

Understanding transboundary water cooperation: Evidence from Africa

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ABSTRACT / ZUSAMMENFASSUNG

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The Working Paper contributes to the understanding of key factors that determine transboundary water cooperation and the formation of transboundary water regimes. It proposes an eclectic approach to the conceptualization of transboundary water management which relies on theoretical concepts stemming both from the economics and political sciences. The theoretical reasoning and conceptual ambiguities of the concept of "benefit sharing" is outlined since it is perceived advantageous over water sharing (i.e. negotiations of riparian states should focus on benefits from water cooperation and win-win option instead of the potentially conflicting water allocations).

We present five studies from the African continent to illustrate key drivers for and constraints to the formation of transboundary water regimes: the Zambesi river where common interests prevailed in the first development phase; the Lesotho Highlands Water Project which established positive externalities; the Senegal river where development created a complementary interest constellation; the package deal on the Incomati river basin, and the Okavango river where cooperation proceeds despite existing asymmetric interests. Largely based on these illustrative studies, we finally propose research themes of general interest.

Ein Versuch, grenzüberschreitende Gewässerkooperation zu erklären: Fünf illustrative afrikanische Studien

Der Artikel beabsichtigt, Schlüsselfaktoren zu identifizieren, die für Kooperationen an grenzüberschreitenden Gewässern und für die Bildung von regionalen Wasserregimen von Bedeutung sind. Der Ansatz zur Konzeptualisierung von Kooperation ist eklektizistisch und bezieht sich auf wirtschafts- und politikwissenschaftliche Theoriestränge. Die theoretischen Annahmen des „Benefit Sharing“-Konzepts legen nahe, dass die Anwendung von „Benefit Sharing“-Arrangements einen Vorteil bietet gegenüber Ansätzen, die auf eine Aufteilung von Wassermengen fokussieren (zwischenstaatliche Verhandlungen sollten Win-win Optionen entwickeln und nicht die konfliktive Aufteilung von Wassermengen zum Gegenstand haben).

Wir haben fünf Fälle ausgewählt, um Schlüsselfaktoren und zentrale Hindernisse für grenzüberschreitende Kooperation auf dem afrikanischen Kontinent zu analysieren: gemeinsame Interessen können in der ersten Entwicklungsphase am Sambesi identifiziert werden; bei dem Lesotho Highlands Water Project wurden positive Externalitäten realisiert; die Entwicklung am Senegal zeigt eine komplementäre Interessenkonstellation und am Okavango kommt Kooperation zustande, obwohl wir es hier mit einer asymmetrischen Interessenlage zu tun haben. Auf der Grundlage dieser Studien schlagen wir Forschungsthemen von allgemeinem Interesse vor.

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Abbreviations

ANC	African National Congress
BCM	Billion cubic meters
CAPCO	Central African Power Corporation
GEF	Global Environment Facility
IGOs	International Organizations
INGOs	International Nongovernmental Organizations
IUCN	International Union for the Conservation of Nature
JPTC	Joint Permanent Technical Commission (Lesotho)
LHDA	Lesotho Highlands Development Authority
LHWP	Lesotho Highlands Water Project
MCM	Million cubic meters
NGO	Nongovernmental Organizations
OKACOM	Permanent Water Commission on the Okavango River Basin
OMVS	Senegal River Development Organization
OVTS	Orange Vaal Transfer Scheme
SADC	Southern African Development Community
TPTC	Tripartite Permanent Technical Committee (Incomati)
UNEP	United Nations Environment Programme
WCD	World Commission on Dams
ZACPLAN	Action Plan for the Environmentally Sound Management of the Common Zambezi River System
ZACPRO	Zambezi Action Project
ZAMCOM	Zambezi Watercourse Commission
ZRA	Zambezi River Authority

1. Introduction

The analysis of drivers and constraints of international water cooperation has received increasing attention in the international scientific literature in the last years. However, the understanding of the key factors that determine cross-boundary water cooperation and the formation of transboundary water regimes is still limited. As Bernauer (2002) has pointed out, most of the existing analyses are single-case studies that do not adequately link theoretical concepts with empirical analyses and findings. Besides only a limited number of international water bodies have been analyzed so far, and methodologically ambitious studies on the formation of international river regimes are particularly rare.

