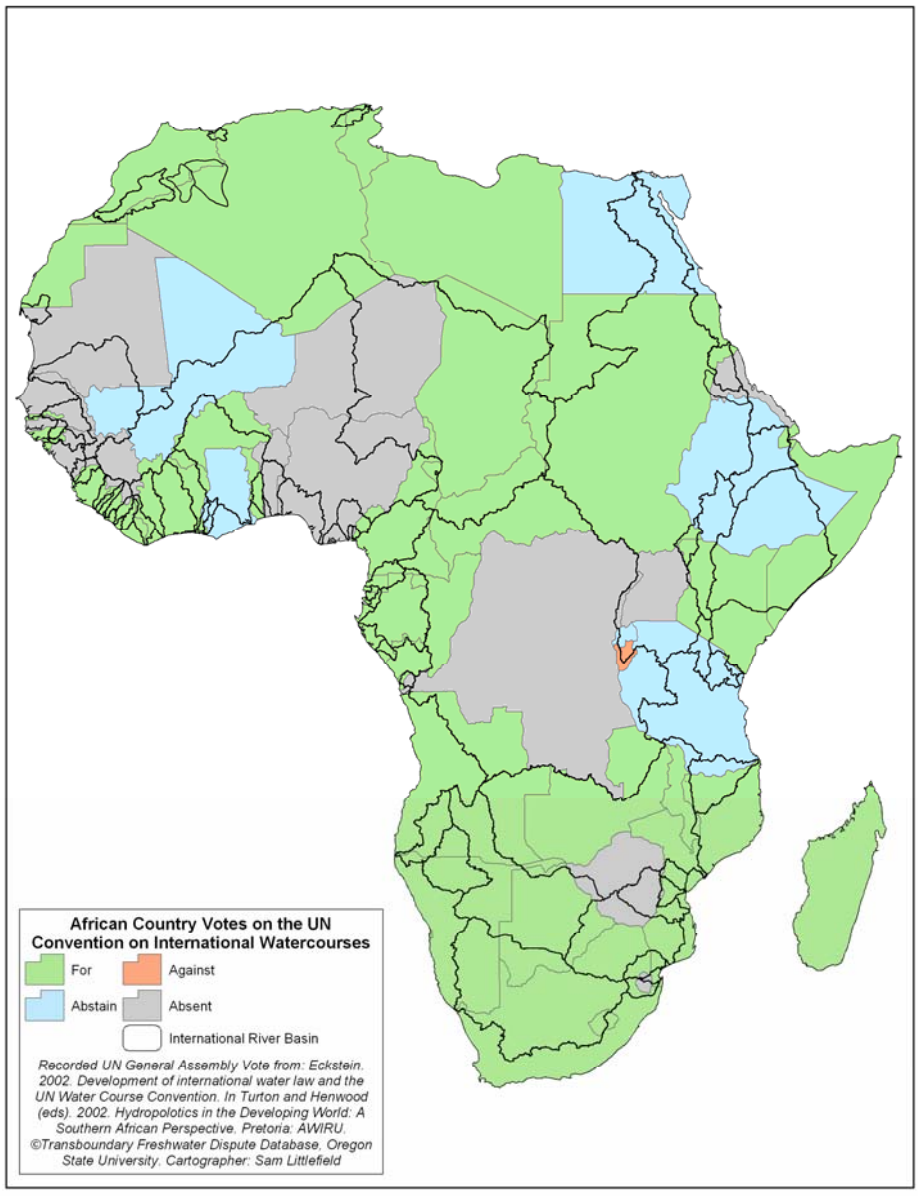

Figure 2: African Country Votes on the UN Convention (UNEP, 2005)

On the other hand, the SADC Member States have signed and ratified the SADC Protocol on Shared Watercourses, which is in force and constitutes the primary legal instrument for the management of shared watercourses in the SADC region. The SADC Protocol is drafted largely along the lines of the UN Convention – yet some differences remain. Against this

background this study assesses whether or not there would be benefits to SADC states resulting from the coming into force of the UN Convention.

2 Overview of shared basins in the SADC region

In total there are 16 shared watercourses in the SADC region, some shared between SADC Member States only, others – like the Pangani, the Congo and the Nile – shared with neighbouring non-SADC Member States.

Table 1: International River Basins of the SADC (Earle & Malzbender, 2007)

Basin	SADC Basin States	Other Basin States	Basin-wide organisation formed?
Buzi	Mozambique, Zimbabwe	n/a	No
Congo	Angola, DRC, Malawi, Tanzania, Zambia	Burundi, Cameroon, Central African Republic, Congo (Brazzaville), Gabon, Rwanda	No
Cunene	Angola, Namibia	n/a	Yes
Cuvelai	Angola, Namibia	n/a	Yes
Incomati	Mozambique, South Africa, Swaziland	n/a	Yes
Limpopo	Botswana, Mozambique, South Africa, Zimbabwe	n/a	Yes
Maputo	Mozambique, South Africa, Swaziland	n/a	Yes
Nile	DRC, Tanzania	Egypt, Ethiopia, Eritrea, Kenya, Rwanda, Burundi, Uganda, Sudan	No
Okavango	Angola, Botswana, Namibia	n/a	Yes
Orange-Senqu	Botswana, Lesotho, Namibia, South Africa	n/a	Yes
Pangani	Tanzania	Kenya	No
Pungwe	Mozambique, Zimbabwe	n/a	Yes
Ruvuma	Mozambique, Tanzania	n/a	Yes
Save	Mozambique, Zimbabwe	n/a	No
Umbeluzi	Mozambique, South Africa, Swaziland	n/a	No
Zambezi	Angola, Botswana, DRC, Malawi, Mozambique, Namibia, Tanzania, Zambia, Zimbabwe	n/a	No

The following overview provides further background information of the shared basins in the SADC region, in addition to providing basic geographic and hydrological data primarily highlighting the main economic uses and the stage of institutional development in the respective basins.

2.1 Rivers shared with non-SADC states

2.1.1 The Congo River basin

Table 2: The Congo River basin – key features

Basin Area	3, 800,000 km²
Annual Run-off	1,260 km³
Population	55,000,000
Basin States	Angola, Burundi, Cameroon, Central African Republic, Congo (Brazzaville), Democratic Republic of Congo, Rwanda, Tanzania & Zambia
Major water uses	Power generation & navigation
River length	4700 km

Physical characteristics

The annual average run-off of the Congo River is 1,260 km³ with an average flow of 40,000 m³/s (Heyns, 2003). The historic minimum and maximum flows vary between 21,400 and 73,600 m³/s respectively. The length of the river is 4,700 km with a total drainage area of 3,800,000 km². The basin is located at the equator in West-Central Africa, with most of the basin area (62%) situated in the Democratic Republic of the Congo (refer to Figure 3).

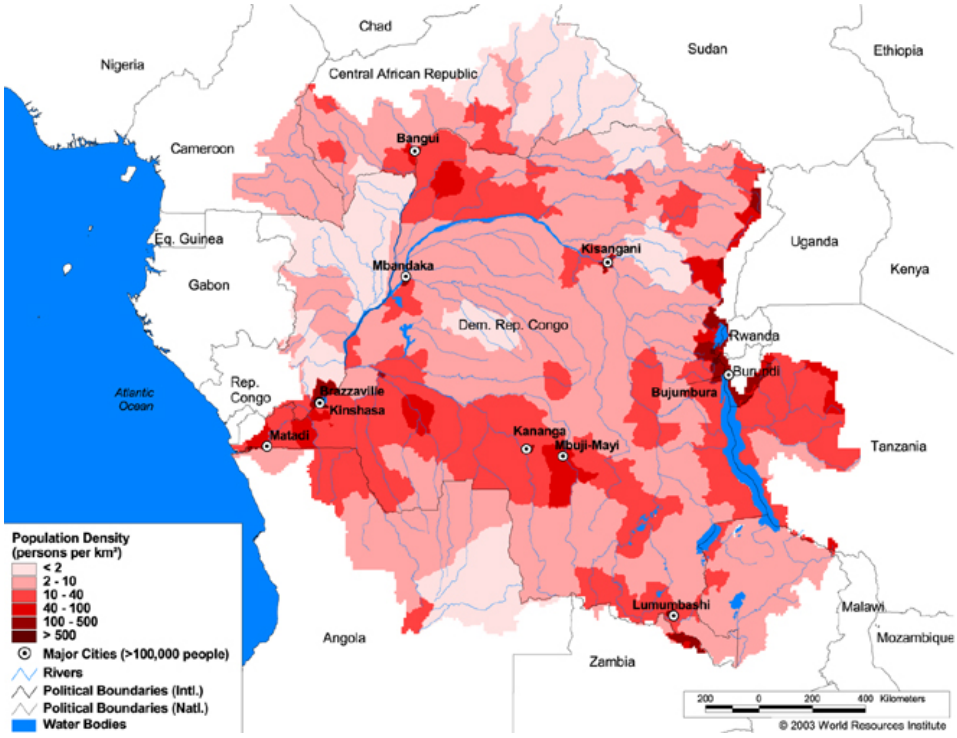

Figure 3: Population of the Congo River basin

The main stem of the river forms the contiguous border between the DRC and Congo Brazzaville and part of the border between DRC and Angola respectively. One of the upstream tributaries forms the northern border of the DRC with the Central African Republic. The outflow of the Congo River is the Atlantic Ocean, with the river moth forming the border between the DRC and Angola.

Economic Use

The main economic potential of the Congo River lies in the generation of hydropower. There are many falls and rapids that provide potential sites for development. The river has a total theoretical generating capacity of 100,000 MW, with the total generating capacity currently installed being merely 2,500 MW. In spite of its many waterfalls and rapids, the Congo River is a very important waterway because the river is navigable over long distances and provides good opportunities for boat transport and trade between the basin states.

There are large wetlands and lakes in the Congo basin within Zambia and Tanzania that provide important grazing, fish, and wildlife resources for the population. About 20 large dams have been built on the tributaries of the Congo River within the Democratic Republic of Congo. Most of the dams are used for water and power supply. The main hydropower developments on the Congo River are the Inga I and Inga II dams. They have 350 MW and 1,400 MW (total 1,750 MW) installed capacity respectively, but this is dwarfed by the proposed Grand Inga Dam, which would have a total installed generating capacity of 39,000 MW (equal to the total installed capacity in South Africa). If completed as planned the Grand Inga Dam will be the largest hydropower facility in Africa. Inter-basin transfers of water from the Congo River to the drier countries in the South such as Namibia, Botswana, and South Africa are being discussed. While none of these has gone beyond the desk-top stage where the various options and alternatives are considered, inter-basin transfers could be an option in the future.

Environmental Issues

At present much of the Congo River basin is largely unspoilt because humans have not yet permanently settled remote parts of the river basin. However, the basin is increasingly coming under pressure due to population increase, ongoing war and civil unrest and associated movements of refugees that lead to intensive wildlife hunting and deforestation. Additional threats are uncontrolled logging as well prospecting and mining operations.

Legal Framework

At present there is no basin-wide agreement or basin-wide shared watercourse institution for the Congo River basin. In 2003 four of the riparian countries – Cameroon, Central African Republic, Democratic Republic of the Congo (DRC) and Republic of the Congo (Brazzaville) – formed the International Commission of the Congo-Oubangui-Sangha Basin (CICOS) with the objective to establish joint principles and strategies for the management of the basin.

The DRC is a Member of the SADC, but has not yet ratified the SADC Protocol on Shared Watercourses. Even when the DRC ratifies the Protocol its application does not extend to

the other basin states since they are not SADC members. There is thus no common legal framework for the basin among all basin states – a gap that could be filled by the UN Convention (see more detailed assessment of the possible role of the UN Convention in this context under 5 below).

2.1.2 The Nile River Basin

Table 3: Nile River basin – key features

Basin Area	3, 200,000 km²
Annual Run-off	84 km³
Population	150,000,000
Basin States	Burundi, Democratic Republic of Congo, Egypt, Eritrea, Ethiopia, Kenya, Rwanda, Sudan, United Republic of Tanzania and Uganda
Major water uses	Irrigation, power generation & navigation
River length	6,700 km

The Nile River with a length of 6,700 km is one of the longest rivers in the world traversing diverse geographical and climatic zones from the equator in the south to the Mediterranean Sea in the north.

With an area of about 3.2 million km^2, the Nile basin is among the largest river basins in the world. Ten riparian countries namely Burundi, Congo, Egypt, Eritrea, Ethiopia, Kenya, Rwanda, Sudan, Tanzania, and Uganda share the Nile River and its tributaries. Of these states, Egypt occupies the lowest position along the river course and its economy is almost entirely dependent on the waters of the Nile (UNEP, 2005). The river does not form a contiguous border between any of the basin states, rather flowing consecutively through them, making it possible for any one of the states to proceed unilaterally with infrastructure development on their portion of river.

The Nile obtains its flows from three sources: a) the basin of the Equatorial Lakes plateau, b) the Ethiopian highland plateau, and c) the Bahr el Ghazal Basin. Almost 85% of the annual natural flow that reaches Aswan, Egypt, originates from the precipitation on the Ethiopian Highlands and reaches the main Nile through Sobat River, the Blue Nile and the Atbara. The remaining 15% arrive from the Equatorial Lakes through the White Nile. The contribution of Bahr el Ghazal is almost negligible.

The Nile Basin being 2.9 million km^2 covers a wide variety of climates, topography, geography, and other geomorphological and hydrological characteristics. Certain parts of the basin are practically dry all the time whereas other parts receive annual precipitation of 1,400 mm or more, with an annual mean of around 650 mm. Figure 4 shows the location of the Nile Basin and the major population centres. The total area of the Nile basin represents 10.3% of the area of the African continent.

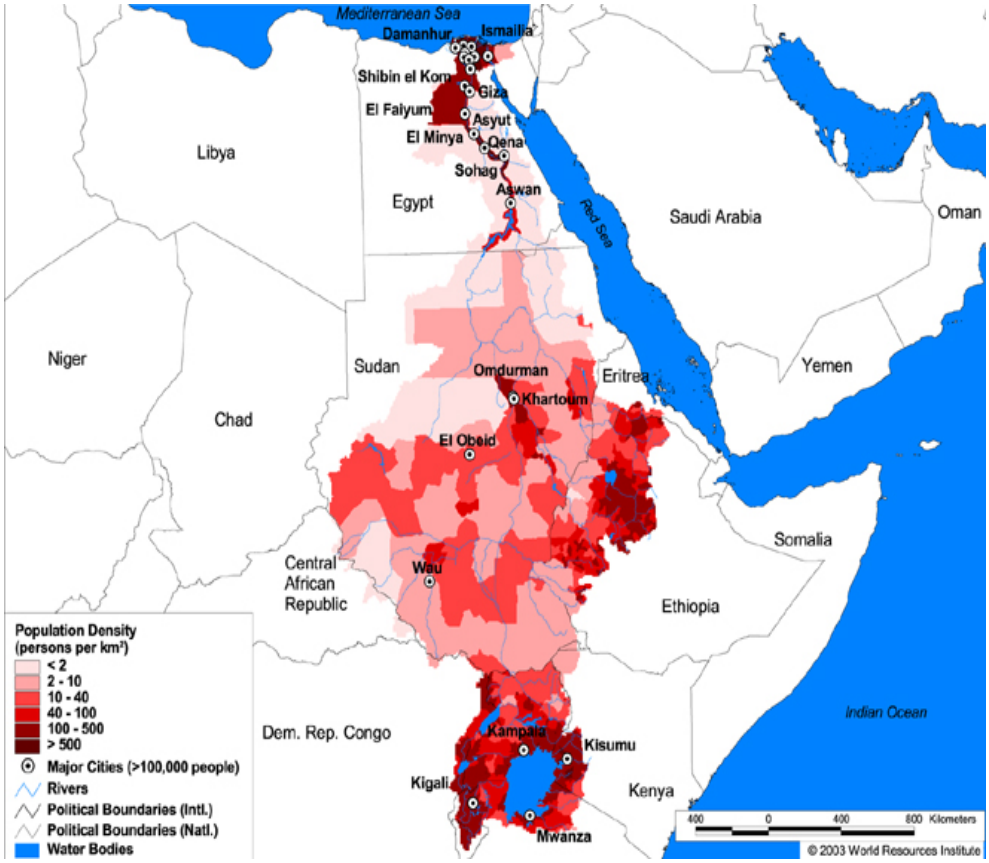

Figure 4: Population of the Nile River basin

The fact that some 55% of the Nile waters flow from Ethiopia, while the remainder comes from Lake Victoria in East Africa, poses an unusual situation. Despite being the most economically powerful of the ten riparian states, Egypt is extremely vulnerable in terms of the security of its water supplies. As a result, Egypt views the use of water from the Nile River as a matter of utmost strategic importance (UNEP, 2005). This has constrained use of the upstream parts of the river by other basin states, with Egypt applying political pressure on them to minimise development of water infrastructure on the river.

