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EXPLOTACIÓN DE RECURSOS NATURALES Y DESARROLLO EN ÁFRICA: ¿UN
NUEVO REPARTO O MALDICIÓN DE LOS RECURSOS?

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Water Conflict and Cooperation in Southern Africa

Water management of hydrological basins has been the source of low intensity conflicts, specially when shared by more than one state, due to the differentiated water and energy management perspectives, and relatively to isolated water auto-efficiency which every states tends to pursue in an isolated manner. Thus the author shall analyze and demonstrate the superiority of regional cooperation perspectives to the detriment of individual self-efficiency. Issues on the growing securitization of water resources in the political, social and environmental spheres are of growing importance in the cases of the Okavango and Incomati basin, and the Lesotho Highlands Water Project (LHWP).

Water, Conflict, Cooperation.

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Rivalries over water have been the cause of dispute since the Neolithic revolution ...when man began cultivating food. Our language reflects these ancient roots: “rivalry” comes from the Latin *rivalis*, or “one using the same river as another”.

Aaron T.Wolf.¹

INTRODUCTION

The objective of this paper is the analysis of water conflict and cooperation and how economic, environmental and security linkages have led to the predominance of the cooperative approach. Analyzing water issues has a clear linkage to human security and development. The availability of water in quantity, the degradation of water quality and the environment undoubtedly contribute to the aggravation of social tensions, and have the potential to contribute to conflicts in Africa and worldwide. Still, many recent studies show that these “water wars” tend to occur only when conjugated with other variables of friction, at the intra and inter-state level. Achieving water-related Millennium Development Goals (MDGs) directly impacts on the success of several other MDGs such as those on poverty alleviation, health, hunger, education and gender equality. Providing water supply and sanitation services has a direct influence on children’s health and school attendance, and liberates woman from “catering” exclusively towards household water needs. These provide important economic and social benefits for society.² Good water services confer many benefits, on the contrary, the costs of inadequate provision of water supply and sanitation services can be significant, in terms of lost opportunities and adverse impacts on economic and social development, and environmental sustainability.³

South African experts consider that the major threats to water resources in the Southern African region include⁴:

The uneven spatial distribution of precipitation with major differences from north to south and east to west. The four economically most developed countries – South Africa, Botswana, Namibia, and Zimbabwe – are all below the global average of 860

¹ Worldwatch Institute, *State of the World: Global Security 2005*, “Managing Water Conflict and Cooperation”, Earthscan 2005

² UNDP, “Beyond scarcity: Power, poverty and the global water crisis” New York, 2006, <http://hdr.undp.org/en/media/HDR06-complete.pdf>, accessed 16.06.2010.

³ OECD, “Managing Water for All: An OECD Perspective On Pricing And Financing, **Key Messages For Policy Makers**”, 2009.

⁴ Anthony Turton. “The State of Water Resources in Southern Africa: What the Beverage Industry Needs to Know”. http://www.anthonyturton.com/admin/my_documents/my_files/8F6_The_State_of_Water_Resources_in_Southern_Africa1.pdf, accessed 14.06.2010.

mm/yr. Africa has the lowest Mean Annual Runoff (MAR) / Mean Annual Precipitation (MAP) ratio in the world, meaning that water derived from MAP later converted into water flow in rivers, known as MAR is the most reduced.⁵ Thus, the World Bank recognizes water as a fundamental impediment to development, making Africa a “hostage to hydrology”.

In the SADC region most cities or centers of development such as Johannesburg, Pretoria, Gaborone and Windhoek are not located on rivers, lakes or seafronts, but on watersheds. The development of these centers was based on mineral resources, they were designed as temporary, and issues such as sustainability were never considered. The development of hydraulic infrastructure such as dams, pipelines and inter-basin transfers (IBT) was the answer to developmental and economic growth needs. This highly developed system of IBT came to be as a result of strategic long term planning by South Africa, as may be asserted by reports dating as far back as 1970. These decisions originated major implications towards the economic development of the whole Southern Africa region.

The conjugation of the two above-mentioned facts, centers of development located on watersheds and highly developed IBT, originate the fundamental need to manage effluent return-flows. Thus, major cities are situated upstream of water storage facilities, which means sewage flows into drinking and industrial process-water. Historically salts, nutrients and cyan bacteria build-up is as threatening to an irrigation-based civilization as water paucity.

Furthermore the mining sector activity, in the past and present, results in pollution flows into drinking and industrial water systems, over-allocation of rivers, reduced capacity to dilute pollution and over a century of unregulated mining, with inactivated mines' toxic and radioactive wastewater infiltrating river systems.

In Southern Africa water issues constitute both environmental vulnerabilities and threats to regional security, but also opportunities for cross-border dialogue. Joint collection of data and regional cross-border management may not induce security per se, but help build trust and strengthen cooperation. The environment has turned into a lens of political observation susceptible to being securitized based on the fact that it is considered as the “ultimate security”. Present day empirical observation permits us the view that the environmental sector has two agendas, a scientific and political agenda.⁶ Both are in permanent interaction and tend to invade each others' territories. The scientific agenda, mainly based on natural sciences, research institutions and NGOs

⁵ Peter H. Gleick. *Water in Crisis: A Guide to the Worlds Fresh Water Resources*. New York Oxford University Press.1993.

⁶ Buzan, B., Waever, O. & de Wilde, J. 1998. *Security: A New Framework for Analysis*. London: Lynne Rienner.

trying to present proof for or against the case of necessity of securitization of specific environmental issues. The political agenda is about the apprehension or recognition of state and public awareness in relation to the issues presented by the scientific agenda, acceptance of responsibilities in dealing with the issues and consequent practical questions such as the international and institutional forums of discussion, allocation of resources and strategic options relative to the issues presented by the scientific agenda. In water issues the engagement of the private sector has also become a reality as can be ascertained through the participation in public forums. A proliferation of public forums of discussion underline the importance of water include UN CEO Water Mandate, the Global Water Partnership, the World Business Council for Sustainable Development, the World Water Forum, World Water Council, and the World Economic Forum's Global Agenda Council on Water.