Against this background, the objectives of this paper are threefold. First, we discuss an eclectic approach to the conceptualization of transboundary water management that may help to understand the formation of water regimes. Our analytical approach makes reference to the current state of the scientific debate and is composed by somehow complementary theoretical concepts stemming from both economics and political sciences. Since the slogan 'benefit sharing instead of water sharing' – i.e. negotiations of riparian states should focus on benefits from water cooperation and win-win options instead of a potentially conflicting water sharing – has gained strong attention in the academic and the political debates, we outline the theoretical reasoning and conceptual ambiguities characterizing this concept. Second, we present five African case studies that were selected to illustrate some of the key drivers and constraints relevant in the water regime formation processes in Africa. Originally, these case studies were analyzed in a series of different and partly still ongoing research projects which largely focused on African transboundary waters but included transboundary rivers and lakes in Europe and Asia too. Third, we will draw some general conclusions concerning the relevance of our conceptual framework which leads us to propose research themes of general interest.

2. Analytical background

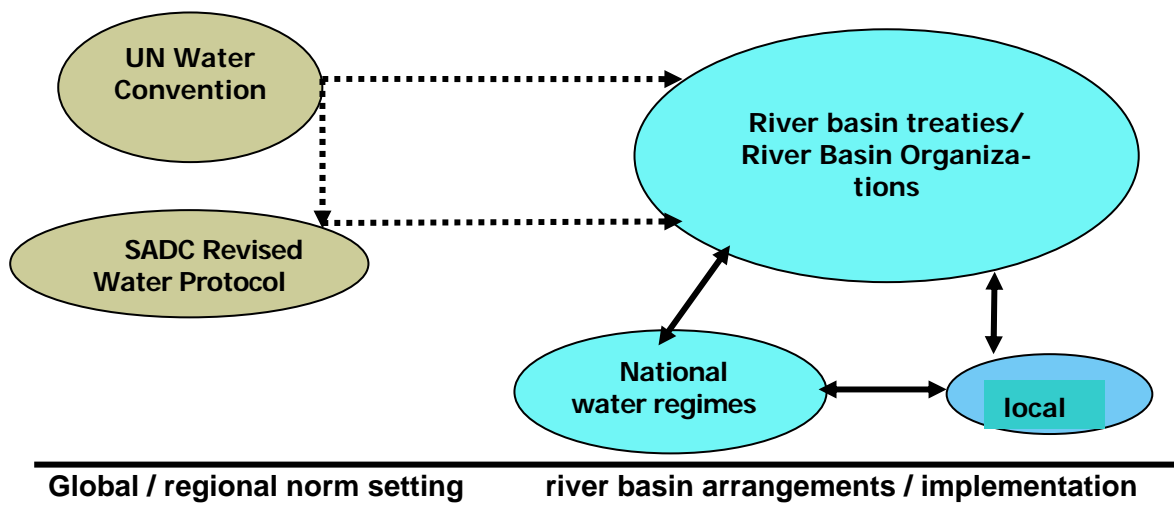
Cooperation of riparian states on transboundary rivers, lakes and aquifers can be conceptualized as a process of regime building. The regime concept, in general, points to the relevance of international institutions – so-called regimes – that are perceived as crucial for the cooperative use, protection, or joint development of shared water bodies. The common perspective of regime scholars is that mutual cooperation of nation states is rational and thus possible because, at least in the long term and under certain conditions, payoffs from cooperation exceed the gains from non-cooperation for all riparians (Hasenclever et al. 1997).

According to Haftendorn, a "water regime exists when the affected states observe a set of rules designed to reduce the conflict potential, caused by the use, pollution or division of a given water resource; or the reduction of the standing costs; and the observance over times of these rules." (2000: 65) While Haftendorn stresses the conflict potential of transboundary water management, other definitions appear more balanced and include both potential disputes and the cooperative dimension. Accordingly, water regimes can rather be seen as the

entirety of explicit or implicit, formal or informal principles, norms, rules, and procedures shaping the cooperation of the riparian states involved (Marty 2001). While both formal and informal norms are relevant, it is assumed that most of the basic principles, rules, norms and procedures governing the action of riparian states are established via basin-specific arrangements and international law. The latter, however, is still in an early development stage and plays a minor role in solving most of the existing transboundary water use conflicts.