Numerous water related agreement for (parts of) the Nile basin have been concluded, many of them by the colonial powers of the times. The 1959 Nile Water Treaty on the Full Utilisation of the Nile Waters, signed by Egypt and Sudan is the first agreement signed by independent riparian countries (Kameri-Mbote & Kindiki, 2007). It distributes the total flow of the Nile into the Aswan High dam, consisting of 84 km^3, as follows: Egypt, 55.5 km^3; Sudan, 18.5 km^3, with the remaining 10 km^3 lost to evaporation and seepage (UNEP, 2005). The wording of agreement is based on the legal concept of "historic rights". The agreement, does however, contain provisions on the inclusion of upstream riparians over time and allocations for upstream uses (UNEP, 2005).

To date there is no basin-wide water sharing agreement for the Nile Basin. Cooperation over the management of the basin is, however, continuously increasing and manifest in the formation of the Nile Basin Initiative (NBI). The NBI is a partnership between the riparian states of the Nile (except Eritrea) that seeks to develop the river in a cooperative manner, share substantial socioeconomic benefits, and promote regional peace and security (NBI, 2007).

In the absence of a uniform legal framework for the basin, the UN Convention could potentially provide the riparian states with a common framework for the management of the basin, from which in the long-run the development of a basin commission as well as a basin-wide management agreement could derive. The value of the UN Convention for SADC states sharing the Nile basin (as well as the Congo and Pangani basin) with non-SADC states is assessed in section 5 below[1].

2.1.3 The Pangani River Basin

Table 4: Pangani River basin – key features

Basin Area	43,650 km²
Annual Run-off	84 km³
Population	2,6 million
Basin States	Kenya, Tanzania
Major water uses	Irrigation, hydropower generation
River length	500 km

Physical characteristics

The Pangani River Basin covers an area of 43,650 km², out of which 3,914 km² (5%) lies in Kenya (IUCN, 2003). Being 500 km long in total the river rises as a series of small streams on the southern sides of Africa's highest peak, Mt. Kilimanjaro, and on Mt. Meru, which together create the Kikuletwa and the Ruvu Rivers, which join to form the Pangani River (PBWO/IUCN, 2007). After passing through the arid Masai Steppe the Pangani River drains the Pare and Usambara Mountain Ranges before reaching the estuary and Indian Ocean at the coastal town of Pangani (PBWO/IUCN, 2007).

Economic use

The largest user of the Pangani's water resources is irrigated agricultures, much of it for the large-scale production of export crops such as coffee, flowers and fruit. Mining (tin, tanzanite, phosphate, limestone, gold) is another significant economic activity in the basin and industrial production (chemicals, textiles, paper, timber) is growing, primarily near the main towns (PBWO/IUCN, 2007). Three hydropower stations are in operation on the Pangani River.

[1] A comprehensive assessment of the potential role of the UN Convention in the Nile Basin has been done by Kameri-Mbote and Kindiki (2007) in the regional assessment for East Africa that forms part of this series of regional studies commissioned by the WWF.

Environmental issues

The Pangani Basin is water-stressed with water supply decreasing because of climate change and basin degradation while at the same time demand is increasing because of growing population numbers, economic growth and new uses of the land (PBWO/IUCN, 2007). As a result water shortages are felt in all economic sectors and shortages of domestic water occur throughout the basin (PBWO/IUCN, 2007). Water quality is deteriorating due to poor land-use practices, effluent and solid waste pollution as well as intrusion of saline water into the estuary because of weakened river flow (PBWO/IUCN, 2007).

Figure 5: The Pangani River Basin (Pangani Basin Water Office, 2007)

2.2 River Basins shared between SADC states only

2.2.1 The Zambezi River Basin

Table 5: The Zambezi River Basin – key features

Basin area	1,400,000 km²
Mean annual run-off	106 km³
Population	45 million
Basin states	Angola, Botswana, Malawi, Mozambique, Namibia, Tanzania, Zambia, Zimbabwe
Major water uses	Power generation, irrigated agriculture, commercial fishing, industry, domestic use
River length	2,650 km

Physical characteristics

The Zambezi River basin is the fourth largest in Africa after the Congo, Nile and the Niger. Rising from the Kalene Hills in the North Western Province of Zambia, flowing south and then eastwards for some 2,650 km to the Indian Ocean the Zambezi river crosses through eight riparian states - Angola, Botswana, Malawi, Namibia, Tanzania, Zambia and Zimbabwe. The main stem of the river forms the southern border of Zambia with Namibia, Botswana and Zimbabwe, before flowing consecutively to Mozambique – where it terminates in the Indian Ocean. One of the largest tributaries of the Zambezi, the Shire, forms the outflow of Lake Nyassa (Malawi), shared by Malawi, Mozambique and Tanzania.

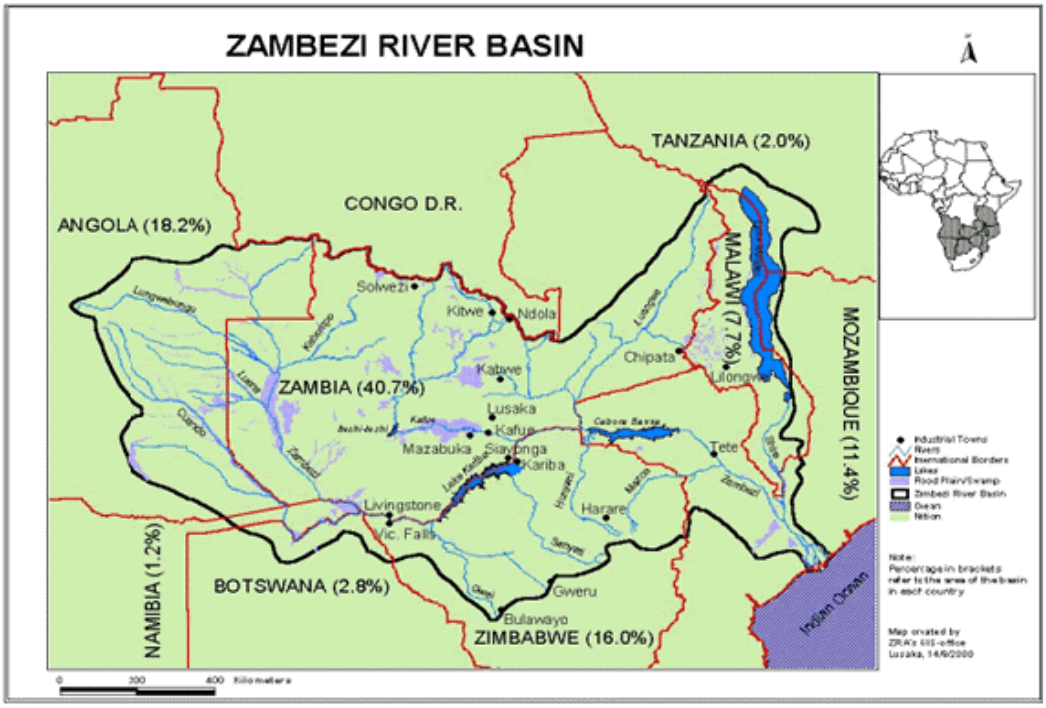

Figure 6: Zambezi River basin

The Zambezi River basin is home to about 45 million people, mainly concentrated in Malawi, Zambia and Zimbabwe (ZRA, 2007). About 90 percent of the people in Malawi live in the basin, representing 31 percent of the total basin population. More than 70 percent of Zambia's population and 72 percent of Zimbabwe's population live within the basin

Economic use of the basin

The Zambezi River basin is rich in natural resources – water, minerals, timber and agricultural land. Despite these favourable conditions, the economies of the riparian countries are generally characterized by low levels of industrial development and economic growth, notwithstanding higher GDP growth rates in Zambia and Mozambique in recent years. The existing industries (mining, forestry and agricultural processing) strongly depend on the electricity produced at the hydropower plants on the river, as well as on organic sources of energy (coal, oil). Future reliance on hydro-power sources of electricity is likely to increase, prompting the construction of more dams on tributaries as well as the main stem of the river.

Environmental issues in the basin

There is no doubt that water resource developments have improved the economy of the riparian states. However, the construction and operations of both the Kariba and Cahora Bassa dams have had environmental impacts downstream. The legal agreements for the development of these dams did not address issues of environmental impacts. As a result, adverse impacts of the dams were not effectively mitigated. These adverse impacts include drops in the sediment transport of the river (thus increasing its scouring effect downstream), changes to the riverine habitats and flora due to reduced variability of stream-flow and destruction of estuarine habitat (Hirji et al, 2002).

Pollution of surface and groundwater resources has become a major environmental problem for the Zambezi River Basin. The increase in pollution discharges is largely attributed to urbanisation, increased industrial and agricultural activities, mining and soil erosion. The urban centres produce sewage effluent, industries industrial wastes, and the agricultural sector uses fertilisers and other pesticides which all contribute to the pollution of the surface and groundwater resources.

2.2.2 The Orange-Senqu River basin

Table 6: The Orange-Senqu River Basin – key features

Basin Area	850, 000 km^2
Mean annual run-off	11.5 km^3
Population	19 million
Basin States	Botswana, Lesotho, Namibia, South Africa
Major water use	Agriculture, mining, industries, power generation, domestic use
River length	2,100 km

Physical characteristics

The Orange River Basin straddles four countries – Botswana, Lesotho, Namibia and South Africa. The river originates in the highlands of Lesotho and roughly flows in a westerly direction through South Africa. It forms the contiguous border between South Africa and Namibia, before terminating in the Atlantic Ocean (see Figure 7). The Botswana portion of the basin is only connected through groundwater interactions. The total basin population is estimated at 19 million with the large industrial presence in the Gauteng Province of South Africa dominating the population distribution in the basin while the northern and western parts of the basin are very sparsely populated.

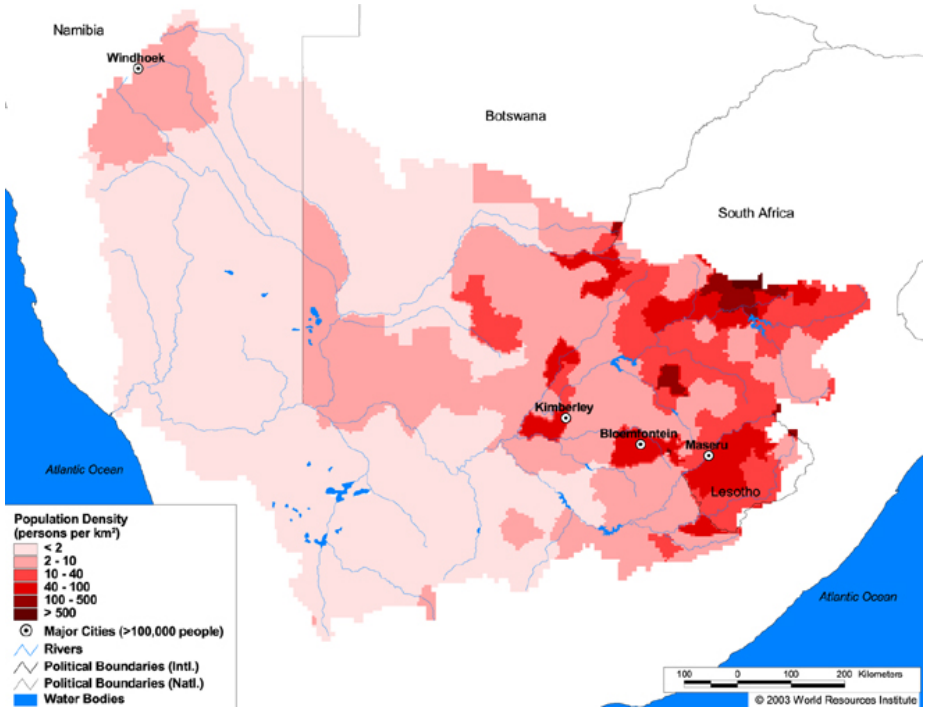

Figure 7: Population of the Orange-Senqu River basin

Economic use

The Orange River catchment is highly developed. A lot of this development is geared towards the augmentation of water supply to the Gauteng area of South Africa. Further water transfers support the agricultural and domestic water use in the Sundays and Great Fish River catchment in the South African province of the Eastern Cape. In total there are twenty-four large dams to be found along the river length.

The water resources of the Orange River basin are used for various purposes, with irrigation, mining, industries, power generation and domestic consumption being the main user groups. The type of use differs from region to region, with agriculture being a major user of water on the mid to lower reaches while industrial and municipal uses predominate on the upper reaches of the Vaal River (a tributary to the Orange-Senqu River).

Environmental issues in the basin

Given the length of the Orange River, combined with its range of altitude and climacteric zones, the basin covers a wide range of ecological systems and can be regarded as being a linear oasis. Its bio-geographical isolation means that potential for re-colonisation from adjacent rivers and wetlands is very low. The river biota is therefore unusually susceptible to the permanent loss of species.

The Orange River basin includes sections of several biomes, but is predominantly made up of:

- Grasslands (subdivided into dry and montane grasslands)
- Nama karoo and
- Arid savannah biomes

These biomes contain a vast array of faunal and floral species variety several endemic species. They comprise areas facing environmental threats, such as the extinction of species and changes brought about by desertification (Earle et al. 2005). There are two major problems in the Orange-Senqu river basin related to water quality. The first is industrial and municipal pollution, with large amounts of municipal and industrial effluent being released into the Vaal River in Gauteng province. Secondly, water quality problems result from agricultural activities, in terms of the increase of siltation and increase in loads of salts and nutrients such as nitrates and phosphates from farming operations.