HISTORICAL PERSPECTIVE

Among the many things I learnt as a president, was the centrality of water in the social, political and economic affairs of the country, the continent and the world

Nelson Mandela.⁷

Understanding water conflict and cooperation in Southern Africa necessarily implies having a historical perspective of South African history. South Africa as the regional hegemon on the military and economic front in Africa is the most industrialized state responsible for a significant portion of industrial output in the African continent; water resources constitute a major limitation to growth in economic capacity, besides providing water as a utility to its growing population. The importance of hydrology in Southern Africa can be asserted by the fact that the first known records of water resource management in South Africa were written by J.C. Brown, a Cape Town botanist, in the 1870s.⁸ At a later date South African history is punctuated by military and political power projection and the need to capture water resources so as to

⁷ UNDP, "Beyond scarcity: Power, poverty and the global water crisis" New York, 2006, <http://hdr.undp.org/en/media/HDR06-complete.pdf>. <http://hdr.undp.org/en/reports/global/hdr2006/press/>. Accessed 10.06.2010.

⁸ John Croumbie Brown. *Hydrology of South Africa; or Details of the Former Hydrographic Condition of the Cape of Good Hope, and Causes of its Present Aridity, with Suggestions of Appropriate Remedies for this Aridity*. Henry S. King & Co, London, 1875. Accessed at American Libraries, <http://www.archive.org/details/cu31924014446276>, on 28.06.2010.
John Croumbie Brown. *Water Supply in South Africa and the Facilities for the Storage of it*. Edinburgh: Oliver & Boyd, Tweeddale Court. London: Simpkin, Marshall, & Co, 1877. <http://www.archive.org/stream/cu31924014446268#page/n7/mode/2up>, on 28.06.2010.

guarantee its economic future, earning it the classification of a hydro-hegemon.⁹ The relationships between domestic and international water cooperation and conflict and the link with non-water related events have been studied and are of interest to the regional case.¹⁰ Historically the importance of water, economic development and the energy nexus is classifiable into three fundamental phases:

1. The period between 1948 and 1974. In 1948 the National Party came out victorious in the South African elections, consolidating its power agenda and implementing its policy of Grand Apartheid. Economic development was a major priority conjunctly with water management and hydrology reconnaissance in the Witwatersrand where the goldfields industrial complex dominated. These options set the stage for South Africa's economic and political isolation. Harold Macmillan, the British Prime Minister in 1960, made his "Wind of Change" speech while visiting South Africa, underlining the emerging spirit of independence in the colonies. Prime Minister Verwoerd replies in favor of South African apartheid policy in 1961 at the Commonwealth Conference in London, leading to the Republic of South Africa's (RSA) expulsion. Conflict marked the RSA relations from then on with the outside world, contaminating the hydrological domain. Furthermore African liberation movements started ranging in Angola, South West Africa, Rhodesia, Mozambique and Lesotho.

The construction of hydrological infrastructure such as the Orange River Project (ORP), permitting the supply of the Witwatersrand, through ramifications such as the construction of the H.F.Verwoerd Dam in 1971 (still the largest dam in South Africa), with its IBT tunnel of 82 km (the longest in the world at the time) allowing the expansion of the economic hub situated in the vicinity of the Bay of Port Elizabeth (today known as Nelson Mandela Bay). H.F.Verwoerd himself in the beginning of the 1970's alluded to the technical prowess as a sign of white civilization ingeniousness leading to progress in the whole of Southern Africa. Meanwhile in 1969 South Africa and Portugal recognized the importance of water resources and economic development establishing agreements on the Cahora Bassa Project on the Zambezi River in Mozambique, and on the Cunene River in Angola.¹¹

⁹ Anthony Turton. "Hydro hegemony in the Context of the Orange River Basin". Workshop on Hydro Hegemony hosted by Kings College and School of Oriental and African Studies (SOAS), 20-21 May 2005, London.

¹⁰ Meredith Giordano, Mark Giordano, Aaron Wolf. "The Geography of Water Conflict and Cooperation: Internal Pressures and International Manifestations", *The Geographical Journal*, Vol. 168, No. 4, Water Wars? Geographical Perspectives (Dec. 2002), pp. 293-312 Published by: Blackwell Publishing on behalf of The Royal Geographical Society (with the Institute of British Geographers).

¹¹ **Treaty**. 1969(a). Agreement between the Governments of the Republic of South Africa and Portugal Relative to the Cahora Bassa Project. **Treaty**. 1969(b). "Agreement between the Republic of South Africa and the Government of Portugal in Regard to the First Phase Development of the Water Resources of the Kunene River Basin". <http://www.fao.org/docrep/w7414b/w7414b11.htm>. Accessed 20.06.2010.

2. From 1974 to 1990, a phase marked by the coup d'état in Portugal and consequent domino-effect through the rapid decolonization of its former colonies, of which the wars of liberation in Angola and Mozambique, which turned into civil wars, are of special interest to this paper. The presence of Cuban and East German troops in these two recently independent countries was interpreted as evidence of a total onslaught by Soviet imperialism. This led to the consolidation of a Garrison State mentality in South Africa, leading to a strong military response to any threat and the securitization of economic development and water resource management. South Africa invaded Angola in 1975 and started to destabilize Mozambique by supporting Renamo, the resistance movement that competed for power with Frelimo. The killing of Steve Biko in 1977 caused a wave of international indignation, which resulted in the Security Council of the United Nations imposing an arms embargo on South Africa.

By the end of the 1970s South Africa was designing a constellation of politically independent states with a common view on security, economy and politics which was to be known as the Constellation of Southern African States (CONSAS). This regional non-aggression pact, which would congregate the countries south of the Cunene and Zambezi rivers, was to use economic and infra-structural development projects so as to stimulate regional cooperation. Unexpectedly in 1980 Robert Mugabe won the elections in Zimbabwe, refused to join the proposed CONSAS, and instead together with Botswana, Lesotho, Swaziland, Mozambique, Angola, Zambia, Malawi and Tanzania, launched the Southern African Development Co-ordination Conference (SADCC). This new forum, dubbed as a "counter-constellation", had as its main objective mutual development cooperation and the reduction of collective dependency on South Africa. At its Fourth SADCC Consultative Conference, held in Lusaka in 1984, the linkage between water and development was also acknowledged when President Kaunda of Zambia recognized that lack of water had resulted in food insecurity and reduced agricultural production in Southern Africa.

South Africa had an increasingly isolated state status similar to that of Israel, with whom development and transfers of technology were undertaken in sectors such as energy, agriculture, water management and even the transfer of nuclear technology as was most recently revealed.¹² Curiously both states have domestic and international water dynamics marked by the larger political and historical context.¹³

¹² Sasha Polakow-Suransky. *The Unspoken Alliance: Israel's Secret Relationship with Apartheid South Africa*. Pantheon Books. 2010. Pp 6-9.