It is a matter of fact that norm- and rule-based international water cooperation is much more widespread on the African continent than is usually assumed in the international discourse on water cooperation (Dombrowsky / Grey 2002). For quite some time, the discourse has overemphasized the risks of serious international conflicts and water wars potentially stemming from disputes over the allocation and conflicting uses of international waters (Turton / Solomon 2000). Interestingly, in Africa there are both general water regimes aiming to establish basic principles for the use of transboundary water resources, and river- and issue-related water regimes providing a framework for action at a particular watercourse (see Figure 1).¹ The most effective piece of international law aiming to establish general principles for water cooperation in Africa is the water protocol of the Southern African Development Community (SADC) whose revised version was signed in 2000 and ratified in 2002 (Ramoeli 2002). While the SADC water protocol plays a role as a legal framework for the development of water cooperation at the many international river basins in Southern Africa, this paper focuses on basin- and conflict-specific regimes.

Figure 1: Multilevel water regimes



Certainly, the existing specific water regimes in Africa show quite different characteristics in terms of scope, specificity, regime organizations (e.g. river basin commissions), financing rules, information exchange, dispute settlement rules, and participation of non-governmental organizations (Scheumann / Muro 2005). Existing forms of cooperation predominantly con-

¹ Haftendorn generally distinguishes between general water regimes, e.g. international water conventions (UN Water Convention, UN ECE Convention), and those directed towards a particular cooperation project or conflict.

cern the development of joint infrastructure projects (e.g. dams), or the allocation of water quantities while agreements on water pollution problems or integrated approaches that combine different hydrologic, ecologic and socio-economic issues are, if any, scarce (Nakayama 2003; Giordano 2003; Hirji / Grey 1998). Not only do the institutional provisions and the scope of the specific water regimes substantially vary but also the effectiveness of the different institutional and organizational approaches. Obviously, whilst some basin-specific arrangements are just on paper and the agreed norms completely lack implementation, other examples comprise effective implementation structures and the building-up of operative international organizations such as river basin commission. Clearly, the formation of water regimes and their effectiveness are two analytically distinguishable but interrelated aspects because, for instance, the expected effectiveness might influence the countries' incentives to agree on water regimes and vice versa. Thus, we do not intend to completely ignore the performance issue but deal with it only in the context of regime development analysis.

One important insight of the hitherto discussions on the applicability of theoretical concepts to the development of river basin institutions is that there is not one single theoretical concept whose explanatory power would allow to sufficiently understand under which conditions riparian states are prepared to form institutions to address transboundary river management issues (see Bernauer 2002). Thus, a mono-theoretical approach can not form an adequate analytical basis in order to analyze water regime building in the complex African situation. Consequently, we try to identify key drivers and constraints shaping the water regime building process in an eclectic manner through the combination of different analytical components. One further aspect is worth mentioning: we put greater emphasis on the post-colonial formation of water regimes because the emergence of water regimes during the colonial period shows some particularities that can not easily be incorporated in a theoretical context dealing with actions and negotiations of independent nation states. On the other hand, however, we do not ignore the colonial water legacy because some regional water regimes date back to colonial times and still shape the present forms of cooperation (Fekoua 2000).

However, it is analytically expedient to use the characteristics of the transboundary problem as the analytical starting point because its nature and the fundamental hydropolitical constellation (e.g. upstream-downstream) will strongly shape the basic incentive structure for the riparians concerned (Marty 2001; Mitchell / Keilbach 2001). This reasoning makes reference to economic and game theory approaches where states are conceptualized as welfare maximizing sovereign entities (Klaphake 2005; Just / Netanyahu 1998). These approaches acknowledge that so-called collective problems should be distinguished from transboundary externalities (Marty 2001).

In collective problems, incentives for cooperation tend to be symmetric and interests to be homogenous. Such situations occur where the riparian states are mutually affected from a particular situation or a water management problem. Examples are the management of transboundary aquifers or lakes, untapped river development opportunities, flood management on rivers which form the border between two countries, or where the navigability of a river is maintained. Generally spoken, collective problems refer to situations where all ripar-

ian countries benefit from activities undertaken. A priori, in the case of collective problems, there is no need to change the incentive structure because cooperation may develop simply due to symmetrical interests. From a game theoretical perspective, these situations are similar to the Prisoner's Dilemma that can be solved cooperatively if countries credibly commit to cooperation, and implement a stepwise approach (Klaphake 2004). However, even for collective problems a re-distribution of cooperation gains between the riparian countries might be a necessary prerequisite for cooperation ("fair sharing" of cooperation benefits) because cooperation gains are more often than not unevenly distributed which may impede joint actions even if all parties would be better off compared with the initial situation (Mitchell / Keilbach 2001).