2.2.3 The Okavango River basin

Table 7: The Okavango River basin – key features

Basin area	570,000 km² (Pallet J., (ed), 1997)
Mean annual run-off	11 km³
Population	1.11million
Basin States	Angola, Botswana & Namibia
Major water use	(subsistence) agriculture, livestock, tourism, domestic use
River length	1,750 km

Physical characteristics of Okavango River basin

The Okavango River basin covers an area of around 570, 000 km², including the Okavango delta. Angola, the upstream riparian state, comprises over 46% of the basin area, followed by 36% by Namibia and nearly 18% by Botswana (see Figure 8). However, the basin area comprises only 16% of total geographical area of Angola, while nearly 19% of the total geographical area of Namibia (Talukdar, 2003).

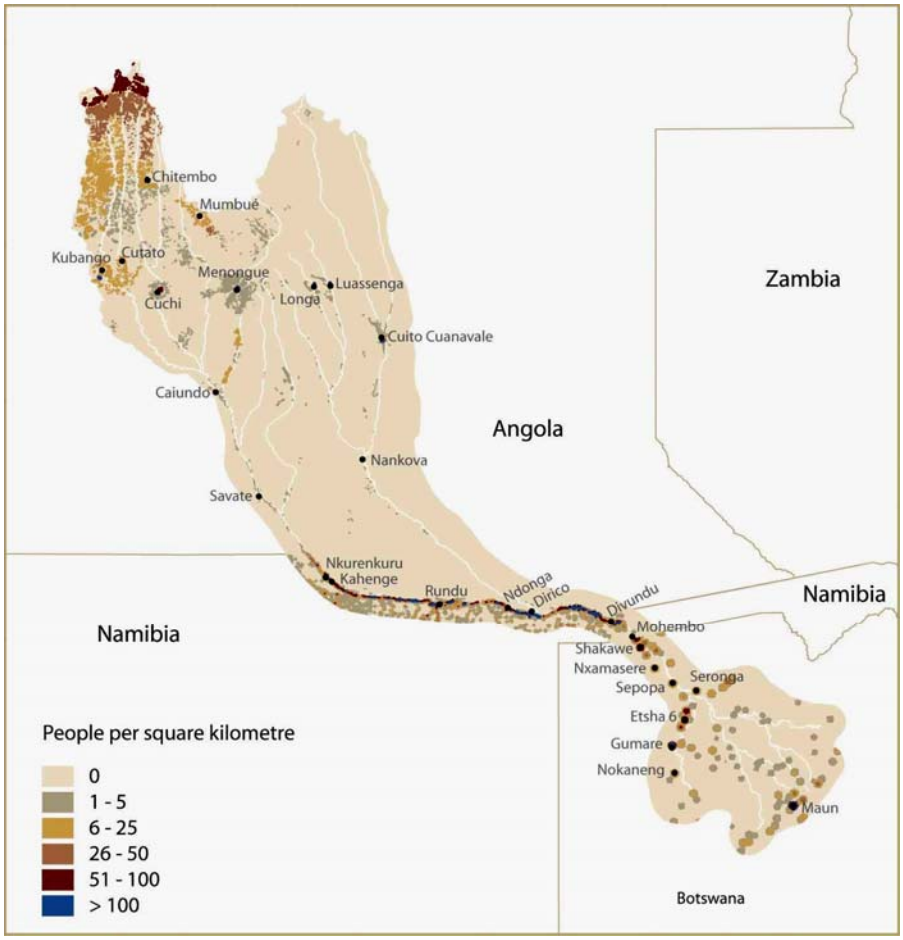

Figure 8: Okavango River Basin

Water flowing in from highland and higher rainfall areas in Angola, such as the Bei plateaux passes through the Namibian Caprivi strip as the Kavango River and then into Botswana's Okavango Delta. The two main Angolan rivers carrying water into the Okavango River are the Cubango and Cuito rivers. Drainage lines that are now dry - such as the Omatako Omuramba – carried water into the Okavango during much wetter times long ago (Mendelsohn and el Obeid; 2003).

Economic Use of the basin

About 215 000 people live in 75% of the basin area, a 100 000 in Namibia and the remainder in Botswana. The Okavango River basin is sparsely populated; average population density is 3 people per km^2.Within each of the three basin states there are small, yet subtle, differences in the water use patterns. In Angola, rural and urban populations account for some 95% of all the water used, primarily for subsistence and domestic use. This reflects the almost complete absence of irrigated agriculture in the Angolan segment of Okavango basin as a result of the, now-ended, civil war (Turton et al, 2003). In contrast, the rural and domestic water use sectors use considerably less water in Namibia and Botswana, whereas agricultural

activities (principally small scale irrigation and subsistence agriculture) consume between 30 and 54 percent respectively of the water used.

Environmental Issues

The Okavango's water is generally clean and clear along its entire course. There are few nutrients or sediments, and its turbidity is low. It is likely that concentrations of phosphates have increased in recent years, especially close to Rundu as a result of effluent from the town. Such chemicals from sewage and fertilizers could have severe effects on aquatic life in the river, and there is concern that increasing chemical concentrations may rise as the number of people and farming activities along the river increase. Any degradation of eco-system functioning would have negative impacts on the Okavango Delta – the largest Ramsar wetland site in the world (Turton et al, 2003).

2.2.4 The Limpopo River basin

Table 8: The Limpopo River basin – key features

Basin area	415, 000 km²
Mean annual run-off	5.5 km³
Population	Approximately 14 million
Basin States	Botswana, Mozambique, South Africa, Zimbabwe
Major water use	Irrigated agriculture, industry, mining, power generation, subsistence agriculture, domestic use
River length	1,750

Physical Characteristics of the Limpopo River Basin

The catchment area is around 415,000 km². Rainfall averages 530 mm per annum and ranges between 200 and 1,200 mm. Evaporation averages 1,970 mm per annum and ranges between 800 and 2,400 mm per annum. Water is transferred into the basin under 6 separate transfer schemes. Irrigation covers 244,000 ha, with further potential of 122,000 ha in selected sub-catchments. Flowing in an easterly direction the river forms the contiguous border between South Africa and Botswana, and then South Africa and Zimbabwe, before crossing into Mozambique and terminating in the Indian Ocean (see Figure 9).

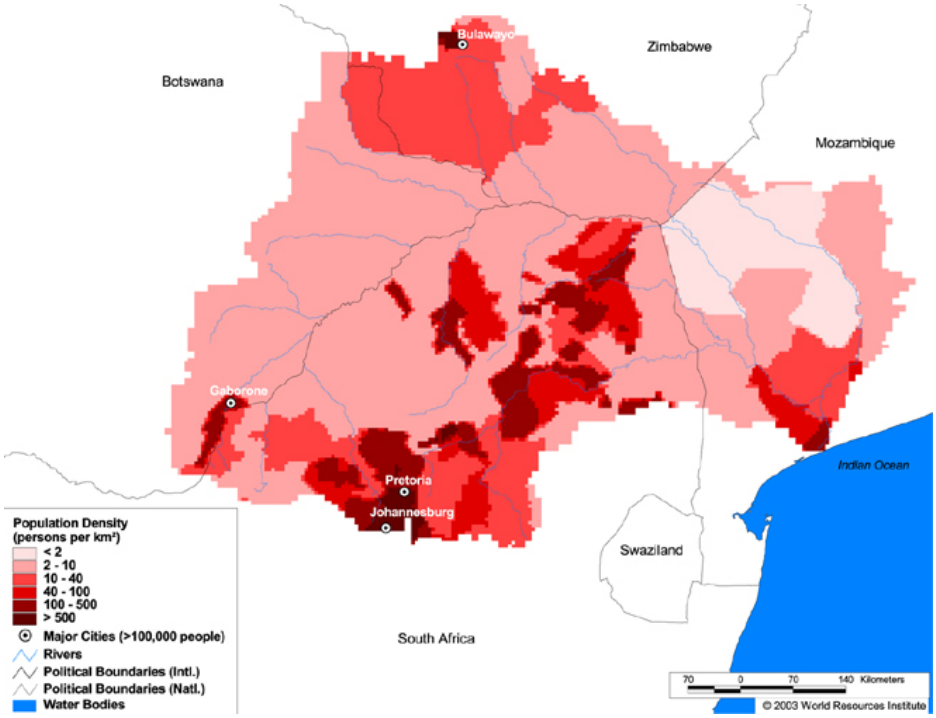

Figure 9: Population distribution in the Limpopo River basin

Economic Use of the Basin

There are numerous dams in the basin, 44 of them with a storage capacity of more than 12 million m³ (UNEP, 2005). Most of these dams (28) are located in the RSA, on Limpopo tributaries. The largest of these is the Loskop Dam on the Olifants River (348 million m³). The Limpopo is the receiving basin for four ITBs and itself has two ITBs (UNEP, 2005). The RSA and Zimbabwe together come close to fully exploiting the water resources of the Limpopo.

The river is of vital importance to the four riparian countries and their natural environments as it is located in a region of water scarcity. South Africa, who dominates in terms of land occupation and runoff, is most economically dependent on the basin. In Botswana and Mozambique the river supplies the most populated and urbanized regions. In Southern Mozambique large irrigation schemes are highly dependent on the river. In Zimbabwe it has been fully developed to the rivers potential. The RSA's north-western province of Mpumalanga as well as the power-generation facilities for Gauteng is supplied with water from the basin.

Environmental Issues

Over-utilisation of water resources and pollution arising from high density urban settlements, mining and other industrial developments are seen to have an impact on the

social, economic, political and natural environments downstream. Despite the frequency of droughts, floods can also occur in intensive rain periods – causing flooding in downstream areas, especially Mozambique. The clearance of land in South Africa has increased soil erosion and reduced soil moisture retention capacity – thus exacerbating the flooding problem.

The upper reaches of the river drain some of the most industrialised areas on the African continent – Johannesburg and surrounds. Over the years the build-up of industrial, mining and domestic waste-water runoff has overloaded the eco-system, with the result that dams like the Hartebeespoort on the Crocodile River (an upstream tributary of the Limpoopo in South Africa) are rated as some of the most polluted in Africa (UNEP). This has manifested as large-scale eutrophication of the water due to the increase in phosphates and nitrates flowing into the dam.

2.2.5 The Rovuma River basin

Table 9: The Rovuma River basin – key features

Basin Area	152,000 km²
Mean annual run-off	15 km³
Basin States	Malawi, Mozambique, Tanzania
Major water use	Subsistence agriculture, navigation, fishing
River length	800 km

Rovuma River basin covers an area of 152, 500 square kilometres, with a mean annual runoff 15 km^3 (Pallet, 1997). The Rovuma River rises in the Matogaro Mountains in Southern Tanzania and flows eastward along the border with Mozambique into the Indian Ocean. It forms the border for 650 km between Tanzania and Mozambique – making it Mozambique's only contiguous river border. The major tributary of the Rovuma is the Lugenda River, which originates at Lake Chiuta on the border between Malawi and Mozambique. The flow of the Rovuma River has not been systematically gauged and, owing to its remote location in both basin states, little significant development has taken place. A preliminary study was undertaken in 1982 for the construction of a 2.0 MW hydropower plant to supply power to Tundura in Tanzania, but no further development took place. As there is no demand, no significant development on the Rovuma is planned for the near future.

2.2.6 The Cunene River basin

Table 10: The Cunene River basin – key features

Basin Area	106, 500 km²
Mean annual run-off	5,5 km³ /a
Basin States	Angola, Namibia
Major water use	Irrigated agriculture, power generation, domestic use
River length	1,050 km

Physical Characteristics of the Basin

The length of the Cunene River, from its sources to the mouth, is about 1,000 km, rising in the Huambo Province of southern Angola and draining into the Atlantic Ocean. For the last third of its length it forms the contiguous border between Angola and Namibia. The size of the drainage basin is about 106,500 km^2. The regional variation in rainfall is well reflected by the vegetation pattern and land-use. Forty percent of the run-off in the Cunene is generated in the Upper Cunene, upstream of Jamba-la-Mina, which is equal to 13 % of the total catchment area (see Figure 10).

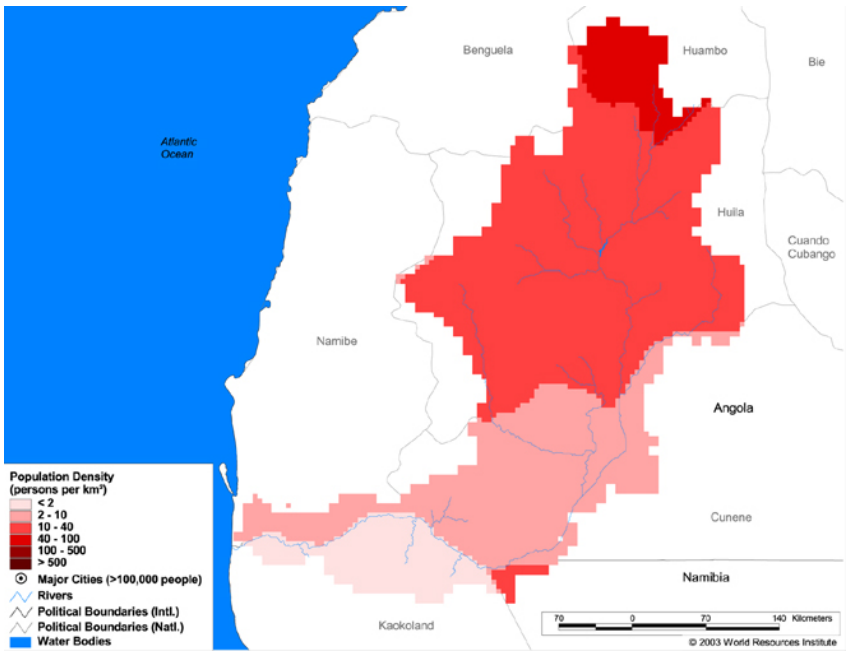

Figure 10: Population density of the Cunene River basin

Environmental issues

In general terms the climate of the Angolan part of the catchment can be classified as a tropical wet-and-dry (savannah) climate, influenced by the high altitudes and downstream (in Angola and Namibia) as a semiarid (tropical steppe) to arid (desert) climate. The geomorphological development and the climatological differences of the Cunene Basin have therefore created an environment that is particular in terms of sediment production, sediment transport and sediment deposition. The old deposits are still annually flooded and act as a sediment trap for sediments produced further upstream.

2.2.7 The Cuvelai River basin

Table 41: The Cuvelai River basin – key features

Basin area	100 000 km^2
Mean annual run-off	ephemeral
Population	Approximately 700 000 to 785 000

Basin States	Angola, Namibia
Major water use	Communal and subsistence farming, domestic use, irrigation, power generation
River length	430 km

The Cuvelai River is an endoreic river, rising in the southern foothills of the Sierra Encoco in south-western Angola. It drains southwards towards the Etosha pan in northern Namibia. The basin is in a semi-arid area with 96% of the rainfall occurring in Nov-Apr. Rainfall is on average 300 mm/a to the west and 600 mm/a to the east. Potential evaporation is 2,500 mm/a. Average daily temperature is 17°C in winter and 25°C in summer. The Cuvelai is perennial for about 100 km before it ramifies into a delta of ephemeral watercourses which cross a broad plain of low relief; this delta converges again to terminate in the ephemeral Etosha pan. The watercourses, called oshanas, are the lifeblood of an area where 700,000 to 785 000 people (or just less than half of the population in Namibia) live (Pallet, 1997).