¹³ Meredith Giordano, Mark Giordano, Aaron Wolf. "The Geography of Water Conflict and Cooperation: Internal Pressures and International Manifestations", *The Geographical Journal*, Vol. 168, No. 4, *Water Wars? Geographical Perspectives* (Dec. 2002), pp. 293-312 Published by: Blackwell Publishing on behalf of The Royal Geographical Society (with the Institute of British Geographers).

Growing insecurity also led to the founding of the South African State Security Council (SSC) in 1972, a fundamental organ of formulation of South African foreign policy from then onwards.¹⁴ The year after its founding the White Paper on Defense introduced the concept of “total strategy”, with all aspects of foreign policy being securitized, including water resources.¹⁵

In terms of use of water as an instrument of war, southern Africa was center-stage to various acts: i) It is said that South Africa may have promoted the overthrow of Lesotho’s government in 1986, thus engaging with in interim government over the LHWP ii) in 1988 between Angola and Namibia when Cuban and Angolan forces attacked the Calueque Dam in Angola, threatening water supply to Northern Namibia; with the pipeline to Owamboland being destroyed.iii) in 1990 the South African Government cut the water to Wesselton Township following protests over deficient sanitation and living conditions.¹⁶

3. The 1990’s is home to a Post Cold War period, with the collapse of apartheid, resulting in the elimination of great power Politics in Southern Africa. Namibia became independent almost immediately after Nelson Mandela’s release in 1990. SADCC was transformed from a governmental anti-apartheid organization of the frontline states into a regional organization for political and economic integration, the Southern African Development Community (SADC), adapting its objectives to a friendlier regional environment.¹⁷ Minor border disputes over the Orange River occurred between Namibia and South Africa, and over the Incomati between Mozambique and South Africa, although none was a driver of conflict. Still this did not impede South African water security interests leading initiatives, such as South Africa’s 1998 deployment of troops to Lesotho, in response to political turmoil in the mountain kingdom, so as to protect the infra-structure of the LHWP.

¹⁴ D.Geldenhuis. *The Diplomacy of Isolation: South African Foreign Policy Making*. Johannesburg: Macmillan South Africa. 1984. Pp 93.

¹⁵ *Ibid.* pp 140.

¹⁶ Peter H.Gleick, “Water and Conflict: Fresh Water Resources and International Security”, in Sean M. Lynn-Jones, Steven E. Miller. *Global Dangers: Changing Dimensions of International Security*. The MIT Press, 1995. Page 98.

¹⁷ Southern African Development Community (SADC). “Declaration and Treaty of SADC”, <http://www.sadc.int/index/browse/page/119>, accessed 14.06.2010.

THEORETICAL FRAMEWORK OF CONFLICT AND COOPERATION

Conca and Dabelko state that ultimately transboundary environmental cooperation can contribute to peace building.¹⁸ The typical causal pathway to conflict involves factors such as: i) Dependency on natural resources ii) Environmental scarcity which may be supply-induced scarcity (when quality or quantity of resources decreases), demand-induced scarcity (increase in population) and structural scarcity (greater asymmetries in resource access).¹⁹ This may lead to social effects such as: migration of affected populations, growth in population segmentation such as ethnic differences, disruption of institutions, reduced agricultural activity and economic productivity. Environmental discrimination understood as asymmetrical access to natural resources, is a main reason for group marginalization leading to the stimulation of population action as was registered by the unrest in Wesselton Township. Resource capture may also occur when elites gain control over scarce resources. This is often connected with modernization and development processes with asymmetrical distributive implications. Another possible road to conflict is ecological marginalization due to conjunct population growth and asymmetrical resource access. The negative impact related with loss of livelihood may fuel conflicts in the community, with political forces capitalizing on social grievances so as to mobilize popular support which well fomented may lead to violence. Unfulfilled expectations may certainly be a major feeding source for dishonest leaders.

Researchers such as Collier and Hoeffler state that invariably conflict may be better explained by grievances or greed.²⁰ Water may act as an irritant, but these authors highlight greed as the major driving force for those who have a special interest in using violence to achieve goals. Unhappiness with a situation ends in violence only when someone is able to extract economic profit in order for violence to occur, motivation for violence is a way of attaining control over resources. This violence may be defused by society through political institutions and society or fomented through poor governance and corruption. Regional and global occurrences can increase or decrease probabilities of conflict. Through a mix of factors, such as the advent of elections or a natural disaster, windows of vulnerability may originate disturbances or even conflict.

¹⁸ Conca K. and Dabelko G. D. (Eds.) *The Case for Environmental Peacemaking*, Washington, Woodrow Wilson Center Press. 2003.

¹⁹ Homer-Dixon, T. *Environment, Scarcity, and Violence*. Princeton: Princeton University Press. 1999.

²⁰ Collier P. And Hoeffler A. "Greed and Grievance in Civil War". World Bank Policy Research Working Paper No. 2355 October. 2001.

Overcoming the Costs of Non-Cooperation: Rights, to Needs to Interests

Up-stream riparian's often invoke that water rights originate where the water falls. Down-stream riparians claim absolute river integrity, claiming rights to an undisturbed system or historic rights based on their history of use. In almost all of the disputes which have been resolved the paradigm used for negotiations have been "needs-based" in detriment of "rights based" variables such as relative hydrography or chronology of use. Needs are defined by irrigable land, population, or requirements of a specific project. Speculation on why negotiations vary from rights-based to needs-based criteria have various motives: Negotiation psychology, moves along three stages: i) adversarial stage, with each side defining its position or rights, ii) reflective stage, where the needs of each faction presenting their position is analyzed, c) integrative stage, where negotiators brainstorm together to address each sides underlying interests. Negotiations seem to follow this pattern: rights-»needs-» interests. Where each negotiator may initially see his own rights as superlative, over time one tends to empathize to some level and notice that the "other", one's enemy, requires the same amount of water for the same use with the same methods as us.²¹

A second motive for the change from rights to needs, may simply be that rights are not quantifiable and needs are. Thus, if two countries insist vehemently on their respective rights, upstream versus downstream, there is no common frame of reference along which to bargain. A needs-based criterion permits the quantification of each parties needs considering for example: irrigable land or population. Even with diverse interpretations, once both parties feel comfortable that their minimum quantitative needs are met, negotiations ultimately are more objective to bargaining over numbers which possess a common spectrum.

A further approach in the development of transboundary cooperation has been the total obliteration of rights and needs in detriment of the evaluation of the benefits in the basin from a regional viewpoint as is observable in the cases of the Lesotho Highlands Water Project (LHWP), and Okavango and Incomati basin. This requires that riparian states not look at water as a commodity to be divided, a zero-sum, rights based approach, and rather develop an approach which equitably allocates the benefits derived there from in a positive-sum and integrative approach.