In contrast, transboundary externalities are perceived as unidirectional effects (Rogers 1997). The most discussed example is the upstream-downstream context, e.g. downstream water pollution stemming from upstream sources, or significant water diversions, which limits water availability and/or usability in the downstream country. Equally, upstream hydropower projects might negatively impact on water-dependent activities downstream or simply worsen the ecological quality of the river. Other riparian problems might be linked to positive externalities. This situation typically occurs if one country, usually the upstream state, is requested to provide a particular service or good (e.g. flood protection; low flow management) to the benefit of the downstream country. The theoretical expectation is that both positive or negative externality problems are harder to solve than collective ones because, in general, only one party could gain from cooperation while the other will risk to lose unless additional arrangements provide for compensation. Compensation can be provided either as financial contributions (so-called side payments) or in-kind.

In the regime literature, issue linkages (or package deals) have received particular attention. It is observed that if a particular water externality problem is negotiated together with another problem (water or non-water related), settling of disputes might become easier. These package deals might balance losses and gains resulting from single projects. Following this reasoning, there are two options to change the incentive structure: First, the 'winning' party can promise the 'losing' party higher benefits or lower costs from a particular arrangement (e.g. via financial transfers or investment decisions). Second, the 'losing' country could be made better off via benefits the country will receive in another issue-area or project. In any case, the likelihood of water cooperation depends on the implementation of benefit- (or cost-) sharing mechanisms. However, the incentive structure can also be shaped by third party interventions, e.g. bilateral or multilateral donors. On many transboundary water resources in Africa, donor involvement is a prerequisite to meet the funding requirements associated with large-scale river development and infrastructures (Kipping / Lindemann 2005; Elhance 2000).

It is obvious that the widespread political recommendations to implement 'benefit sharing' instead of 'water sharing' along international rivers (see Sadoff / Grey 2002) have their origins in this rational choice conceptualization of riparian problems. Whether, and if so to what extent, the implementation of benefit-sharing mechanisms is realistic, feasible and preferable, is strongly debated in the international literature. Since it is very difficult to define fair

and adequate compensations, or to agree on package deals, several authors have argued that water regimes with a win-win character are rather unlikely to be reached (Waterbury 1997; Elhance 2000). Others have argued that countries have, if any, infrequently agreed on mechanisms to neutralize asymmetries in the countries expected benefits.

However, these approaches should consider too the relative power distribution among the riparian countries, their economic and political disparities and the role of regional hegemons (Waterbury 1997; Lowi 1993). Here, we enter the field of the 'realistic' category that generally assumes that sovereign states, and not international institutions, are the prime actors, and that water regime development primarily depends on the distribution of power in the river basins and, in particular, the respective strategic interests of the regional hegemons. Whilst powerful upstream countries might generally not be interested in water regimes because they potentially limit their freedom of action, powerful downstream states, in contrast, might support or even enforce the development of water regimes in order to improve the stability of water supply. Consequently, the unequal distribution of power between the riparians could not only hamper water cooperation but also promote joint actions (Lowi 1993), in particular, if the long-term strategic interests of the hegemon coincides with water cooperation. Since economic, political and military disparities between African countries are obvious and the strategic interests of regional hegemons like South Africa, Nigeria or Egypt strongly shape the regional cooperation patterns on the continent, the relevance of the power category is palpable and largely acknowledged in the water cooperation literature also.