Because of the arid climatic conditions, surface waters and shallow wells dry up from time to time. The groundwater is saline and the only way to augment these rather unreliable water supplies is to import water from the perennial Cunene River. This is the main reason for diverting water from the Cunene River basin to the Cuvelai basin. The water scheme is operated by the Namibia Water Corporation on Angolan territory and serves as an excellent example of cooperation between basin states. The existing water-supply network, distributing water through canals and pipelines to the population, is one of the largest in Southern Africa.

It is clear that any alteration to this international watercourse system in Angola or Namibia will have major repercussions for the fragile, semiarid ecosystem and the people living on the flood plains. Whereas there is an agreement between the two countries that allows Namibia to divert water from the Cunene River basin into the Cuvelai basin (see above), there is no specific international agreement between Angola and Namibia on water allocation or further studies in the Cuvelai basin itself (Heyns, 2003).

2.2.8 The Save River basin

Table 52: The Save River basin – key features

Basin area	92 500 km²
Mean annual run-off	7 km³/
Population	2.6 million
Basin States	Mozambique, Zimbabwe
Major water use	Irrigation, mining
River length	740 km

The Save River and its major tributaries (the Odzi, Runde, Mutirikwi, and Turgwe) arise on the southern side of the watershed with the Zambezi, between Marondera in the east and Gweru in the west. These rivers flow southwards and turn to the east, where they converge before crossing the border with Mozambique and entering the Indian Ocean through

swamps on the coastal plains. At least 17 dams with a storage capacity of more than 12 MCM (7 can impound more than 100 MCM) have been built in the Save Basin to supply water to some 2.6 million people, irrigation schemes, and mining development. The largest dam, the Osborne Dam on the Odzi River, can impound 400 MCM. The estimated present consumption of water in the Save Basin within Zimbabwe is 1.25 MCM/year, and Zimbabwe is planning to divert 12.5 m³/s from the Pungue´ River to the Save catchment for irrigation purposes. As a result of the present land-use patterns, erosion causes high silt loads in the river beds. A Pungue´ /Save Water Commission to regulate the water-resource development activities within the two river basins have been proposed. Zimbabwe is also planning the Mukosi Dam, with a capacity of 180 MCM, on the Tokwe River in the Save basin. The Save Development Plan proposed by Zimbabwe envisages a considerable increase in water consumption in the Save basin in Zimbabwe. The needs of Mozambique, as a downstream basin state, should therefore be taken into account by the proposed water commission.

2.2.9 The Incomati River basin

Table 13 The Incomati River basin – key features

Basin area	46,700 km²
Mean annual run-off	3.5 km³/
Population	2 million
Basin States	Mozambique, South Africa, Swaziland
Major water use	Forestry, Irrigation, industrial
River length	800 km

Physical Characteristics

The Incomati River, though small by most standards, is a vital source of water for the three basin states – Mozambique, South Africa and Swaziland. The river rises on the South African highveld (just under 2,000 m above sea level) and flows east into Swaziland, back to South Africa and then into Mozambique where it flows into the Indian Ocean (see Figure 5). The coastal areas of the basin experience a sub-tropical climate, with warm, wet summers and cooler winters. The highveld area receives summer rains and becomes cold in the dry winter. The average basin rainfall is around 740 mm/a, while average evapotranspiration potential is 1,900 mm/a (Van der Zaag & Carmo Vaz, 2003).

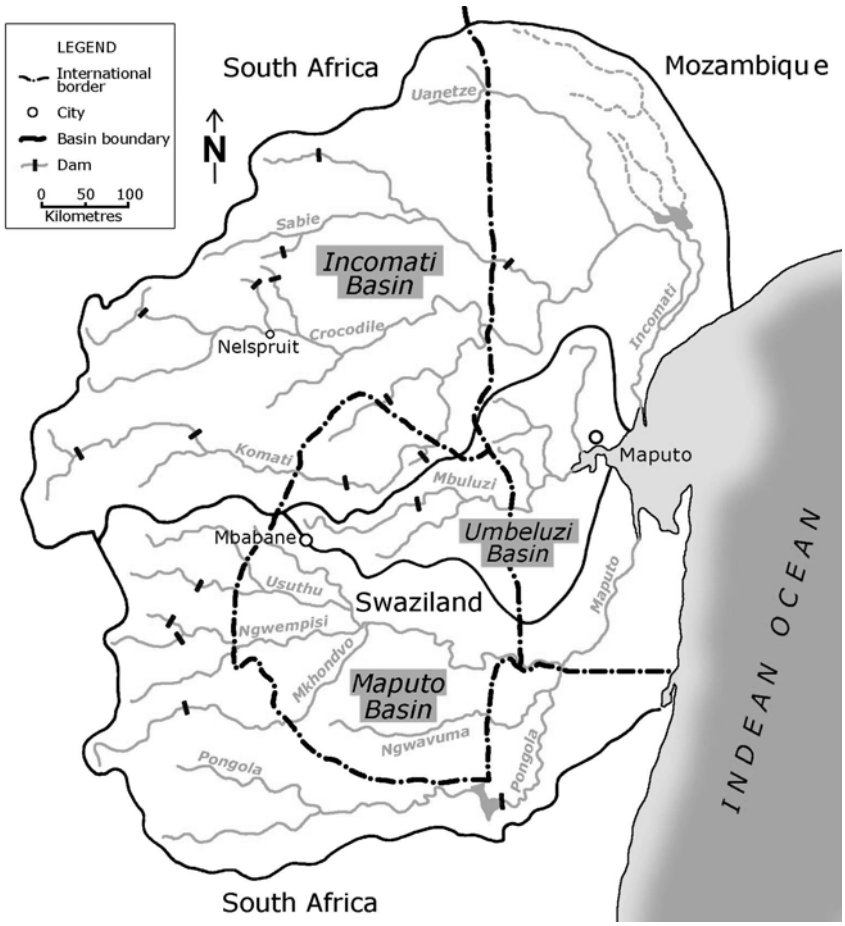

Figure 51: Incomati, Maputo and Umbeluzi River basins (Van der Zaag & Carmo Vaz)

The flow regime of the Incomati River has been significantly altered, due to upstream water use developments. These include water transfers out of the basin in South Africa, primarily to provide water for the cooling of coal-fired power stations there. Additionally, there is large-scale commercial irrigated agriculture in that country, as well as Swaziland, producing sugar cane, fruits and vegetables. This change in the quantity as well as the quality of the water in the river has led to environmental problems downstream. Significantly – there are years when there is almost no flow crossing form South Africa into Mozambique.

2.2.10 The Pungue River basin

Table 6: The Pungue River basin – key features

Basin area	32 500 km²
Mean annual run-off	3 km³
Basin States	Mozambique, Zimbabwe
Major water use	Irrigation, fishing
River length	300 km

The source of the Pungue´ River is the eastern highlands of Zimbabwe to the north of Mutare. From there it crosses the coastal plains of Mozambique and enters the Indian Ocean at the port of Beira. The river is navigable for some 60 km upstream from Beira. The major tributaries of the Pungue´ are the Urema and the Muda.

Little development has taken place on the Pungue´ River, but Zimbabwe has constructed a dam to divert water from the headwaters of the Pungue´ in Zimbabwe for water supply to Mutare and to the Save River catchment. The water requirement for Mutare is 0.75 m^3/s, and 12.5 m^3/s will be made available for irrigation along the Save River. Zimbabwe has informed Mozambique of its plans to proceed with the project; the creation of a river commission between Mozambique and Zimbabwe is being considered to execute river-basin studies on the Pungue´ and the Save rivers (Heyns, 2003)

2.2.11 The Maputo River basin

Table 15: The Maputo River basin – key features

Basin area	32,000 km^2
Mean annual run-off	2.5 km^3
Population	
Basin States	Mozambique, South Africa, Swaziland
Major water use	agriculture, power generation, industry
River length	380 km

The Maputo river basin is shared between South Africa, Swaziland and Mozambique, with 56% of the basin lying in South Africa (upstream riparian), 34% lying in Swaziland and 10% in Mozambique (downstream riparian) (Turton, 2003).

"The downstream part of the Maputo river basin in Mozambique includes sensitive wetland areas such as floodplains mangrove forest and tidal lakes" (Kramer, 2003). The Maputo River rises on the border between northern KwaZulu-Natal and south-eastern Mpumalanga provinces in South Africa and south Swaziland. It flows into the Indian Ocean at the bay of Maputo. Four dams, which can store more than 12 MCM each, have been built on the tributaries of the Maputo in South Africa and two in Swaziland. The largest dam in the Maputo basin is the Pongolapoort Dam in South Africa, which can impound 2,500 MCM and inundates a portion of Swaziland. The water in the Maputo River basin in South Africa is diverted from the Usutu catchment and the Pongola catchment for industrial use and the cooling of power stations in the Limpopo River basin (Olifants River catchment) and the Orange River basin (Vaal River catchment).

2.2.12 The Buzi River basin

Table 16: The Buzi River basin – key features

Basin area	31 000 km^2
Mean annual run-off	2.5 km^3
Basin States	Mozambique, Zimbabwe
Major water use	Irrigation, power generation, domestic use
River length	250 km

The Buzi River originates to the south of Mutare in the eastern highlands of Zimbabwe before it cascades down to the coastal plains of Mozambique. The mouth of the river is 25 km south of the important harbour of Beira on the Indian Ocean. The major tributary of the Buzi is the Revue. The Chicaˆmba Dam, which can impound 450 mm³ (million cubic metres; MCM), has been built for water supply, irrigation, and power supply on the Revue´ River near Chimoio on the Beira–Mutare road in eastern Mozambique. The installed capacity is 38 MW. About 60 km lower down the river, at Mavuzi, more power is generated with an installed capacity of 52 MW.

2.2.13 The Umbeluzi River basin

Table 17: The Umbeluzi River basin – key features

Basin area	10, 900km²
Mean annual run-off	600,000 m³
Population	
Basin States	Mozambique South Africa Swaziland
Major water uses	Agriculture
River length	200 km

The Umbeluzi River rises in the eastern mountainous highveld of Swaziland to the north of the capital Mbabane. The river flows in an easterly direction to Maputo, the capital city of Mozambique and a major harbour on the Indian Ocean. The main tributaries of the Umbeluzi are the White and the Black Umbeluzi in Swaziland as well as the Matola and the Tembre rivers in Mozambique (Heyns, 2003).

The most important developments on the Umbeluzi are the Hawane and Mnjali dams in Swaziland as well as the Pequenos Libombos Dam, with a capacity of 400 MCM, in Mozambique. No immediate future development is envisaged in the Umbeluzi catchment, but there is a Joint Permanent Technical Water Commission between Swaziland and Mozambique that deals, inter alia, with the development of the Umbeluzi Basin.

3 Analysis of existing management framework

The overall framework for the management of shared watercourses consists of multiple elements such as international agreements, national laws as well as water management institutions at national and international level. The following section provides a brief overview of the applicable national water legislation in SADC states as well as of the management framework at regional and basin level.

3.1 National water laws of SADC countries

All SADC countries have regulated the management of their water resources in a specific water act but the stage of development of national water legislation varies between countries. A number of SADC Member have adopted new water acts in the last decade (e.g. Mozambique, Namibia, South Africa, Swaziland, Zimbabwe) whereas others are currently in the process of revising their national water laws (e.g. Botswana, Lesotho, Tanzania). The ongoing revision process is guided by regional policy instruments, such as the SADC Regional Water Policy and Regional Water Strategy, which in turn reflect the principles of the SADC Protocol.

Table 18: Overview of applicable water legislation in (non-island) SADC countries

Country	Water Act
Angola	Water Law (2006)
Botswana	Water Act (34 of 1968)
Democratic Republic of the Congo	Currently being developed (NBI, 2007)
Lesotho	Water Resource Act 1978
Malawi	Water Resources Act 1969
Mozambique	Water Law (Law 16/91, of 1991)
Namibia	Water Act No 54 of 1956; Water Resources Management Act (24 of 2004) pending commencement
South Africa	National Water Act 36 of 1998
Swaziland	Water Act (No 7 of 2003)
Tanzania	Water Utilisation (Control and Regulation) Act (42 of 1974)
Zambia	Water Act 1948
Zimbabwe	Zimbabwe Water Act (31 of 1998)

A tendency that can be observed is that the revised Acts incorporate what is currently considered to be state of the art water law, such as the adoption of the IWRM principle and the devolution of water management responsibilities to the lowest possible level. The new Acts are generally also compatible with the Principles of the UN Convention (and the SADC Protocol) (see more detailed analysis in 4.3 below).

Increasingly the national water acts also make reference to international rivers and meeting international obligations—an element previously not found in national water laws of SADC states. This growing recognition for international obligations bodes well for the implementation of shared watercourse agreements such as the SADC Protocol at the national level.

3.2 Regional agreements/ arrangements and joint basin institutions

In addition to the SADC Protocol, the SADC region has a rich history of international agreements dealing with freshwater management and allocation as well as associated institutions at the basin level. In the country of South Africa alone there are at least 60 of these agreements entered into with other states – on a bilateral as well as a multi-lateral basis (Ashton et al, 2006). To some degree this reflects the fact that national borders were drawn by colonial powers with little regard for cultural, economic or geographical ties between people in the region. Thus borders split groups from similar cultural, linguistic or ethnic backgrounds, with the result that people on opposite sides of an international river, while being citizens of different countries, have a history of interaction through trade, traditional cultural practices and resource management (Turton & Earle, 2003).

In the years prior to independence several agreements around the management of water resources were entered into between the respective colonial governments, such as between Portugal and the United Kingdom on the Cuvelai, Limpopo, Zambezi and Incomati rivers (UNEP, 2005). These agreements have never been declared as terminated after the end of the colonial period, but their validity has been questioned by scholars and by the newly independent states affected by them. Directly after the granting of independence the number of agreements increased sharply, reflecting the creation of new states (as opposed to colonial "spheres of influence") as well as a desire by states to assert their new-found sovereignty (UNEP, 2005). During the 1970s and 1980s when much of the region was caught up in the proxy-conflicts associated with the Cold War there was a drop in the number of new agreements entered into formally between states. However, technical cooperation between national departments of water continued, with officials from neighbouring countries meeting and cooperating over joint programmes such as the control of invasive alien plant species, pollution and flow quantities (Turton & Earle, 2003).

Since the late 1980s there has been a steady increase in freshwater agreements entered into between states in the southern African region. A characteristic of these is that they are increasingly entered into on a multilateral basis – most commonly including all the basin states (Ashton et al, 2006). While most agreements still focus on cooperation, joint management and conflict prevention and resolution, the underlying rationale for these efforts has shifted in line with global trends, from economic development to sustainable development, thus incorporating environmental as well as social issues.

Through these agreements a range of organisations have been formed to advise basin states on river management issues (such as basin commissions), cooperate over technical aspects (technical committees) and implement projects (development authorities). Many of the original inter-state organisations were informal in nature – recognised by the respective ministers of water, but not in fact codified in international law (SADC, 2007). These organisations formed a forum where officials could meet to discuss development issues and share information – thus advising their national governments on management interventions for the basin. These informal technical working groups were usually bi-lateral, with some having been developed into formally recognised organisations while others are superseded. An overview of the various organisations in the SADC is provided in Table 19 below.