In many water-related treaties water issues are dealt with separately from other political or resource issues. The separation of "high" politics and "low" resource economical politics means the negotiation process shall often achieve a sub-optimum result. However an emerging trend has been the establishment of linkages between

²¹ Aaron T.Wolf. "Conflict and Cooperation over Transboundary Waters". UNDP, Human Development Report 2006 – Occasional Paper. http://hdr.undp.org/en/reports/global/hdr2006/papers/wolf_aaron.pdf, accessed 14.06.2010.

water and politics but also between water and other resources. Thus these multi-resource linkages constitute additional opportunities towards the generation of solutions, allowing for greater economic efficiency through a basket of benefits approach. These include options such as:

- Political linkages, although formally no treaty includes provisions stipulating political or capital linked to water negotiations, explicitly this sometimes takes place such as South African agreement on water issues with Lesotho depending on Lesotho's relations with ANC nationalists in the apartheid era, implicitly peace talks established a close link between political and resource issues.
- Financial incentives frequently induce success in difficult negotiations.²²
- Energy resources are an increasingly common linkage between water and energy resources. An excellent example is the LHWP where South Africa financed a hydroelectric and water diversion facility in Lesotho, acquiring rights to drinking water for Johannesburg, while Lesotho receives all the power generated.
- Data can be used as a form of negotiating capital due to the growing complexity of water management models which means that water data are increasingly vital to management agencies. Breakthroughs in negotiations may be attained through data-sharing. Data issues may also allow the development of patterns of cooperation in the absence of more contentious issues, particularly water allocations. Examples include the fact that third parties may be entrusted with data gathering or a joint body of representatives from riparian states may find themselves encumbered with such details.

A study by the Oregon State University undertook the objective of understanding water conflict and cooperation by compiling every reported interaction between two or more nations, conflictive or cooperative, involving water as a scarce or consumable commodity or as a quantity to be managed. This study incorporated water when it was the driver of conflicting events, during the last 50 years. Its major conclusions were that in modern times there have been very few wars fought over water resources, with the dominance of mild interactions, varying between moderate verbal support and moderate verbal hostility. Thus two-thirds of total events were only verbal, with the same amount reported as having no official sanction at all. The

²² In the LHWP dispute World Bank financing helped in resolving the dispute. A provision in the LHWP stipulates that South Africa pay Lesotho for water, to which both agreed Lesotho had rights, but that it was unable to use.

conclusion is that cooperative interactions dominate rather than the common belief on conflicting events.²³

THE LESOTHO HIGHLANDS WATER PROJECT²⁴

Cooperation between South Africa and Lesotho over the Lesotho Highlands Water Project (LHWP) is one of the most illustrative examples of water cooperation in Africa. This is an excellent example of bilateral cooperation strongly based on the sharing of benefits resulting from the joint river development. The LHWP is often considered as case study of economically efficient and fair water cooperation project. However, the LHWP is also considered to be a controversial transboundary water management project due to its negative social and environmental impacts, its bilateral character, lacking the integration of local people and stakeholders.

The multiphase project (all three or four phases are projected to be finalized in 2021) is based on the construction of a cascade of six dams on the territory of the upstream Kingdom of Lesotho, a minuscule mountainous water rich state, in the upper section of the Orange-Senqu River. The project further includes 200 km of tunnels permitting Inter Basin Transfers (IBT) of 2,200 MCM per annum to the Gauteng region, and water infrastructure including pumping stations and hydroelectric generators. The main objective is water supply to South Africa which pays royalties, while enabling Lesotho to produce hydroelectricity. South Africa's Gauteng Province (formerly known as Witwatersrand), is 100 percent reliant on inter-basin transfers (IBT). Additionally 40 percent of the South African population resides in the region which is responsible for 60 percent of the country's output and generates 85 percent of total electricity.²⁵ Thus, the industrial heartland of South Africa faces long-term restrictions on economic and social development, due to its water deficits.

The bilateral arrangement of South Africa and Lesotho is fairly complex and comprises not only financial and ownership arrangements but also dispute settlement mechanisms, and the formation of a bilateral organization and two implementing agencies enjoying autonomous status. Clearly, the LHWP demonstrates that bilateral

²³ Aaron T.Wolf. "Conflict and Cooperation over Transboundary Waters". UNDP, Human Development Report 2006 – Occasional Paper. http://hdr.undp.org/en/reports/global/hdr2006/papers/wolf_aaron.pdf, accessed 14.06.2010.

²⁴ Axel Klaphake and Waltina Scheumann. "Understanding Transboundary Water Cooperation: Evidence From Africa". Institute for Landscape Architecture and Environmental Planning Technical University of Berlin.2006. http://www.landschaftsoekonomie.tu-berlin.de/fileadmin/a0731/uploads/publikationen/workingpapers/WP_14_2006_Klaphake_Scheuman_Transboundary_Wat_.pdf. accessed 16.06.2010.

²⁵ SouthAfrica.info. "Africa's biggest water Project". <http://www.southafrica.info/business/economy/infrastructure/sa-lesothowaterproject.htm>, accessed 14.08.2010.

functional water cooperation needs not only technical and financial cooperation but complex institutional arrangements in parallel. For the preparation of the project and costs and benefits assessment, a Joint Technical Committee was established by the two countries in the early 1980s. The benefit- and cost-sharing arrangement of the LHWP treaty demonstrates the exceptionality and complexity of the approach. Accordingly, South Africa bears the full cost of water delivery to itself, while Lesotho pays for the cost of the hydropower component, approximately 5 percent of LHWP total costs. South Africa receives increasing allocations of water while Lesotho retains the benefits of hydroelectricity production. Royalties paid by South Africa amount to 56 percent of the cost-savings in comparison with the more expensive best alternative, the national Orange Vaal Transfer Scheme (OVTS).

The LHWP concept came into being in a complicated political environment. The earliest plans to transverse the upper section of the Orange-Senqu River in Lesotho and transport the water to South Africa originated in the mid-1950s when Lesotho was a “backwards” protectorate of Great Britain. Initial negotiations failed over partition of infrastructure costs, the price of water and domestic and international political issues. These issues included South Africa’s apartheid policy, competing territorial demands between Lesotho and South Africa. South Africa’s reservations arose from dependency on a foreign state for its water supply, and serious security concerns in the early 1980s when the Jonathan government of Lesotho supported the African National Congress (ANC). The success of the LHWP was totally dependent on resolving security issues and changing Lesotho’s internal political orientation. The South African government used the LHWP at that time as a bargaining variable to put pressure on Lesotho to change its politics towards the ANC.