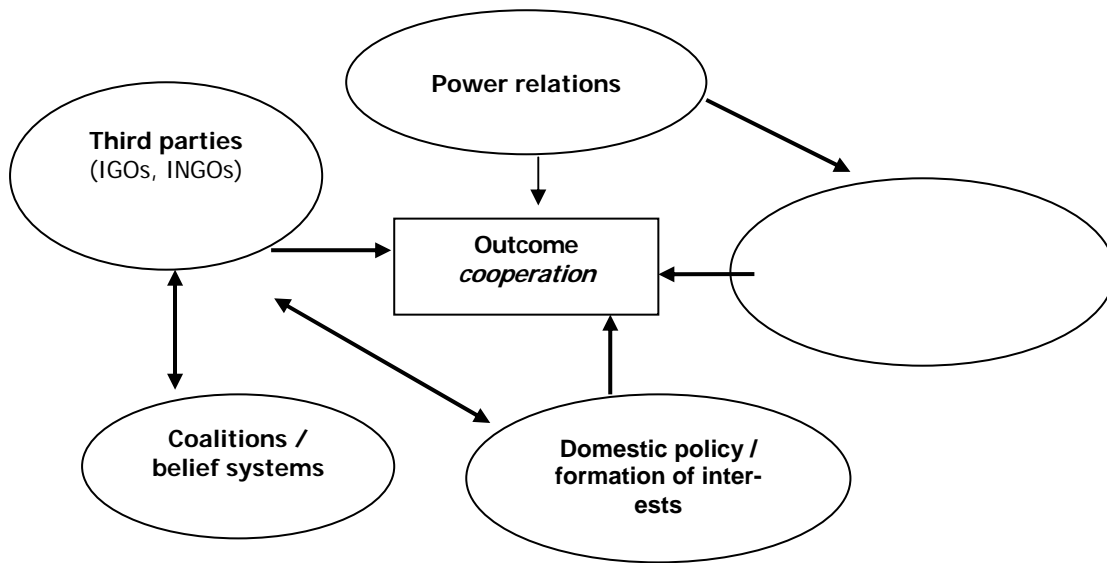
Furthermore, international water cooperation mirrors the inner life of the states concerned, i.e. national political processes, the style of national policy formulation, the role and influence of different political actors, and the administrative capacities on the national or regional level. Whilst the rationale choice version of the regime approach largely examines states or countries as homogeneous and self-interested entities displaying utility-maximizing behaviour, the regime concept does not explicitly focus on the role of domestic policy processes and their impact on international cooperation (Dinar 2000). It is, however, unquestionable that the characteristics of the national political-administrative systems strongly shape international water cooperation whereas these factors can either favour international cooperation or hamper joint actions (Elhance 2000). According to liberal analytical approaches and the economic theories of political decision-making (Dinar 2000), bureaucracies and interest groups act in favor of their own interests and are heavily influencing the decision-making process. Against this background, it is doubtful whether administrations and political representatives are geared to the general welfare of a country as largely assumed in the regime literature. Rather, rent-seeking behaviour and personal interests of decision-makers play an important role, in particular in Africa where regional cooperation might be seen as an appreciated way to receive additional external assistances with financial transfers being channelled into national projects. Many scholars describe clientelism and patronage as important factors triggering water cooperation if international joint actions implement prestige projects such as huge dams being appreciated political symbols for national development aspirations. Consequently, international water cooperation might go hand in hand with the fact that cooperation benefits are restricted to national elites largely ignoring local and environmental interests.

A somehow complementary line of reasoning is provided by Sabatier's Advocacy Coalition Framework (Sabatier 1993). In his concept, decision-making in water management occurs within a system of multi-level governance involving a large number of actors. Different actors, including government agencies, associations, civil societies, academics, media etc. form advocacy coalitions on the basis of shared beliefs and values, i.e. coalitions are networks of actors and organizations who share a similar perspective and forge relationships with each other. Usually, there are competing advocacy coalitions within each policy domain, and in general one of these coalitions will be dominant and wield greater power over the policy process than other coalitions. The transfer of this concept to water cooperation implies that the key cleavages in water management do not necessarily exist between states but potentially between different coalitions. In this concept, water management issues are not only conceptualized as interest conflicts in a narrow sense but as the expression of diverging normative-cognitive perception of different networks. In practice, however, water user interests often stand vis-à-vis protection interests.