At present the formation of shared watercourse institutions (SWCI) is based on Article 5(3) of the SADC Protocol on Shared Watercourses (SADC, 2000). This states that:

> (a) Watercourse States undertake to establish appropriate institutions such as watercourse commissions, water authorities or boards as may be determined.
>
> (b) The responsibilities of such institutions shall be determined by the nature of their objectives which must be in conformity with the principles set out in this Protocol.
>
> (c) Shared Watercourse Institutions shall provide on a regular basis or as required by the Water Sector Co-coordinating Unit, all the information necessary to assess progress on the implementation of the provisions of this Protocol, including the development of their respective agreements (SADC, 2000).

The Protocol is thus flexible on the types of SWCI which may be formed – as well as their scope of powers, mandate and so on. This leaves it open to member states to determine the mechanism most appropriate to their situation.

Only four of these SWCI have an executive mandate – that is they have the authority to develop, implement and maintain joint projects and to take management decisions about those projects. They are formed specifically for some type of joint project – dam construction or operation, hydropower generation or irrigation. They do not engage in inter-state negotiations or policy formation – only operating within their clearly defined mandate as agreed by the states concerned. None of the four which exist in the SADC include all the basin states. However, these SWCI are important as they represent a tangible example of cooperation between states – developing and managing water-related infrastructure in an effort to promote the socio-economic development which the region requires.

The largest of these organisations is the Zambezi River Authority – established between Zimbabwe and Zambia. The ZRA was formed to manage and further develop the shared hydro-electric infrastructure between the two states on the Zambezi River. At present this consists of the Kariba Dam and its associated monitoring and electricity transmission infrastructure. The ZRA was established as a body corporate on 1 October, 1987 by parallel legislation in the Parliaments of Zambia and Zimbabwe following the reconstitution of Central African Power Corporation - under the Zambezi River Authority Acts (Act No. 17 and 19 Zambia and Zimbabwe respectively) and is jointly owned by the governments of Zambia and Zimbabwe in equal proportions (ZRA, 2007). It is governed by a Council of Ministers consisting of four members, two of whom are Ministers in the Government of the Republic of Zambia and two of whom are Ministers in the Government of the Republic of Zimbabwe. The Ministers designated by the two Governments to be members of the Council are those holding portfolios of Energy and Finance respectively.

In the Incomati basin, shared by South Africa, Swaziland and Mozambique the Komati Basin Water Authority (KOBWA) is a bi-national company formed in 1993 through the treaty on the Development and Utilization of the Water Resources of the Komati River Basin signed in 1992 between the Kingdom of Swaziland and the Republic of South Africa (KOBWA, 2007). The purpose of KOBWA is to implement Phase 1 of the Komati River

Basin Development Project. Phase 1 comprise the design, construction, operation and maintenance of Driekoppies Dam in South Africa (Phase 1a) and the Maguga Dam in Swaziland (Phase 1b).

KOBWA has a board of six directors, three of whom are appointed by each of the ministers in South Africa and Swaziland. They are not all government officials. The board reports to the governments via the Joint Water Commission. KOBWA is operated by a chief executive officer and staff that reports to the board. It is financed by the two states on the basis of an annually agreed budget.

Two smaller SWCI with executive authority are on the Orange-Senqu and the Cunene rivers respectively:

- The Treaty of the Vioolsdrift and Noordoewer Joint Irrigation Scheme between Namibia and South Africa was signed in 1992, establishing an international parastatal authority to operate the irrigation project located on both sides of the Orange River at Vioolsdrift and Noordoewer (Republic of Namibia & Republic of South Africa, 1992). This authority is known as the Joint Irrigation Authority and has the aim of operating and maintaining the irrigation scheme and controlling the abstraction of water from the river.

- In 1990 the Joint Operating Authority between Angola and Namibia on the Cunene River was reinstated. It deals specifically with the operation of the regulating dam on the Cunene River at Gove (Angola), and with the infrastructure for the Ruacana hydropower station on the river in Namibia. The power station itself is in Namibia, but part of the infrastructure (diversion weir, intakes) is situated in Angola.

The southern African region, with its differences between basins and states in terms of climate, hydrology and socio-economic development is set to pursue the development of water-related infrastructure to achieve some balance between these areas (SADC 2007). The natural climate of the region is highly variable – both on an intra-annual basis as well as inter-annually, with floods and droughts typically following close to each other (UNEP, 2006). Additionally, the spatial distribution of water in the region is unequal – with the relatively well-watered north in contrast to the drier south. In an effort to prepare the political ground for the development of the necessary water storage and transfer infrastructure several basin-wide commissions have been formed between states. Although these commissions typically do not have an executive mandate they do play an important role in the development of trust and a common vision between basin states over the sustainable development of their shared water resources. As such they operate as advisory bodies to their national states – thus not limiting their sovereignty. Several of these basin-wide commissions have achieved notable successes in promoting a spirit of cooperation between basins states, something which was frequently not previously present.

These basin-wide commissions are the outcome of a protracted negotiating process between the states – this carried out at the highest bureaucratic levels in close association with the relevant political structures of each state. Each commission is comprised of delegations from each state, the members of which are normally respected and trusted professionals in

appropriate fields of expertise from each country. They must ensure that the commission does the required work to enable each delegation to provide informed advice to the governments about the development of the river basins (SADC, 2007). The commissions mostly work through subcommittee systems in which the members are technical experts or advisors nominated by each delegation. It is at this level that studies are done to provide the information to enable the committees to reach consensus around technical issues. Several of these commissions have now formed secretariats to assist them in the carrying-out of their duties.

At the moment there are eight basin-wide commissions in the region which are either formed or in the advanced stages of being formed. In Table 18 an overview is provided of these commissions in the SADC region.

Table 19: Basin-wide commissions in the SADC

Commission	River	Countries
Okavango Commission (OKACOM)	Okavango	Angola, Botswana & Namibia
Orange-Senqu River Commission (ORASECOM)	Orange-Senqu	Botswana, Lesotho, Namibia & South Africa
Limpopo Commission	Limpopo	Botswana, Mozambique, South Africa & Zimbabwe
Zambezi Commission (ZAMCOM) – undergoing ratification process	Zambezi	Angola, Botswana, Lesotho Malawi, Mozambique, Namibia, Tanzania, Zimbabwe & Zambia
Cunene Permanent Joint Technical Commission	Cunene	Angola & Namibia
Cuvelai Permanent Joint Technical Commission	Cuvelai	Angola & Namibia
Pungwe River Basin Commission	Pungwe	Mozambique & Zimbabwe
Rovuma Joint Commission	Rovuma	Mozambique & Tanzania

These commissions form an important base for continued cooperation between states in the region. Although the commissions themselves have been accused of not achieving tangible results in the management of their respective basins they have brought states closer together and resulted in the development of the framework for cooperation. This is vital if states are to start developing and managing their shared water resources in a cooperative way. Various other bilateral, or non-basinwide, technical committees and commissions exist in the region. These will most likely continue to be the mechanisms for the implementation of joint projects, such as the Lesotho Highlands Water Commission (LHWC). The LHWC serves as coordinating and management function for the Lesotho Highlands Water Project, between Lesotho and South Africa. But increasingly these non-basinwide SWCI are coming under the remit of the basin-wide commissions. The agreement establishing the Orange-Senqu River Commission (ORASECOM), for example, whereas leaving the rights and obligations of parties arising from other agreements in force unaffected, stipulates that existing Commissions will liaise with ORASECOM in terms of the agreement. Hence, while the existing Commissions remain in place, increasing efforts are made in practice to include all basin management issues under the auspices of the basin-wide Commission.

It has been said before that numerous international freshwater agreements have been signed between countries in the SADC region. A more recent one of these deserves specific

attention as it arguably marks the beginning of a new era in treaty making related to shared watercourses in the SADC. The so-called Incomaputo-Agreement[2] is the first comprehensive basin-wide agreement that has been drafted in line with the SADC Protocol's Article 6(3) (the equivalent of the UN Convention's Article 3(3)), thus applying the principles of the SADC Protocol to a specific watercourse. Although other basins in the regions have not yet advanced to this stage, it can be expected that in the long-run other basins will draft similar agreements, thereby harmonising the management of shared watercourses within the framework set by the SADC Protocol (see further discussion in 5.1 below).

[2] Tripartite Interim Agreement between the Republic of Mozambique and the Republic of South Africa and The Kingdom of Swaziland for Co-operation on the Protection and Sustainable Utilisation of the Water Resources of the Incomati and Maputo Watercourses.

Table 20: River Basin Institutions in the SADC (Adapted from SADC, 2007)

BASINS	STATES	RBO's WITH EXECUTIVE AUTHORITY	COMMISSIONS WITH BASIN-WIDE MANDATE	BILATERAL COMMISSIONS NOT COVERING THE WHOLE BASIN			TECHNICAL COMMITTEES
Buzi	Mozambique						
	Zimbabwe						
Congo	Angola						
	Burundi						
	Cameroon			International Commission of the Congo-Oubangui-Sangha Basin (CICOS)			
	Central African Republic						
	Congo						
	DRC						
	Gabon						
	Malawi						
	Rwanda						
	Tanzania						
	Zambia						
Cunene	Angola	Joint Operating Authority	Permanent Joint Technical Commission (1)				
	Namibia						
Cuvelai	Angola		Permanent Joint Technical Commission (1)				
	Namibia						
Incomati	Mozambique				Joint Water Commission (4)	Joint Water	Tripartite Technical Committee (6)
	South Africa	Kobwa		Joint Water Commission (2)			
	Swaziland					Commission (5)	

BASINS	STATES	RBO's WITH EXECUTIVE AUTHORITY	COMMISSIONS WITH BASIN-WIDE MANDATE	BILATERAL COMMISSIONS NOT COVERING THE WHOLE BASIN			TECHNICAL COMMITTEES
Limpopo	Botswana		Limpopo River Commission		Joint Water		
	Mozambique			Joint Water Commission (4)			
	South Africa				Commission (3)		
	Zimbabwe						
Maputo	Mozambique			Joint Water Commission (4)	Joint Water		Tripartite Technical Committee (6)
	South Africa					Joint Water Commission (2)	
	Swaziland				Commission (5)		
Okavango	Angola		OKACOM				
	Botswana			Joint Permanent Technical Comm'			
	Namibia						
Orange	Botswana		ORASECOM	Joint Water			
	Lesotho				Joint Water		
	Namibia	Joint Irrigation Authority				Permanent Joint Water Commission	
	South Africa			Commission (3)	Commission		
Pungue	Mozambique		Pungwe River Basin Commission				
	Zimbabwe						
Rovuma	Mozambique		Rovuma Joint Comm'				
	Tanzania						
Save	Mozambique						
	Zimbabwe						
Umbeluzi	Mozambique						

BASINS	STATES	RBO's WITH EXECUTIVE AUTHORITY	COMMISSIONS WITH BASIN-WIDE MANDATE	BILATERAL COMMISSIONS NOT COVERING THE WHOLE BASIN			TECHNICAL COMMITTEES
	Swaziland						
Zambezi	Angola		ZAMCOM (pending ratification)				
	Botswana			Joint Permanent			
	Lesotho						
	Malawi						
	Mozambique						
	Namibia			Technical Commission			
	Tanzania						
	Zimbabwe	Zambezi River Authority					
	Zambia						

4 Compatibility between the UN Convention and existing regional and national legal and policy tools

4.1 The UN Convention vs. the SADC Protocol

The most important regional legal instrument relating to shared watercourses is the (revised) SADC Protocol on Shared Watercourses. When comparing the UN Convention with the Protocol it is important to keep the history of the latter one's development in mind.

The original SADC Protocol on Shared Watercourse Systems (as it was then called) was adopted in 1995 and was the first sectoral protocol following the signing of the SADC Treaty in 1992 (Ramoeli, 2002). The 1995 SADC Protocol was greatly influenced by international water law instruments such as the Helsinki Rules and the Dublin Principles, as well as the Agenda 21 (Ramoeli, 2002). The subsequent revision of the 1995 Protocol was influenced by two main factors. The first one is that some Member States had reservations about the contents of the Protocol and the summit approved that their concerns should be addressed (Ramoeli, 2002). The second one was the adoption of the UN Convention in 1997.

During the revision period the SADC Member States used the opportunity to bring the (revised) SADC Protocol in line with international water law as reflected in the UN Convention. As a result much of the revised SADC Protocol, adopted in August 2000, is literally a verbatim reflection of the UN Convention. Hence, although to date only Namibia and South Africa have ratified the UN Convention, SADC Member States have expressed their consent with its key principles, albeit indirectly through ratifying the SADC Protocol which contains the identical key principles. These include, among others, the three principles that are considered to be accepted as customary international law

- Equitable and reasonable utilisation
- obligation to prevent significant harm, and
- obligation to notify of planned measures

Despite the great similarity between the two agreements there remain a few differences, some of which could result into rights and obligation that are substantially different, depending on whether the SADC Protocol or the UN Convention would apply.

4.1.1 Key differences

Factors for equitable and reasonable utilisation

Article 6 of the UN Convention and Article 3(8)(a) of the SADC Protocol list factors to be taken into account for determining what is equitable and reasonable utilisation. Whereas the list of factors in both agreements is otherwise identical, the SADC Protocol lists a factor not to be found in the equivalent UN Convention provision.
Both the UN Convention (in Article 6(1)(f)) and the SADC Protocol (in Article 3(8)(a)(vi)) list as one factor the "conservation, protection, development and economy of use of

the water resources of the shared watercourse and the costs of measures taken to that effect;…". These provisions refer to the water resources of the shared watercourse itself, the social and economic needs of the watercourse state, in other words beyond the specific watercourse in question, are listed as a separate factor in both agreements. With regard to the latter the UN Convention (Article 6(1)(b)) specifies that the social and economic needs of a watercourse states need to be considered. The SADC Protocol on the other hand, adds to this the environmental needs of watercourse states (Article 3(8)(a)(ii)).

It is debatable though, whether this indeed creates a difference in practice. The list of factors in both agreements is merely exemplary and not exclusive, meaning that also factors not specifically listed need to be considered where relevant. Arguably the environmental needs of watercourse states thus could not be ignored under the UN Convention as well – the SADC Protocol may just be more specific.

Protection of aquatic environment vs marine environment

Both the UN Convention and the SADC Protocol contain provisions dealing specifically with the protection and preservation of the environment. Whereas the rest of the provisions on this matter are identical in the two instruments, there is a difference between the UN Convention's Article 23 and the equivalent Article 4(2)(d) of the SADC Protocol.

Article 23 of the UN Convention obliges states to take all necessary measures to protect and preserve the "marine environment," including estuaries. Article 4(2)(d) of the SADC Protocol on the other hand, whereas being otherwise identical with Article 23 of the UN Convention, uses the term "aquatic environment" instead of "marine environment". If the obligation set forth in this provision was meant to have the same scope as the one of Article 23 of the UN Convention, there was no need to change the terminology, particularly seeing the Articles otherwise have identical wording. The replacement of the term "marine" by the drafters of the Protocol therefore suggests that they preferred a more limited protection obligation compared to the one in the UN Convention

While there is no universally accepted definition for aquatic ecosystems, these are considered to include riverine systems, estuarine systems, coastal marine systems, wetland systems, floodplains, lakes and groundwater systems (Masundire & Mackay, 2002). Following this definition the SADC Protocol obligation would extend only to coastal marine systems but not include impacts that occur in the open sea, i.e., beyond coastal areas.