In 1986 a coup d’état took place in Lesotho enabling the implementation of the LHWP. International and particularly South Africa’s influence as the regional hegemon made a major contribution to the rapid regime change. Domestic policy changes and pressures played an important role too, eventually leading to the installation of a much more pragmatic government. Lesotho’s new government focused on the expected economic benefits from the LHWP, fundamental to this extremely poor country, suffering from a serious economic crisis in the 1980s. However, although the change of the political climate was certainly a key driver for the project’s progress, the mutual economic benefits expected from the project and technical cooperation were the major factors which contributed to a continuation in the feasibility studies, negotiation of technical details and further preparations of the LHWP in the 1970s and 1980s.

The end of the apartheid regime and the establishment of a civil government in Lesotho in the early 1990s, led to changes in the political climate between both

countries. Growing international cooperation and inter-state political support for the project ensued. Thus, initially while the ANC was against the LHWP during the apartheid regime, its stance evolved towards concurring on mutual economic benefits of the project as soon as it assumed power in South Africa.

As early as the 1990s, NGOs, environmentalists, and human and social rights activists raised objections towards the project. This opposition was not due to transboundary issues but differing interests. The hydro-engineering coalition perceived large dams as an adequate response to expected water shortages, while ecologists and other social activists argued against the perceived environmental and social costs of large-scale water infrastructure and unequal distribution of costs and benefits. Political lobbying and the democratization of the political systems, saw the LHWP project implementation strategy suffer significant change, leading to a much more transparent and collaborative decision-making, including towards incorporating non-state entities.

1998 saw the Lesotho Highlands Development Authority (LHDA) and various interest groups in Lesotho signed a Memorandum of Understanding, establishing the rules and legal specificities of the state entities so as to guarantee the wellbeing of persons and communities affected by the project. Environmental Action Plans were also agreed upon providing a framework for mitigation, compensation, resettlement and development measures. The financial intervention of South Africa has made the project feasible besides demonstrating the importance of international institutions and organizations in the implementation and monitoring of the project. The integration of other interest groups has also constituted an example of consideration and inclusion of all parties involved.

COOPERATION IN THE INCOMATI RIVER BASIN²⁶

The Incomati river basin is shared by South Africa, Swaziland and Mozambique. Main water consumption derives from the agricultural sector, especially sugarcane production, which was rapidly developed in the three riparian countries. Parts of the Incomati basin faced major water stress with the hydrological regime of the river being highly influenced by the multiple dams, with a severe impact on ecosystems and downstream water uses. Another fundamental issue was flood protection which occurred much too often, with serious economic and social consequences in the basin. The construction of the Driekoppies dam was commissioned by South Africa, following

²⁶ Alvaro Carmo Vas and Pieter van der Zaag. "Sharing the Incomati Waters: Cooperation and Competition in the Balance". a UNESCO-IHP, PCCP Series Publication (2003).

the bilateral agreement with Swaziland (Maguga dam) in the 1980s on joint dam projects. In response Mozambique unilaterally ordered the construction of Corumama dam in the late 1980s.

Upstream-downstream coordination was in great need with the three members of the hydropolitical constellation of the Incomati basin, influenced by tense political relations having reduced water cooperation prior to the 1990s. Although a Tripartite Permanent Technical Committee (TPTC) was established in 1983, due to the political situation in Mozambique and the complicated political relations between the riparian states, its meetings were irregular and ineffective during the 1980s. Cooperation between South Africa and Swaziland existed, through the establishment of the Incomati Basin Water Authority in connection with the bilateral dam projects mentioned above. South Africa and Swaziland had good relations between them but a near absence of interaction with Portuguese speaking Mozambique.

When financial support was provided by the World Bank for dam projects, it was on the condition that Mozambique should agree with the planned developments ('no-objection rule'). In 1991 an agreement was signed between the three riparians by which Mozambique accepted the construction of the dams, while it was also agreed that a joint study on the hydrological conditions and the water uses for the whole Incomati basin, should be realized by the three countries, to serve as a basis for future agreements on water sharing. Furthermore, South Africa accepted to refrain from building any further dams in the Sabie sub-basin, from extracting any additional water, guaranteeing a minimum of water flow at the border point of Komatipoort / Ressano Garcia, until a water sharing agreement for the whole basin was concluded.

In the mid 1990s, the negotiations between South Africa and Mozambique were facilitated by the ongoing democratization in the two countries and the regional integration process in the form of SADC. Certainly, the most important international influence was the adoption of the SADC Protocol on Shared Watercourses that formed the legal basis for several water agreements in the region.

A Tripartite Interim Agreement between the three riparian countries was finally signed between the three countries in 2002. A very complete document, it set out general principles and objectives concerning the cooperation and the protection of the water resources and specific regulations concerning water. Its most striking features are: i) the agreement allows for a significant increase in the water uses of the Incomati by all countries, based on the premise that more water can be supplied by increasing the capacity of existing dams and constructing several new dams in the three countries. ii) the agreement includes provisions concerning the water uses of two watercourses: the Incomati and the Maputo rivers, thus allowing for some "trade offs"

during negotiations. The fact that the Maputo basin issue was included as part of the agenda, broadened the negotiation base and allowed new combinations of negotiation positions in the form of package deals. iii) The scope of the negotiations was further broadened because the Joint Study added the environment in the form of an ecological minimum flow to the list of accepted water using sectors.

The commitment to advance the plight of small-scale farmers runs through the recent policies of all three countries. Mozambique's objectives are mainly rehabilitating existing irrigation infrastructure. Swaziland developed the Komati Downstream Development Project, which will irrigate 6,000 ha of sugarcane for smallholders from the new Maguga Nkomati Basin dam, a joint venture with South Africa. In the lower Komati and Lomati rivers in South Africa, the Nkomazi Irrigation Expansion Program involves the development of 6,500 ha of irrigated sugarcane for emergent black farmers, drawing water from the Maguga dam in Swaziland and Driekoppies dam in South Africa. Contrast between the 1980s and the 1990s could hardly have been starker.²⁷ Developments during the 1990s were characterized by cooperation and economic integration, and a new thrust of economic development.