In developing countries, transboundary advocacy coalitions often form around controversies about large-scale infrastructure development (e.g. large dams) whereas advocacies (e.g. sector administrations, agriculturalists lobbying for large-scale irrigation schemes, and hydropower industry) and objectors (e.g. environmental organizations) can be identified in the countries concerned. From this perspective, cross-border water management decisions depend on the respective power of the coalitions and their linkages with decision-makers. Apart from the influence of environment-oriented transboundary coalitions, sector policy coalitions share comparable interests (e.g. development of water infrastructure, expanding irrigated agriculture) and are the visible expression of similar water management development paths. Apparently, similar water development paths and transboundary coalitions of water engineers and administrative and economic elites potentially benefiting from water development can facilitate transboundary cooperation if demands are not competing.

However, since the Advocacy Coalition Framework was developed for pluralistic western societies it might be doubtful whether the concept is fully applicable to the African context. But even if some doubts remain, the concept points to increasingly important general conditions of water regime formation, i.e. transnational coalitions, the growing influence of international non-governmental actors, and the role of belief systems (Conca 2006).

Figure 2: Factors influencing transboundary water cooperation (outcome)



Summing-up: It can be expected that water regime formation is initially strongly influenced by the very nature of the cooperation problem where pure asymmetric interest constellations are much harder to solve than collective problems. Furthermore, we expect that bilateral relations of the states concerned and the engagement of international actors will strongly influence the water regime formation process. Certainly, to overcome asymmetric interest constellations deserves benefit- or cost-sharing mechanisms (e.g. financial transfers, in-kind compensations, foreign direct investments, package deals) that are only feasible and realistic if transaction costs are low. (Klaphake 2005) Besides transaction costs, power relations between the riparian countries strongly shape the incentive structure because significant power asymmetries can both reduce or enhance incentives to cooperate depending on the hydro-political situation and the characteristics of the water management issue. Furthermore, the process of coalition formation is worth considering because it shapes the pattern of water cooperation.

3. Illustrative studies

For the sake of illustrating our general observations, we have chosen five cases of international water cooperation in Africa. We intend to demonstrate the empirical relevance of the analytical framework presented being aware that the selection and the analysis of the cases will not allow to falsify the theoretical hypotheses in a more rigorous methodological sense. We selected four cases of international cooperation in Southern Africa (the rivers Zambezi, Okavango, Orange-Senqu, and Incomati) and one case from West Africa (the Senegal river). The cases are characterized by a wide spectrum of cooperation issues and allow to discuss various institutional approaches to the management of transboundary waters.

3.1. Cooperation on the Zambezi river: common interests

The Zambezi river basin is one of the largest transboundary water basins in Africa and stretches on the territory of eight states, namely Angola, Zambia, Botswana, Namibia, Zimbabwe, Malawi, Tansania and Mozambique. Cooperation started in the early 1950s when North-Rhodesia and Southern Rhodesia were under colonial rule and united in a federation. The Federation engaged in a hydropower project because “(...) the copper mines of Zambia were experiencing electric power shortages and there was an urgent need for a large dependable source of cheap electric power. In addition, the fast developing industrial, agricultural and mining sectors of Southern Rhodesia were also suffering from a shortage of electric power.” (WCD 2000: 133)

The key infrastructure of the project is the Kariba Dam, which was realized between 1953 and 1963 along a 760 km strip where the river forms nowadays the border between Zambia and Zimbabwe. The dam has an active storage capacity of 186 billion cubic meters (BCM) and two power plants with an installed capacity of 1,266 MW (600 MW in Zambia, 666 MW in Zimbabwe), which provide 34 percent of the total electricity requirements of both countries.

When the Federation ended in 1963, and Zambia gained independence in 1964 and Zimbabwe in 1980, cooperation became an international issue in the true sense of the word. At that time, the project had yet to be completed, and the states had to negotiate on dam operation procedures. In November 1963, North- and Southern Rhodesia established the Central African Power Corporation (CAPCO) to finalize construction work and operate the system (including electricity generation and transmission). A Higher Authority for Power comprising two ministers of each country would control and coordinate CAPCO's activities.