The difference between the two provisions might in practice be reduced by the fact that many impacts that affect the marine environment in the open sea would also affect the estuary and coastal areas, in which case the protection obligation applies in any case. Where this is not the case, the two agreements seem to create different obligations for states, with the UN Convention being the more demanding instrument as far as marine protection obligations are concerned.

Relationship of the "equitable utilisation" principle vs. the "no harm" obligation

Article 5(1) of the UN Convention and the equivalent Article 3(7)(a) of the SADC Protocol incorporate the principle of reasonable and equitable use, stipulating that watercourse states shall in their respective territories utilise a shared watercourse in an "equitable and reasonable manner." At the same time, Article 7(1) of the UN Convention and the equivalent Article 3(10)(a) of the SADC Protocol codify the no-harm rule, obliging parties "to take all appropriate measures to prevent the causing of significant harm to other watercourse states" when utilising a shared watercourse. The no-harm rule is not "an absolute obligation, but rather one of due diligence, or best efforts under the circumstances" (McCaffrey, 2001, p 254). The legal relationship between the two principles is dealt with in Article 7(2) of the UN Convention. The equivalent provision in the SADC Protocol is Article 3(10)(b), which, however, is not so clear as to how the two principles relate to each other.

During the negotiations of the UN Convention it was strongly contested what the exact legal relationship between the no-harm obligation and the equitable and reasonable utilisation principle is (McCaffrey, 2001). Some parties were of the opinion that the equitable utilisation principle should have precedence over the no-harm obligation, whereas other parties held the opposite view (McCaffrey, 2001). This legal relationship between these two key principles is of great practical relevance. If the no-harm obligation enjoys precedence, developments (usually in upstream states) cannot take place without consent of the other states if they are significantly harmful to other (usually downstream) states. In other words, such developments would be automatically considered in violation of the principle of reasonable and equitable use. If, on the other hand, the equitable and reasonable utilisation principle enjoys precedence over the no-harm obligation, there is no outright prohibition on planned developments capable of causing significant transboundary harm. Under certain circumstances, such developments may be considered reasonable and equitable.

Interpreting Article 7(2) of the UN Convention, McIntyre (2007, p 26) states that "it is apparent that the principle of equitable utilisation takes priority over the obligation to prevent significant harm…." His view is supported by McCaffrey (2001, p 255) who states that it "appears to be that paragraph 2 of Article 7 gives precedence to equitable utilisation over the no-harm doctrine, and is thereby consistent with actual state practice." McCaffrey (2001) lists three main reasons why this conclusion is drawn. The first is the very existence of the paragraph 7(2) itself, which implicitly acknowledges that harm may be caused without engaging the harming state's responsibility. A further reason is that Article 10 of the UN Convention states that any conflict between uses of an international watercourse is to be resolved with reference to Articles 5-7 – in other words not by solely applying the no-harm rule but by applying "the package of articles setting forth the principles of both equitable utilisation and no-harm (McCaffrey, 2001, p 255). Arguably the strongest argument in support of the above view is the wording of Article 7(2) of the UN Convention obliging a state that causes significant harm to another watercourse state to take all appropriate measures, *having due regard for the provisions of articles 5 and 6*,[3] to eliminate or mitigate such harm. The explicit reference that appropriate measures need to be taken with due regard to the equitable utilisation principle confirms this principle's precedence over the no-harm obligation. Consequently, under the UN Convention, developments that are equitable and reasonable and carried out in

[3] Italics added

conformity with the due diligence duty of prevention established by the no-harm rule, but which nevertheless cause significant harm, could in principle be in compliance with the Convention.

Obviously, although equitable and reasonable utilization takes priority over the no-harm rule, the circumstances whereby significant harm might be tolerated are very limited, given that the UN Convention obliges states to protect aquatic ecosystems, to give due regards to vital human needs, and to develop international watercourses with a view to attaining their sustainable and optimum utilisation.

The SADC Protocol's equivalent to Article 7(2) of the UN Convention is Article 3(10)(b) and it is drafted in a different manner. It specifically requires states to have due regard for the provisions of Article 3(10)(a) when taking appropriate measures, which is the Protocol's no-harm obligation itself. Thus, like the UN Convention's Article 7(2), the Protocol does acknowledge that harm may be caused under certain circumstances. However, by obliging states to give due regard to the prevention of harm obligation in Article 3(10)(a) rather than the equitable utilisation principle, it may be argued that the SADC Protocol did not follow the UN Convention's approach of giving precedence to the equitable utilisation principle. Instead the no-harm obligation seems to be strengthened and be given precedence over the equitable utilisation principle. But in addition to the text of a legal instrument, its Preamble also needs to be considered in an interpretation exercise, as determined by Article 31(2) of the Vienna Convention on the Law of Treaties (hereinafter Vienna Convention). In this sense, a different interpretation also seems possible on the basis of the Preamble of the Protocol, which expressly refers to the UN Convention as a legal source states were bearing in mind for drafting the Protocol. This provides a strong argument for concluding that the Protocol *intended* to reflect the relation between the substantive provisions at hand as codified by the UN Convention.

Given that the Protocol's text and its Preamble, respectively, seem to lead to different conclusions, the interpretation of Article 3(10)(b) has to rely on other factors. Article 32 of the Vienna Convention permits the resort to other means of interpretation in such cases, including the preparatory works of a treaty and the circumstances of its conclusion. The minutes of the Protocol negotiations reveal that earlier drafts of the Protocol had used the same wording as used in the UN Convention. This was later changed to the current wording, but there are no recorded discussions on the reasons for the change. On the other hand, the circumstances of the Protocol's conclusions strengthen the view that the two instruments adopt the principle of reasonable and equitable use as their overriding substantive rule. The original 1995 SADC Protocol on Shared Watercourse Systems was revised exactly to harmonize it with the UN Convention. Furthermore, the inclusion of the two factors relating to 'the effect of the use or uses of the watercourse in one watercourse State on other watercourse States' (Art. 3(8)(a)(iv)) and to 'existing and potential uses of the watercourses' (Art. 3(8)(a)(v)) in the SADC Protocol as elements for determining reasonable and equitable utilization supports the conclusion that the Protocol has indeed subordinated the obligation not to cause harm to the principle of reasonable and equitable utilization (Salman, 2001). Arguably, in this context, it is thus not reasonable to assume an intentional deviation from the UN Convention's primary substantive rules.

Giving preference to the no-harm rule arguably would strengthen the negotiation position of downstream states on planned water developments upstream In case of a

disputed planned development, for example, a downstream state would claim that the SADC Protocol favours the no-harm rule. The state planning the development would, on the other hand, push for an alternative interpretation of the Protocol aligned with the UN Convention, with its precedence for the equitable utilisation principle over the no-harm rule. The cost of this would be an imbalance among watercourse states in the region, especially where water demand increases and availability decreases, thereby adding further stress on the resources. The lack of clarity of the SADC Protocol regarding the relationship between the equitable utilisation principle and the no-harm rule is unfortunate and further clarification would be desirable.

Such clarification can of course be provided by a judgement of the SADC Tribunal in a dispute between SADC states. In this context the predominance of the principle of reasonable and equitable utilization as the guiding principle for international water law is supported by the decision of the ICJ in the Gabcikovo-Nagymaros case. In that case, the Court cited equitable and reasonable utilization as the basis for the development and protection for the watercourses in question. The decision made no reference to the obligation not to cause significant harm. This decision will certainly strengthen the arguments in favor of the predominance of equitable and reasonable utilization and is likely to be followed by tribunals looking into this issue in the future (Salman, 2001).

However, clarification of the matter by judgement of the SADC Tribunal should be seen as a last resort. Could instead the entry into force of the UN Convention and its ratification by SADC Member States shed light to the Protocol's ambiguity regarding the relationship between the principle of reasonable and equitable use and the no-harm rule? Article 3(2) of the UN Convention states that parties to watercourse agreements may, where necessary, consider harmonising such agreements with the basic principles of the UN Convention. According to Wouters (1999), this provision supports the view that watercourse states will consider the provisions of the UN Convention in the interpretation of their existing agreements. Therefore, by becoming parties to the UN Convention, SADC Member States would reinforce the argument that the SADC Protocol and the UN Convention are aligned as to the relationship between their fundamental principles. They would thus contribute to the clarification of that issue, thereby reducing the risk for future conflicts to arise on the interpretation of Article 3(10)(b) of the Protocol.

Should the matter be considered by the SADC Tribunal, in examining this issue, the court would first have to decide whether the very relationship between the two principles, as codified in the UN Convention, represents in itself a basic principle of customary law and should be adhered to. This is because under Article 3(3) of the SADC Protocol "State Parties undertake to respect the existing rules of customary or general international law relating to the utilisation and management of the resources of shared watercourses." The UN Convention's entry into force would reinforce a conclusion that its Articles 5-7 do represent customary law.

If the court concluded that such a relationship cannot yet be established as customary law, the court would have to decide on the interpretation of Article 3(10)(b) of the Protocol, reading it either in conformity with the UN Convention or as giving preference to the no-harm rule. It remains to be seen to what extent the SADC Tribunal would consider the provisions of the UN Convention as interpretational guidance for adopting one or the other reading of the provision at hand.

Dispute Settlement Mechanisms

The dispute settlement procedures provided for in the UN Convention and the SADC Protocol, respectively, show some differences. The SADC Protocol simply obliges Member States to resolve disputes amicably. Where an amicable settlement is not possible, disputes shall be referred to the SADC Tribunal

The UN Convention on the other hand, provides disputing parties with more dispute settlement options. In terms of Article 33(2), as a first step parties are obliged to enter into negotiations, at the request of (at least) *one* of the disputing parties. If agreement cannot be reached through negotiations, the disputing parties may *jointly* seek the good offices of, or request mediation or conciliation by, a third party or make use of any joint watercourse institution established between them. Alternatively the disputing parties can agree to submit the dispute to arbitration or to adjudication by the ICJ.

Arguably the most significant difference to the dispute settlement mechanism set out in the SADC Protocol is Article 33(3) of the UN Convention, which provides for mandatory fact-finding if after six months from the time of the request for negotiations the parties have not been able to settle their dispute through negotiation or any of the other means referred to in Article 33(2). The inclusion into the UN Convention of mandatory fact-finding is due to the importance of facts in relation to the core obligations of the Convention (McCaffrey, 2001). Without establishing the facts it will not be possible to determine whether harm occurring in one state has indeed caused by the other state or whether a specific use is equitable and reasonable. Yet, the drafters of the SADC Protocol have chosen not to make express reference to compulsory impartial fact-finding should the amicable settlement of disputes fail.

4.1.2 Potential Implications from Key Differences

The above examples illustrate that despite the similarities between the SADC Protocol and the UN Convention some differences in their respective texts remain. In regards to factors relevant for equitable and reasonable utilization and the obligation related to the protection of the marine environment, as incorporated into the UN Convention and the SADC Protocol, respectively, such differences in language have little practical repercussion, as discussed above. As for the relationship between the principle of equitable and reasonable use and the no-harm rule, the SADC Protocol is ambiguous and leaves room for interpretation, i.e., it is not really clear that such an inconsistency between the two instruments really exists. But depending on how such an ambiguity is ultimately resolved, it may result in different rights and obligations for states under each instrument. For states that become parties to both the SADC Protocol and the UN Convention, it may be useful to investigate how such states could be affected by a decision favouring the interpretation that there really is a substantive conflict between their respective provisions.

Moreover, the UN Convention is much more detailed on dispute settlement mechanisms than the SADC Protocol. It is thus necessary to assess whether and how the dispute settlement provisions in each instrument could be implemented so as to supplement each other.

This section raises questions of both procedural and substantive nature:

a) Applicable substantive law: could the parties invoke either the SADC Protocol or the UN Convention or do the substantive provisions of one agreement take precedence over the other one?

b) Applicable dispute settlement procedures: as set out in the SADC Protocol, with compulsory adjudication by the SADC Tribunal, or as set out in the UN Convention, with the possibility of submission of disputes to the International Court of Justice.

Applicable substantive law

Let us assume, for purposes of this exercise, that the SADC Tribunal has analysed the ambiguity of Article 3(10)(b) of the SADC Protocol and, based on the language used in that provision, endorsed the interpretation that such a provision deviates from the UN Convention and gives prevalence to the no-harm rule. In such a case, which treaty should guide decision-making in disputes involving states that were parties to both the UN Convention and the SADC Protocol?

Article 21 of the SADC Protocol on Tribunal and the Rules of Procedure Thereof deals with the applicable law for the SADC Tribunal, but is not conclusive in this regard. It lists as applicable law the SADC Treaty, all SADC Protocols as well as subsidiary instruments adopted by Community institutions or organs pursuant to the Treaty or Protocols. In addition, Article 21(b) mandates the Tribunal to develop its own Community jurisprudence having regard to "applicable treaties, general principles and rules of public international law and any rules and principles of the law of states." Hence, both the SADC Tribunal's basis for jurisdiction (see above) as well as the substantive law it can apply is not limited to SADC law but to international law in general. With respect to the above example, the SADC Tribunal could, *in principle*, apply the SADC Protocol or the UN Convention.

The answer to that question stems from Article 3(1) of the UN Convention itself, which stipulates that "nothing in the present Convention shall affect the rights or obligations of a watercourse state arising from agreements in force for it on the date on which it became a party to the present Convention." This provision preserves the validity of existing watercourse agreements. For those countries for which the SADC Protocol is in force and which decide to accede to the UN Convention, the former constitutes such an existing agreement. Consequently the rights and obligations of SADC Member States under the SADC Protocol would remain unaffected as between the parties to the SADC Protocol, if those states became parties to the UN Convention.

At the same time, Article 6(1) of the SADC Protocol also preserves the validity of existing agreements. This is relevant because, as of October 2007, the Democratic Republic of the Congo, Madagascar, and Zimbabwe had not yet become parties to the SADC Protocol, even though they are still expected to do so (Barroso, 2007).[4] Since a state is only bound by an international agreement when it has expressed its consent to be bound by it—which in case of the SADC Protocol needs to be done through ratification or accession (Article 9)—the SADC Protocol is not yet binding on these countries. What

[4] Whereas there is no definitive answer as to why the DRC and Zimbabwe have not yet ratified the SADC Protocol, it appears that the current and/ or recent political difficulties in these countries rather than disagreement with the substantive provisions of the Protocol have prevented them from doing so.

would happen then if DRC and Zimbabwe first became parties to the UN Convention and only later to the SADC Protocol?

Article 30(3) with Article 30(4)(a) of the Vienna Convention stipulate that where treaties relate to the same subject-matter, the treaty later in time prevails between states that are parties to both treaties. If DRC and Zimbabwe first accede to the UN Convention and then to the SADC Protocol, the latter would be the treaty later in time and would thus prevail over the former. However, one needs to bear in mind that the Vienna Convention provides general rules only and it can be argued that it is likely to be heavily circumscribed by rules in agreements that are more specific in geographical coverage and/ or subject matter. With the SADC Protocol and the UN Convention being more specific agreements in this context, the answer as to the relation between SADC Protocol and the UN Convention needs to stem from these agreements itself rather than from the Vienna Convention. In line with Art. 6 (1) of the SADC Protocol this would suggest that the rights and obligations from the UN Convention would take precedence if DRC and Zimbabwe had ratified the UN Convention first. Given the existing differences between the SADC Protocol and the UN Convention (see 4.1 above) this would potentially undermine the harmonised regional framework provided by the SADC Protocol.