The main factors which contributed to the water regime formation leading to the successful negotiations of the 2002 agreement was the involvement of international donors such as the World Bank, and the broadening of the negotiation base that made issue linkages and the establishment of package deals possible. The World Bank further sponsored a major study viewing the compilation of hydrological data used as a credible source by all parties involved. Other important variables in this case include the impact of the evolving internal and external political conditions and the SADC integration process.²⁸

COOPERATION ON THE OKAVANGO: ASYMMETRY OF INTERESTS

The Okavango river basin is an excellent example on how to share regional benefits, between three riparian states considered as equal partners, even though they contribute unequal amounts of water supply: Angola contributes the lion's share of 94.5 percent, while Botswana and Namibia contribute 2.6 and 2.9 percent respectively.²⁹ The Okavango delta does not discharge into the sea but into the interior of Botswana,

²⁷ Waterwiki.net. "Incomati".

http://waterwiki.net/index.php/Incomati#The_Tripartite_Interim_Agreement_of_2002, accessed 14.06.2010.

²⁸ South African Government Information, "Launch of Inkomati Catchment Management Agency", <http://www.info.gov.za/speeches/2006/06110216451001.htm>, 16.05.2010.

²⁹ SADC. "SADC Secretariat Visits Okacom", SADC Newsletter April 2010, <http://www.okacom.org/Inside%20SADC%20Issue%202%20%20Volume%201%20%20April%202010.pdf>. Accessed 25.06.2010.

being classified as an endoreic river. During Angola's civil war, this country showed no interest in developing the water resources, while Namibia and Botswana tapped in on extensive groundwater resources. The little water withdrawn from the river was destined for small irrigation projects and domestic consumption. The early 1990s were marked by increasing demand led by Namibia and Botswana, and consequent need for the development of the Okavango's water resources.

A coordination of efforts required for the management and use of the Okavango's waters was established in 1994 with the constitution of the Permanent Water Commission on the Okavango River Basin (OKACOM), "to act as a technical advisor to the Contracting Parties on matters relating to the conservation, development and utilization of water resources in the common interest to the Contracting Parties." (OKACOM treaty 1994, Art. 4) Cooperative efforts benefitted from long-lasting technical cooperation between Namibia and Botswana, and Namibia and Angola. Although the overall political relations were on edge, technical cooperation facilitated the building of trust and understanding.

Okavango water resources face a typical upstream-downstream cooperation dilemma. Since the use by one country would cause negative transboundary externalities. As Turton et al. mention, "the Okavango river basin presents a classic example of potentially opposing national interests when prioritizing strategic concerns over the use of transboundary waters".³⁰ Of the three riparian countries, Botswana is the most vulnerable to upstream uses and relies heavily on transboundary cooperation. For Botswana, the Okavango Delta bears importance for its tourist industry and its local population, having declared the delta as a Ramsar Site in 1996 so as to restrict planned water use by Namibia and Angola.³¹ In its efforts the government of Botswana was supported by international and national NGOs. Intensive lobbying by the Okavango Liaison Group took place. This group is a coalition of NGOs formed in 1996, comprising the Kalahari Conservation Society, Conservation International, Namibia Nature Foundation, Desert Research Foundation of Namibia, the Okavango Wildlife Society, and the Integrated Resource Development and Nature Conservation. The International Rivers Network was actively involved in forming this coalition. Other international actors involved are International Union for the Conservation of Nature (IUCN), World Wildlife Fund, Green Cross International, and Green Peace. In this way,

³⁰ Turton, A., P. Ashton; E. Cloete (2003). An introduction to the hydropolitical drivers in the Okavango river basin, in: Turton et al. (eds.). *Transboundary rivers, sovereignty and development. Hydropolitical drivers in the Okavango river basin*, African Water Issues Research Unit (AWIRU) and Green Cross International, Pretoria, Genf: 9-30.

http://www.anthonyturton.com/admin/my_documents/my_files/F22_Chapter_1.pdf, accessed 14.06.2010.

³¹The Ramsar Convention on Wetlands. http://www.ramsar.org/cda/en/ramsar-home/main/ramsar/1_4000_0__, accessed 10.08.2010.

Botswana was able to strengthen its position as the most downstream country, but also limited at the same time its own development efforts.

Namibia another water-stressed country, and in the need to import water from the river to supplement water supplies to its central area, also adhered to the establishment of OKACOM. Namibia followed a strategy which facilitated the creation of OKACOM. Rather than claiming certain water shares, it favored to assess the potential for development and the water requirements in each country by, among other means, creating uncontested basin-wide data and by fostering technical cooperation. Namibia's central role in establishing OKACOM is explained by interest in gaining access to perennial water sources, and that can only be done through water commissions and discussion with neighboring states. The Ministry of the Department of Water Affairs and the Ministry of Agriculture through concerted efforts developed these commissions, so as to start discussions and negotiations thus building trust and confidence on critical issues.

On the other hand, the Okavango Delta being a Ramsar Site after 1996, Namibia had to take into account the role of the various NGO's and international donors encountered. Regime formation was the only way of accessing the river in a formal manner, so as to transfer water to Windhoek, without Namibia being blacklisted by NGO's as an ecotourism destination. With Botswana and Angola acquiescing to Namibia use of a portion of the water, international opposition will be less stiff.

Angola's interest to join OKACOM has been less forthright because, as Larry Swatuk assumes "maintaining the health of the Okavango Delta is about as far away from Angolan government policy-making circles as an issue can get (...). As an Angolan state maker, the first question to ask of Botswana is probably why Angola should forego the use of the water of the Cubango and allow Botswana to reap all the economic and social benefits. What is in it for Angola?".³² In enabling transboundary institutions to flourish, once more, the role of donors as external agents for change was crucial.

Due to the engagement of multiple donors and international NGO's, the Okavango river basin is dubbed as being internationalized. Even though OKACOM has a short record, a limited mandate, no permanent secretariat and very few staff, OKACOM has managed to accomplish results which would never have come to be if this forum did not exist.

³² Larry A. Swatuk. "Kant and should: Strategic thoughts about 'wise use' of the Okavango Delta system", in: Turton et al. (2003), pp. 119-140.
http://www.anthonyturton.com/admin/my_documents/my_files/865_Chapter_6.pdf, accessed 14.06.2010.