Art. 3(3) UN Convention also does not seem to provide recourse here. The provision allows watercourse states to enter into one or more agreements, hereinafter referred to as "watercourse agreements", which apply *and adjust* the provisions of the present Convention to the characteristics and uses of a particular international watercourse or part thereof. This suggests that to some degree the UN Convention is subsidiary also to future agreements, thereby emphasising its framework character. However, whereas Article 3(1) of the UN Convention speaks of "agreements", Article 3(3) speaks of "watercourse agreements" for a particular international watercourse, which, so Article 3(4), needs to be defined in the watercourse agreement. Hence, deriving from Art. 3(3) of the UN Convention that the instrument is also subsidiary to regional framework agreements (e.g. the SADC Protocol in the DRC/ Zimbabwe example) that apply to all shared watercourses in the region, appears to be a too liberal interpretation of Art. 3(3) UN Convention.

Consequently, unless (an)other provision(s) can be found that provide(s) the basis for a convincing argument that there is in the UN Convention a precedence for regional (framework) agreements, it would appear that if DRC and Zimbabwe ratified the UN Convention before the SADC Protocol, they would be bound by the former rather than the latter. In the interest of a coherent framework for the management of basins shared between SADC countries (only) it thus seems preferable if the SADC member states that have not yet ratified the SADC Protocol do so before ratifying the UN Convention.

SADC Protocol and watercourse agreements

The importance of the SADC Protocol in establishing a coherent, harmonised regional framework for the management of shared water resources in SADC is further manifested in Article 6(3) of the SADC Protocol. This article stipulates that watercourse states may enter into watercourse specific agreements, but such agreements *must apply* the provisions of the Protocol to the watercourse in question. Through this provision the SADC Protocol fulfils the important guidance function inherent in its nature as a framework agreement. Essentially the provision requires that all future (basin-wide) watercourse

agreements are concluded along the lines of the SADC Protocol, thus ensuring a high degree of regional harmonisation as far as the management of shared basins is concerned. The first example of a comprehensive basin-wide agreement (including water allocation provisions, water quality control, procedure for notification of planned measures etc.), the Incomaputo-Agreement, has clearly followed the Article 6(3) requirement and is drafted in line with the provisions of the SADC Protocol (Ashton et. al., 2006). At the same time, the SADC Protocol enshrines the basic principles for the management of shared watercourses in the SADC region. For the basins for which no watercourse specific (basin-wide) agreements have been concluded yet, the SADC Protocol sets the basic standards for the utilisation of the shared water resources and the obligations of states in connection with planned developments (prior notification etc.). The SADC Protocol is the most important guiding instrument for the management of water resources among SADC member states at present as well as for the envisaged conclusion of basin specific agreements in the future.

Dispute settlement forum

The answer to the question if any one of the dispute settlement mechanisms (and forums) takes precedence would stem from the agreements themselves. Article 33(1) of the UN Convention gives precedence to regional machinery where it exists. This can be derived from the phrase "the parties concerned shall, *in the absence of an applicable agreement between them*,[5] seek a settlement of the dispute by peaceful means in accordance with the following provisions" of the UN Convention. In other words, if there is an applicable agreement between parties that contains provisions for a dispute settlement procedure, this one takes precedence. In a dispute between SADC Member States, the SADC Protocol is an "applicable agreement between them" in the sense of Article 33(1) of the UN Convention. Consequently, the SADC Protocol dispute settlement procedure takes precedence.

This argument appears to be supported by Article 14 of the SADC Protocol on Tribunal and the Rules of Procedure Thereof. This provision deals with the SADC Tribunal's "basis of jurisdiction" and gives it jurisdiction over disputes relating to the interpretation of the SADC Treaty, the SADC Protocols and of "all matters specifically provided for in any other agreements that States may conclude among themselves or within the community and which confer jurisdiction on the Tribunal." The wording of this provision appears to refer to the substantive scope of other agreements, in this case the UN Convention, rather than their specific dispute settlement arrangements. Hence, whereas the UN Convention does not confer jurisdiction on the Tribunal explicitly, it does so by implication through its Article 33(1). At the same time, the SADC Tribunal has jurisdiction also over matters provided for in other (non-SADC) agreements, which would include disputes involving the interpretation of the UN Convention itself.

Even though regional mechanisms would always prevail according to Article 33(1) of the UN Convention, it could be argued that referring a dispute to the ICJ is an alternative which countries may resort to in order to resolve their dispute amicably, in conformity with Article 7(2) of the SADC Protocol. This provision refers disputes to the SADC Tribunal which "are not settled amicably." Hence, Article 7(2) of the SADC Protocol is not triggered while the parties are still striving to resolve their dispute amicably. Whether indeed this would make it possible for SADC states to bring their dispute before the ICJ instead of the SADC Tribunal depends on the scope of measures falling into the

[5] *emphasis added.*

definition of "amicable resolution" of disputes. The very wording of Article 7(2) of the SADC Protocol suggests that the SADC Protocol does not consider adjudication by a court as a means of "amicable resolution" (hence the sequence of Article 7, i.e., first amicable resolution and, if that fails, adjudication). It would therefore seem that disputes between SADC states over the use of shared water resources need to be adjudicated always by the SADC Tribunal, and not by the ICJ. This avoids forum shopping—where disputing parties approach the one out of two or more possible courts, from which they expect the most positive judgement for them—and the possibility of conflicting judgements.

The situation is of course different for disputes between SADC and neighbouring non-SADC states. In that scenario, the SADC Protocol would not come into play. If the UN Convention became effective, its dispute settlement procedure would be applicable in its entirety, unless other watercourse agreements were in place between the states involved in the dispute.

But before adjudication by the SADC Protocol, how can the more detailed provisions of the UN Convention, on amicable dispute settlement mechanisms, supplement the generic language in Article 7(1) of the SADC Protocol? The UN Convention establishes a compulsory fact-finding procedure that has not been included in the SADC Protocol. One would argue that disputing parties can jointly agree on impartial fact-finding as part of the efforts to achieve an amicable resolution of the dispute. However, could impartial fact-finding, as an "amicable" dispute settlement mechanism, take place under Article 7(1) of the SADC Protocol at the request of only one party, as it is the case under the UN Convention? McIntyre (2007a) argues that the provisions regarding independent fact-finding provide a de-minimus standard for dispute settlement in the absence of specific binding provisions in regional agreements. The SADC Protocol's applicable provisions simply require amicable settlement and, if that is unsuccessful, adjudication by the SADC Tribunal. But the protocol does not contain detailed provisions on which procedure to be followed for achieving amicable settlement. It could thus be argued that the de-minimus standard arguably set by the UN Convention would have to be applied once the latter is in force. Whether this interpretation will take root in practice and be upheld by the courts needs to be seen.

4.2 The UN Convention and SADC Policies

The main water related policy documents at SADC level are the Regional Water Policy (RWP) and the Regional Water Strategy (RWS). The two instruments inform the implementation of the SADC Regional Indicative Strategic Development Plan (RISDP) and the SADC Regional Strategic Action Plan (RSAP), the water related development plans of the SADC and are key elements of the implementation phase of the SADC Protocol. Although themselves not legally binding, the RWP and RWS are important guidelines for the ongoing harmonisation of national water policies and laws in the SADC region.

The RWP and the RWS subscribe to the principle of Integrated Water Resources Management (IWRM) as the underlying basis for water resources management. Both instruments recognise the importance of regional cooperation over water resources and the need to manage water resources in an integrated manner (Malzbender & Earle, 2007), specifically highlighting the need for regional integration (Policy 3.1) as well as

cooperation between all affected (water use) sectors (Policy 3.3) (SADC, 2005). In line with the provisions of the SADC Protocol the RWP calls for the establishment of Shared Watercourse Institutions (SWCI) on each shared watercourse (Policy 9.2.2)

The policy framework set out in the RWP and RWS is increasingly being reflected at national level in SADC states. Some countries in the region have already revised their water laws and policies and in this process accounted for the integration of IWRM principles in their national policy and legal framework. Other countries are still in the process of revising the policies and laws and while doing so are guided by the principles enshrined in the SADC RWP (Malzbender & Earle, 2007). Against that background, the ongoing harmonisation of policies and laws in and between Member States and with SADC policies are likely to ensure a coherent regional water resources management framework.

Of interest is the fact that, perhaps different from otherwise common practice, the RWP and RWS were drafted in 2005 and 2006 respectively, thus a number of years after the adoption of the SADC Protocol. This allowed the drafters of the RWP and RWS to ensure that the two instruments reflect the legal principles set out in the SADC Protocol. With the SADC Protocol and the UN Convention being to the largest extent compatible (if not to say identical), there is therefore also a high degree of compatibility between the UN Convention and SADC water resources management policy framework as set out in the RWP and RWS.

4.3 UN Convention and national laws

An international agreement creates rights and obligation for states in relation to each other. It should not, however, "be assumed that once a treaty has entered into force for state it is then in force *in* that state; in other words that it has become part of its law" (Aust, 2000 p143). Yet, for most international agreements the means for states to meet their obligations resulting from the international agreement lie (with the rare exception of self-executing provisions in international agreements) in their domestic law. In other words, a country's domestic law must provide for the tools to meet its international obligations. If for example a watercourse agreement contains flow allocations between countries, the domestic laws of each country must ensure that not more water is allocated to users in that country than its agreed share of the resource – usually through a licensing system provided for by the country's domestic law. Since the international obligations create obligations (for water users) at the national level, the international agreement needs to be given effect in each country's domestic law.

Broadly speaking there are two ways of giving international agreements effect in domestic law – monism and dualism[6]. Where a monist approach is followed a treaty automatically becomes part of domestic law once it has been concluded in accordance with the constitution and has entered into force for that state (Aust, 2000). In the SADC region Namibia (through section 144 of the Namibian Constitution) follows a monist approach.

Where the dualist approach is followed, the rights and obligations created by treaties have no effect in domestic law unless legislation is in force to give effect to them (Aust, 2000). South Africa is one country in the SADC region that (with few exceptions) follows the dualist approach.

[6] It should be noted that few countries apply pure forms of monism or dualism and numerous variations exist – for the purpose of this study the broader distinction made here will suffice.

An analysis for all SADC countries of how international agreements are to be given effect in their respective domestic law and whether the states have taken the necessary steps (if required) to do so, is beyond the scope of this study. Instead a brief look will be taken whether or not the domestic water (and, where relevant, other environmental) law of SADC countries contains the key elements that are necessary to give effect to international agreements such as the SADC Protocol and the UN Convention.

Whereas a more detailed breakdown could be made, it shall suffice in this study to look at the three broad categories of domestic law provisions that in essence are required as minimum standards in order to effectively implement the UN Convention (or SADC Protocol). These are:

- Water allocation provisions in order to comply with equitable utilisation (or, if available, detailed flow allocations in basin-specific agreements) as far as water quantities are concerned
- Water quality standards as well as monitoring, control and enforcement mechanism
- Environmental Impact Assessment (EIA) Legislation in order to determine the possibility (and degree) of transboundary harm

Table 21: Key elements of domestic law of SADC countries for the implementation of the UN Convention and SADC Protocol

Country	Water Allocation Provisions	Water Quality Standards	EIA Legislation
Angola	yes	yes	yes
Botswana	yes	yes	yes
Democratic Republic of the Congo	no data	no data	no data
Lesotho	yes (but no provisions for monitoring and enforcement)	yes	yes
Malawi	yes	yes	yes
Mozambique	yes	yes	yes
Namibia	yes	yes	yes
South Africa	yes	yes	yes
Swaziland	yes	yes	yes
Tanzania	yes	yes	yes
Zambia	yes	yes	yes
Zimbabwe	yes	yes	yes

With the exception of the DRC, where a national water law is currently being developed (NBI, 2007), all (continental) SADC countries have domestic law provisions for water allocation and water quality standards as well as EIA legislation. Although efforts towards the harmonisation of national laws have been and continue to be made there remain differences in national laws between countries that pose a challenge for transboundary implementation. A lack of capacity in some of the countries to enforce effectively legislation also creates potential difficulties for the effective implementation of international agreements. Thus, whereas in principle SADC countries have the legal means for it, the further harmonisation and the building of capacity would benefit the implementation of international agreements such as the UN Convention and the SADC Protocol.

5 Regional and national benefits arising from the entry into force of the UN Convention

5.1 Provisions of the UN Convention that Could Support the Interpretation of the SADC Protocol

Whereas the SADC Protocol covers most issues regulated in the UN Convention and thus creates a comprehensive legal framework for the management of shared watercourses in the SADC region, the UN Convention (if in force for SADC states) could support the interpretation of some provisions of the SADC Protocol.

Art. 3(6) of the SADC Protocol obliges states to exchange available information and data regarding the hydrological, hydro geological, water quality, meteorological and environmental condition of shared watercourses. The UN Convention provides more detailed rules for instances where information or data is not readily available. Art. 9(2) UN Convention provides that "if a watercourse State is requested by another watercourse State to provide data or information that is not readily available, it shall employ its best efforts to comply with the request but may condition its compliance upon payment by the requesting State of the reasonable costs of collecting and, where appropriate, processing such data or information". Art. 9(3) stipulates that " Watercourse States shall employ their best efforts to collect and, where appropriate, to process data and information in a manner which facilitates its utilization by the other watercourse States to which it is communicated". If, in the context of the SADC Protocol, there is uncertainty as to the format in which data is presented and the responsibility of costs for the collection and processing of data, these provision of the UN Convention would provide valuable guidance for the interpretation of Art. 3(6) of the SADC Protocol.

Likewise, the interpretation of Art. 3(8) of the SADC Protocol, which lists factors for the determination of "equitable and reasonable utilisation", could be supported by Art. 10(2) of the UN Convention. Art. 10(2) makes specific reference to the concept of vital human needs in the determination of "equitable and reasonable utilisation". Whereas the concept of vital human needs is increasingly being recognised in international water law as a key factor to consider in the relationship between different uses, it is not explicitly mentioned in the SADC Protocol. If the UN Convention became binding on SADC States and could thus relied on more strongly in the interpretation of the SADC Protocol, the vital human needs factor would be strengthened in the application of the latter.

Art. 28(4) of the UN Convention could support Art. 4(5) of the SADC Protocol on emergency measures. Whereas Art. 4(5) SADC Protocol and Art. 28 (1)-(3) UN Convention establish the same notification and mitigation obligations for states in cases of emergency, Art. 28(4) goes further an requires, where necessary, the joint, cooperative development of contingency plans for responding to emergencies. The SADC Protocol does currently not establish such obligation, but arguably the development of joint development of contingency plans would be in the interest of the region. With the effect of climate change likely to become more relevant for the

region over time, Art. 28(4) UN Convention could also provide valuable guidance in the development of adaptation strategies to respond to the effects of climate change.

5.2 Revision of Watercourse Agreements

As discussed before, both the UN Convention (Article 3 (1)) and the SADC Protocol (Article 6 (1)) do not affect the rights and obligations of states resulting from existing agreements. At the same time the convention and the protocol encourage states to harmonise such agreements with their respective principles and substantive rules. However, both the UN Convention's wording of "may … consider harmonising" and the SADC Protocol's wording of "may harmonise" do not seem to construct a strong obligation to do so and arguably remain encouragements. Be that as it may, it would seem that in relation to SADC States the UN Convention does not add an additional requirement to what the SADC Protocol already does.

Particularly in regards to pollution, Article 21(2) of the UN Convention requires states to take steps to harmonise their policies with respect to the prevention, reduction and control of pollution in international watercourses, thus providing guidance for states to cooperate in those matters. The SADC Protocol contains a similar, but more far reaching provision in this regard. Article 4 (2) (b) (ii) determines that "watercourse states shall take steps to harmonise their policies and legislation in this connection." First this requirement is highlighted by making it a separate subsection (which is not the case in the UN Convention). More importantly it requires states to harmonise not only their policies but also their legislation, which is more far reaching since, unlike policies, legislation is legally binding.

It would thus seem that, although the UN Convention encourages the adjustment to outdated provisions (of policy only), it reaches less far than the SADC Protocol and adds no additional element compared to the latter one. The UN Convention's policy harmonisation provisions would, though, provide guidance in relation to non-SADC Member States where the SADC Protocol is not applicable. For SADC states sharing basins with non-SADC states it is in their interest to harmonise their policies and legislation not only with fellow SADC members, but also with the non-SADC riparians in order to create a harmonised approach to the management of their shared watercourses. Yet, in relation to non-SADC states there is currently no agreement requiring such harmonisation efforts. The entry into force of the UN Convention with its encouragement to harmonise policy would provide SADC countries with additional arguments (and a guiding framework in the Convention itself) in relation to their non-SADC neighbours. Although not directly provided for in the UN Convention this might in the long-run also aid the harmonisation of legislation with non-SADC members states, based on the harmonised policies.

5.3 Dispute Settlement and Prevention

The adoption of the UN Convention could possibly add benefits as far as the prevention or resolution of disputes between SADC Member States is concerned. As illustrated above, even if the UN Convention was in force, it still gives precedence to regional machinery, hence the dispute resolution procedure provided for in the SADC Protocol would take precedence. However, if one followed the interpretation that the fact-finding

requirement set forth by the UN Convention sets minimum standards for dispute resolution procedures and could thus also be relied on in the SADC context, this would provide SADC Member States with additional options for dispute resolution not provided for in the SADC Protocol itself.

The adoption of the UN Convention would, even more so, create benefits for dispute prevention and settlement with neighbouring non-SADC States. There are no binding regional or basin-wide watercourse agreements in place between SADC States and their non-SADC neighbours they share basins with. Consequently, there are no universally agreed procedures for the resolution of disputes over shared watercourses. The UN Convention would provide such procedures and thus put the settlement of disputes related to watercourses shared between SADC and non-SADC Member States on a solid legal footing.

5.4 A Common Legal Framework among SADC and non-SADC Member States

The ratification of the UN Convention would be of great relevance for basins shared with non-SADC member states also in regards to substantive principles and rules. The SADC Protocol is not applicable to non-SADC Member States and thus cannot fulfil its guidance function beyond the SADC region in basins like the Nile and the Congo Instead, this role could be played by the UN Convention once it comes into force. Article 3(3)-(4) of the UN Convention is the equivalent provisions to Article 6(3) and 6(4) of the Protocol and encourage watercourse states that want to conclude watercourse specific agreements to do so in line with the provisions of the UN Convention.

It could be argued that the key principles of the UN Convention are accepted as customary international law anyway and thus need to be adhered to even without the coming into force of the UN Convention. Yet, with the coming into force of the UN Convention (and the respective SADC and non-SADC states being party to it) these principles would become applicable treaty law between these countries, thus arguably giving them further weight and clarifying their scope and extent. Furthermore, only the three key principles of the UN Convention are clearly accepted as customary international law. The coming into force of the UN Convention would make the full set of substantive provisions as well as its dispute settlement machinery applicable law to state parties.

With the SADC Protocol and the UN Convention to the largest extent setting forth the same principles, SADC Member States would benefit from the same legal clarity and harmonised basin management framework that they enjoy with fellow SADC Members also in relation to non-SADC Member States. Given the fact that SADC Member States share not only Africa's largest river (Congo) but with the Nile river also one of the most politically and institutionally complex basins in Africa, such clarity and guidance provided for by the UN Convention would appear to be beneficial to all parties involved. In the Pangani, Congo and Nile basins, once in force, the UN Convention would be the first comprehensive overarching legal framework applicable on a basin scale. As the SADC Protocol does for SADC states the UN Convention could provide the direction for the further development of a legal framework for these basins through its encouragement to harmonise existing agreements with the principles of the UN Convention (Article 3(2))

and to enter into future watercourse agreements applying the provisions of the Convention to the characteristics of the watercourse in question (Article 3 (3)).

6 Conclusion

The Member States of the SADC are committed to managing their shared water resources in a cooperative manner within the framework of international law. To this end they have concluded between them the SADC Protocol of Shared Watercourses, which sets out the key principles guiding the management of shared watercourses in the region. Whereas some differences remain the provisions of the SADC Protocol are to the largest extent identical with the provisions of UN Convention and do fully endorse the principles of international water law enshrined in the latter. With the SADC Protocol having precedence over the UN Convention, the benefits of the entry into force of the UN Convention for SADC states would merely lie in interpretational guidance (for some SADC Protocol provisions, e.g., on the duty to address emergency situations, rather than creating a new or more comprehensive legal framework. In addition the UN Convention would offer the fact-finding procedures as an additional dispute settlement mechanism on which SADC Members States could potential rely.

The adoption of the UN Convention would on the other hand provide SADC states with a number of tangible benefits in relation to neighbouring non-SADC states they share basins with. It would therefore seem to be in the interest of SADC states as well as their neighbours, to adopt the UN Convention and extend the harmonised legal framework that SADC states have created among themselves to basins that are shared with non-SADC neighbours.

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Annex: A Comparison of the key issues covered in the UN Convention vs the SADC Protocol

UN Convention		SADC Protocol Equivalent	
Article	**Key issues**	**Article**	**Key Issues**
Part 1: Introduction			
1 *Scope*	Use of international watercourses – other than navigation, as well as to measures of protection, preservation and management related to the uses of those watercourses and their waters	*2* *Objective*	To promote closer cooperation over the use and management of shared watercourses; Promote formation of shared watercourse institutions.
2 *Use of terms*	Watercourse, International watercourse, Watercourse state and Regional economic integration organisation – defined.	*1* *Definitions*	Defines the key terms used in the Protocol – most taken from the UN Convention.
3 *Watercourse agreements*	The Convention does not affect rights and obligations of states resulting from prior agmts. States to consider harmonising present agmts with Convention; Scope of agmts to be defined. States not party to a specific agmt will not have their rights under the Convention affected by such an agreement.	*6* *Shared Watercourse Agreements (1-5)*	The Protocol wont affect rights and obligations of states under present agmts; States to consider harmonising present agmts with Protocol; Scope of agmts to be defined; States not party to a specific watercourse agmt will not have their rights under the Protocol affected by the agmt.
4 *Parties to watercourse agreements*	Which states may join agmts and right to consultation if not part of agmt	*6* *Shared Watercourse Agreements (6 & 7)*	Which states may join agmts and right to consultation if not part of agmt
Part 2: General Principles			
5 *Equitable and reasonable utilisation and participation*	How an international watercourse is to be used, managed, developed etc; Principle of equity; Rights and obligations.	*3* *General Principles (7)*	How an international watercourse is to be used, managed, developed etc; Principle of equity; Rights and obligations.
6 *Factors relevant to equitable and reasonable utilisation*	Need to take into account a whole range of relevant factors (a to g); Consultations in a spirit of cooperation; All relevant factors to be balanced	*3* *General Principles (8)*	Need to take into account a whole range of relevant factors (i to vii); All relevant factors to be balanced
7 *Obligation not to cause significant harm*	States to take measures not to cause harm; If harm caused then mitigate, negotiate, compensate etc.	*3* *General Principles (10)*	States to take measures not to cause harm; If harm caused then mitigate, negotiate, compensate etc.
8 *General obligation to cooperate*	Sovereign equality, territorial integrity, mutual benefit and good faith; Consider establishment of joint commissions.	*3* *General Principles (2, 5 & 7)*	Use of watercourse within state's territory is open without prejudice to sovereign rights, in accordance with principles of the Protocol; Close cooperation between states about projects; Duty to cooperate.
9[7] *Regular exchange of data and information*	Readily available hydrological and ecological data; Try hard to get data not readily available when asked to do so; Try to gather and store data in a way which makes it easier for other states to use	*3* *General Principles (6)*	Shall exchange available information and data;

[7] Blue highlights indicate an area included in the one and missing from the other agreement

10 *Relationship between different kinds of uses*	No priority of uses; Vital human needs given "special regard"	*NA*	
Part 3: Planned Measures			
11 *Information concerning planned measures*	Communicate about plans;	*4* *Specific Provisions (1a)*	Communicate about plans;
12 *Notification concerning planned measures with possible adverse effects*	If a state plans an action with negative impacts on another watercourse state it must give adequate warning – including relevant technical info.	*4* *Specific Provisions (1b)*	If a state plans an action with negative impacts on another watercourse state it must give adequate warning – including relevant technical info.
13 *Period for reply to notification*	6 months to study a notification; possible to extend another 6 months.	*4* *Specific Provisions (1c)*	6 months to study a notification; possible to extend another 6 months.
14 *Obligations of the notifying State during the period for reply*	Cooperate by providing needed data etc; Not implement the planned measures	*4* *Specific Provisions (1d)*	Cooperate by providing needed data etc; Not implement the planned measures
15 *Reply to notification*	Reply ASAP with reasons if objecting.	*4* *Specific Provisions (1e)*	Reply ASAP with reasons if objecting.
16 *Absence of reply to notification*	If no response – then can proceed – but in accordance with 5 & 7; Has an impact on compensation claims	*4* *Specific Provisions (1f)*	If no response – then can proceed – but in accordance with Article 3 (7 & 10); Has an impact on compensation claims
17 *Consultations and negotiations*	If in disagreement about the proposed action a state must communicate this to the other state; Rights and legitimate interests of the notifying state must be taken into account; During the consultation period the planned measures will not be implemented for 6 months.	*4* *Specific Provisions (1g)*	If in disagreement with a proposed action a state must communicate this to the other state; Rights and legitimate interests of the notifying state must be taken into account; During the consultation period the planned measures will not be implemented for 6 months.
18 *Procedures in the absence of notification*	If one state thinks the other is planning activities which may impact it then it can send a request to comply with article 12; If disputed then enter into consultations as per article 17.	*4* *Specific Provisions (1h)*	If one state thinks the other is planning activities which may impact it then it can send a request to comply with article 4,1,b; If disputed then enter into consultations as per article 4,1,g.
19 *Urgent implementation of planned measures*	Measures to protect "public health, public safety" etc can be taken immediately; Must notify other states and provide data.	*4* *Specific Provisions (1i)*	Measures to protect "public health, public safety" etc can be taken immediately; Must notify other states and provide data.
Part 4: Protection, Preservation and Management			
20 *Protection and preservation of ecosystems*	"Watercourse states shall … protect and preserve the ecosystems of international watercourses". IE – whether they impact on other states or not.	*4* *Specific Provisions (2a)*	"Watercourse states shall … protect and preserve the ecosystems of international watercourses". IE – whether they impact on other states or not.
21 *Prevention, reduction and control of pollution*	Pollution is defined; States shall prevent, reduce, control etc pollution which impacts on another watercourse state; Harmonisation of policies; Consult to agree on measures and methods to prevent, reduce and control pollution.	*4* *Specific Provisions (2b)*	States shall prevent, reduce, control etc pollution which impacts on another watercourse state; Harmonisation of policies; Consult to agree on measures and methods to prevent, reduce and control pollution.
22 *Introduction of alien or new species*	Take measures not to introduce alien species…which may have detrimental effects to the ecosystem…harming other watercourse states	*4* *Specific Provisions (2c)*	Take measures not to introduce alien species…which may have detrimental effects to the ecosystem…harming other watercourse states

23 Protection and preservation of the marine environment	Commit to protecting the marine environment (taking into account international rules and standards) irrespective of damage to other states.	*4 Specific Provisions (3a)*	Commit to protecting the *aquatic* environment (taking into account international rules and standards) irrespective of damage to other states.
24 Management	Commit to entering into consultations on management of the watercourse; "Management" is defined.	*4 Specific Provisions (3b)*	Commit to entering into consultations on management of the watercourse.
25 Regulation	Referring to physical or "hydraulic" infrastructure to regulate flow; States to cooperate and share costs.	*4 Specific Provisions (3b)*	Referring to physical or "hydraulic" infrastructure to regulate flow; States to cooperate and share costs.
26 Installations	Protect and maintain installations on their territory.	*4 Specific Provisions (3c i & ii))*	Protect and maintain installations on their territory.
Part 5: Harmful Conditions and Emergency Situations			
27 Prevention and mitigation of harmful conditions	Conditions resulting from human or natural causes shall be prevented or mitigated.	*4 Specific Provisions (4)*	Conditions resulting from human or natural causes shall be prevented or mitigated; A permit must be granted for the discharge of waste into watercourses.
28 Emergency situations	"Emergency" defined; Shall notify other affected states and international organisations; Take mitigatory measures; Joint contingency plans.	*4 Specific Provisions (5)*	Shall notify other affected states and international organisations; Take mitigatory measures;
Part 6: Miscellaneous Provisions			
29 International watercourses and installations in time of armed conflict	Shall be protected in accordance with international law.	*4 Specific Provisions (3c)*	Shall be protected in accordance with international law.
30 Indirect procedures	States can communicate via indirect means.	*NA*	
31 Data and information vital to national defence or security	States do not have to give away data which would compromise national security etc.	*NA*	
32 Non-discrimination	Private individuals have equal access to the legal system of other watercourse states.	*3 General Principles (10c)*	Private individuals have equal access to the legal system of other watercourse states.
33 Settlement of disputes	Should states fail to reach agrmt through negotiations on an issue covered by the Convention they can pursue other avenues, including: Arbitration tribunal or; International Court of Justice. Provides for compulsory fact-finding at the request of one party	*7 Settlement of Disputes*	States strive to resolve disputes amicably; Disputes between states about the provisions of the Protocol to be referred to the SADC Tribunal; Disputes between a state and SADC handled according to the SADC Treaty.
Part 7: Final Clauses			
34 Signature		*8 Signature*	
35 Ratification, acceptance, approval or accession	Instruments to be deposited with UN Secretary-General	*9 Ratification*	Ratified by states according to their constitutional processes.
36 Entry into force	90 days after the receipt of the 35th ratification instrument.	*10 Entry into Force*	30 days after the deposit of two thirds of the ratification instruments with the Executive Secretary.
37 Authentic texts	Main UN languages.		

		5 Institutional Framework for Implementation (1)	Institutional mechanisms responsible for the implementation of the Protocol (Committee of Water Ministers, Committee of Water Senior Officials, Water Sector Coordinating Unit, Water Resources Technical Committee, Shared Watercourse Institutions)
		5 Institutional Framework for Implementation (2)	Functions of the SADC Water Sector Organs
		5 Institutional Framework for Implementation (3)	Shared Watercourse Institutions