CONCLUSION ON WATER CONFLICT AND COOPERATION IN SOUTHERN AFRICA

The growing demand for water in southern Africa coupled with low levels of seasonal rainfall, insufficient aquifers, a high dependency on IBT pose a great challenge to business and government in the region.³³ Together with the EU, Southern Africa probably has the most sophisticated level of inter-state water management treaties in the world. Furthermore, it is the only region on the African continent that has mainstreamed the key elements of UN Watercourse Convention via the SADC Protocol on Shared Waters. This document is the foundation for coordinated and integrated development of trans-boundary water resources in the region. Most basins in the SADC region are managed by multilateral agreements between the riparian states of that specific basin.³⁴

Assessing the relevance of the political relations and the potentially favorable effects of political integration on water cooperation, reinforce the relevance of the SADC integration process. The LHWP and the Incomati basin present the case for cooperation, after the resolution of political and military tensions. In both cases, benefit-sharing mechanisms have been used in order to balance the distribution of costs and benefits in a fair manner. The Okavango case presents slightly different additional features, namely isolated state interests and a highly asymmetrical distribution of costs and benefits. Innovative benefit-sharing arrangements will have to be found so as to overcome these hurdles. Negotiations in the water sector reveal the importance of issue linkages, an important institutional approach, to overcome asymmetrical incentive structures in cases where financial transfers are neither feasible nor realistic.

As many authors argue and the three cases presented demonstrate the exchange of data and of planned measures are highly politicized issues, therefore independent experts and international organization play an important role as knowledge brokers and facilitators of joint actions. The development of a cooperative regime would not be possible without the endorsement of the World Bank promoting cooperative structures, developing the necessary information base for action in the referred cases. Nonetheless as the 2006 Human Development Report points out “in the

³³ Guilio Boccaletti, Martin Stuchtey and Marc van Olst. “Confronting South Africa’s Water Challenge”, McKinsey Quarterly June 2010, https://www.mckinseyquarterly.com/Energy_Resources_Materials/Environment/Confronting_South_Africas_water_challenge_2617?gp=1, accessed 21.07.2010.

³⁴ See Interview with Anthony Turton: Ipsnews. “Shared Water Resources - Source of Conflict or Cooperation?”. <http://ipsnews.net/news.asp?idnews=43241>, accessed 28.06.2010.

interests of ownership, riparian countries have to bear a substantial part of the financial burden.”³⁵

Future trends include as the Secretary-General of the United Nations Ban-Ki-Moon says, giving special attention to the different sectors, “More Crops with Less Drops” in agriculture, greater efficiency in industry and the supply of water and sanitation for a greater portion of the population in Southern Africa, so as to promote fundamental economic development and human security. Past successes will not remain so statically, without proactiveness and further cooperation.³⁶

A further sign of alarm is raised by Saskia Sassen, a world re-knowned sociologist from the University of Columbia, who draws attention to the dilapidation of natural resources in the Global South, through the acquisition of large swathes of land in southern Africa so as to be used for “offshore” agriculture, extraction of underground water and access to minerals.³⁷ This is confirmed by the large decline in foreign direct investment (FDI) in manufacturing in Africa in 2006. Africa’s two largest recipients of FDI, South Africa and Nigeria, have had a sharp rise in FDI in the primary sector counter-balanced by a reduction in the manufacturing sector.³⁸ Thus, the camouflaged exportation of virtual water, defined as the volume of water necessary to produce a commodity or service, is a threatening reality, grossly distorting the true water footprint of the developed world.³⁹

A transition from non-sustainable extractive industry or mining towards a sustainable local economy seems to be obligatory. The need for major investments in technological and water treatment procedures needs to be driven domestically as other OECD nations have not lost their dilution capacity and therefore do not need to fulfill these design characteristics. A multi-partnership approach integrating private - namely financial and industrial institutions – with public - research institutions and regulatory authorities – are fundamental so as to drive science, technology and engineering based innovation in the sector.⁴⁰ Trade-offs between competing demands such as

³⁵ UNDP, “Beyond scarcity: Power, poverty and the global water crisis” New York, 2006, <http://hdr.undp.org/en/media/HDR06-complete.pdf>. <http://hdr.undp.org/en/reports/global/hdr2006/press/>. Accessed 10.06.2010.

³⁶ 2030 Water Resources Group. “Charting Our Water Future: Economic frameworks to inform our decision-making”. http://www.mckinsey.com/App_Media/Reports/Water/Charting_Our_Water_Future_Full_Report_001.pdf, accessed 28.06.2010.

³⁷ Saskia Sassen. “When complexity produces brutality”. Sens Public 16.06.2010. <http://www.sens-public.org/spip.php?article753>, accessed 06.08.2010.

³⁸ UNCTAD 2008.

³⁹ A. Y. Hoekstra and A. K. Chapagain. “Water footprints of nations: Water use by people as a function of their consumption pattern”. *Water Resource Management* (2007) 21:35–48. http://www.waterfootprint.org/Reports/Hoekstra_and_Chapagain_2007.pdf. accessed 14.06.2010.

⁴⁰ John Briscoe. “Next-generation water policy for businesses and government”. *McKinsey Quarterly* December 2009. https://www.mckinseyquarterly.com/Next_generation_water_policy_for_businesses_and_government_2481, accessed 14.06.2010.

agriculture, key economic activities and growing population needs in urban centers will have to be made.⁴¹

Finally this paper underlines the relevance of transnational advocacy coalitions and the internationalization of water cooperation: The case of the LHWP, Incomati and Okavango, puts the spotlight on cooperation and competition in the social and environmental arena, emphasizing how water cooperation is mutating from a straightforward purely intergovernmental negotiation, towards a multi-actor setting with intensive public participation and debate, which originates intense negotiations between civic society and state actors.

BIBLIOGRAPHY

- 2030 Water Resources Group. "Charting Our Water Future: Economic frameworks to inform our decision-making".
http://www.mckinsey.com/App_Media/Reports/Water/Charting_Our_Water_Future_Full_Report_001.pdf, accessed 28.06.2010.
- Boccaletti, Giulio and Stuchtey, Martin and Olst, Marc van. "Confronting South Africa's Water Challenge", McKinsey Quarterly June 2010,
https://www.mckinseyquarterly.com/Energy_Resources_Materials/Environment/Confronting_South_Africas_water_challenge_2617?gp=1, accessed 21.07.2010.
- Briscoe, John. "Next-generation water policy for businesses and government". McKinsey Quarterly December 2009.
https://www.mckinseyquarterly.com/Next_generation_water_policy_for_businesses_and_government_2481, accessed 14.06.2010.
- Brown, John Croumbie. *Hydrology of South Africa; or Details of the Former Hydrographic Condition of the Cape of Good Hope, and Causes of its Present Aridity, with Suggestions of Appropriate Remedies for this Aridity*. Henry S. King & Co, London, 1875. Accessed at American Libraries,
<http://www.archive.org/details/cu31924014446276>, on 28.06.2010.
- Brown, John Croumbie. *Water Supply in South Africa and the Facilities for the Storage of it*. Edinburgh: Oliver & Boyd, Tweebdale Court. London: Simpkin, Marshall, & Co, 1877.
<http://www.archive.org/stream/cu31924014446268#page/n7/mode/2up>, on 28.06.2010.
- Buzan, B., Waeber, O. & de Wilde, J. 1998. *Security: A New Framework for Analysis*. London: Lynne Rienner.
- Collier, Paul. And Hoeffler A. "Greed and Grievance in Civil War". World Bank Policy Research Working Paper No. 2355 October. 2001.
- Conca K. and Dabelko G. D. (Eds.) *The Case for Environmental Peacemaking*. Washington, Woodrow Wilson Center Press. 2003.
- Geldenhuys, D. *The Diplomacy of Isolation: South African Foreign Policy Making*. Johannesburg: Macmillan South Africa. 1984. Pp 93.
- Giordano, Meredith and Giordano, Mark and Wolf, Aaron. "The Geography of Water Conflict and Cooperation: Internal Pressures and International Manifestations", *The Geographical Journal*, Vol. 168, No. 4, Water Wars? Geographical Perspectives (Dec. 2002), pp. 293-312 Published by: Blackwell Publishing on behalf of The Royal Geographical Society (with the Institute of British Geographers).
- Gleick, Peter H. "Water and Conflict: Fresh Water Resources and International Security", in Sean M. Lynn-Jones, Steven E. Miller. *Global Dangers: Changing Dimensions of International Security*. The MIT Press, 1995. Page 98.

⁴¹ 2030 Water Resources Group. *Charting Our Water Future: Economic frameworks to inform our decision-making*.
http://www.mckinsey.com/App_Media/Reports/Water/Charting_Our_Water_Future_Full_Report_001.pdf, accessed 28.06.2010.

- Gleick, Peter H. *Water in Crisis: A Guide to the Worlds Fresh Water Resources*. New York Oxford University Press. 1993.
- Hoekstra, A.Y and Chapagain, A.K. "Water footprints of nations: Water use by people as a function of their consumption pattern". *Water Resource Management* (2007) 21:35–48. http://www.waterfootprint.org/Reports/Hoekstra_and_Chapagain_2007.pdf. accessed 14.06.2010.
- Homer-Dixon, Thomas. *Environment, Scarcity, and Violence*. Princeton: Princeton University Press. 1999.
- Ipsnews. "Shared Water Resources - Source of Conflict or Cooperation?" <http://ipsnews.net/news.asp?idnews=43241>, accessed 28.06.2010.
- Klaphake, Axel and Scheumann, Waltina. "Understanding Transboundary Water Cooperation: Evidence From Africa". Institute for Landscape Architecture and Environmental Planning Technical University of Berlin. 2006. http://www.landschaftsoekonomie.tu-berlin.de/fileadmin/a0731/uploads/publikationen/workingpapers/WP_14_2006_Klaphake_Scheuman_Transboundary_Wat_.pdf. accessed 16.06.2010.
- OECD, "Managing Water for All: An OECD Perspective On Pricing And Financing, Key Messages For Policy Makers", 2009.
- Polakow-Suransky, Sasha. *The Unspoken Alliance: Israel's Secret Relationship with Apartheid South Africa*. Pantheon Books. 2010. Pp 6-9.
- SADC. "SADC Secretariat Visits Okacom", SADC Newsletter April 2010, <http://www.okacom.org/Inside%20SADC%20Issue%20%20%20Volume%201%20%20April%202010.pdf>. Accessed 25.06.2010.
- Sassen, Saskia. "When complexity produces brutality". *Sens Public* 16.06.2010. <http://www.sens-public.org/spip.php?article753>, accessed 06.08.2010.
- South African Government Information, "Launch of Inkomati Catchment Management Agency", <http://www.info.gov.za/speeches/2006/06110216451001.htm>, 16.05.2010.
- SouthAfrica.info. "Africa's biggest water Project". <http://www.southafrica.info/business/economy/infrastructure/sa-lesothowaterproject.htm>, accessed 14.08.2010.
- Southern African Development Community (SADC). "Declaration and Treaty of SADC", <http://www.sadc.int/index/browse/page/119>, accessed 14.06.2010.
- Swatuk, Larry A. "Kant and should: Strategic thoughts about 'wise use' of the Okavango Delta system", in: Turton et al. (2003), pp. 119-140. http://www.anthonyturton.com/admin/my_documents/my_files/865_Chapter_6.pdf, accessed 14.06.2010.
- The Ramsar Convention on Wetlands. http://www.ramsar.org/cda/en/ramsar-home/main/ramsar/1_4000_0__, accessed 10.08.2010.
- Turton, Anthony. "Hydro hegemony in the Context of the Orange River Basin". Workshop on Hydro Hegemony hosted by Kings College and School of Oriental and African Studies (SOAS), 20-21 May 2005, London.
- Turton, Anthony. "The State of Water Resources in Southern Africa: What the Beverage Industry Needs to Know". http://www.anthonyturton.com/admin/my_documents/my_files/8F6_The_State_of_Water_Resources_in_Southern_Africa1.pdf, accessed 14.06.2010.
- Turton, Anthony., P. Ashton; E. Cloete An introduction to the hydropolitical drivers in the Okavango river basin, in: Turton et al. (eds.). *Transboundary rivers, sovereignty and development. Hydropolitical drivers in the Okavango river basin*, African Water Issues Research Unit (AWIRU) and Green Cross International, Pretoria, Genf: 9-30. (2003). http://www.anthonyturton.com/admin/my_documents/my_files/F22_Chapter_1.pdf, accessed 14.06.2010.
- UNDP, "Beyond scarcity: Power, poverty and the global water crisis" New York, 2006, <http://hdr.undp.org/en/media/HDR06-complete.pdf>. <http://hdr.undp.org/en/reports/global/hdr2006/press/>. Accessed 10.06.2010.
- Vaz, Alvaro Carmo and Zaag, Pieter van der. "Sharing the Incomati Waters: Cooperation and Competition in the Balance". a UNESCO-IHP, PCCP Series Publication (2003).
- Waterwiki.net. "Incomati". http://waterwiki.net/index.php/Incomati#The_Tripartite_Interim_Agreement_of_2002, accessed 14.06.2010.
- Wolf, Aaron T. "Conflict and Cooperation over Transboundary Waters". UNDP, Human Development Report 2006 – Occasional Paper.

http://hdr.undp.org/en/reports/global/hdr2006/papers/wolf_aaron.pdf, accessed 14.06.2010.

Worldwatch Institute, *State of the World: Global Security 2005*, Chapter Managing Water Conflict and Cooperation, Earthscan 2005