CAPCO was abolished in 1987, the Zambezi River Authority (ZRA) was established in the same year as a corporate body by parallel legislation in the parliaments of Zambia and Zimbabwe “to obtain for the economic, industrial and social development of the two countries, the greatest possible benefit from the natural advantages offered by the waters of the Zambezi River and to improve and intensify the utilization of the waters for the production of energy and for any other purpose beneficial to the two countries.” (ZRA Agreement 1987)

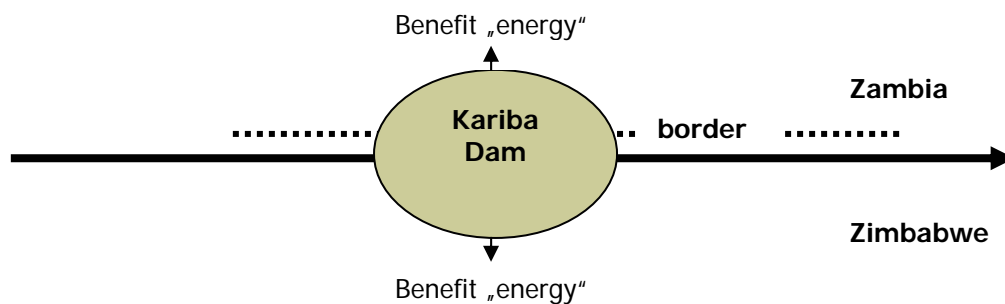
Hydropower generation and the transmission system was designed to be operated as one system comprising two national power plants. Each system in each country supports the other to avoid blackouts and to stabilize voltage outputs and frequency. In addition, hydropower generation at Kariba Dam is operated conjunctively with the thermal power stations in Zimbabwe and the Kafue Gorge power station in Zambia (Tumbare 2002).

The Kariba Dam is jointly owned by the Governments of Zambia and Zimbabwe in equal portions, and benefits and liabilities are shared equally (Figure 3). It is operated by ZRA which has a four-level policy and management structure comprising of a Council of Ministers, a Board of Directors, a Chief Executive responsible for strategic management and the day-to-day running of the authority through the Board of Directors, and three departments for operational functions. The ZRA's mandate is rather limited: it operates the dam's water level and allocates and sales water to the two national power utilities namely the Kariba North

Bank Company (Zambia) and the Zimbabwe Electricity Supply Authority. It finances its activities from the sale of water to the power utilities. According to Tumbare (2002) revenues from water sales are typically in the order of US\$10 million annually.

As regards the electricity demand of Zambia and Zimbabwe, preferences are symmetric which contributed to the realization of the project. However, interests were not always in harmony: in the early planning stage North-Rhodesia favored a project on its territory (the Kafue tributary), while Southern Rhodesia was in favor of the later selected location Kariba where the river forms the border of the two countries. To settle the Kariba-Kafue debate, the Federal government decided in 1953 “to appoint a neutral party to give an objective assessment of the two projects and to make a recommendation on which of the two should proceed first. (...) The Coyne report of December 1954 convinced the Federal government that the Kariba project should precede Kafue.” (WCD 2000: 11)

Figure 3: Common interests on the Zambezi river



In 1987, the governments of Botswana, Mozambique, Tanzania, Zambia, and Zimbabwe adopted the Action Plan for the Environmentally Sound Management of the Common Zambezi River System (ZACPLAN). Angola, Namibia, and Malawi joined these efforts in 1990. ZACPLAN consists of 19 projects, the so-called Zambezi Action Projects. In order to implement ZACPLAN, a River Basin Coordinating Unit and a Zambezi Intergovernmental Monitoring and Coordinating Committee were planned but failed to be established. Due to a lack of political and financial commitment and organizational structures, no project was carried out apart from ZACPRO 6 Development of an Integrated Water Management Plan for the Zambezi River System (Wirkus and Boege 2005). Nakayama (1998) assumes that the strong leadership shown by United Nations Environment Programme (UNEP) during the ZACPLAN's preparation phase may have worried the basin countries during its implementation phase. Limited support was provided because those ministries involved in the formulation of the ZACPLAN were the 'focal points' for UNEP (e.g. in charge of wildlife, tourism, national parks), while managing water resources was usually under the jurisdiction of other ministries who were, in turn, reluctant to support means in whose decision they were not involved. Under these circumstances, the countries could not mobilize the resources needed from within the governments.

However, through this project, a database was developed and several studies were conducted. When in 1996 responsibility for ZACPRO 6 was delegated to the Zambezi River Authority, negotiations to establish a basin-wide river basin organization moved forward. In

2002 the SADC Secretariat headed several rounds of negotiations until finally in July 2004 the Agreement establishing the Zambezi Watercourse Commission (ZAMCOM) was signed. Compared with the ZRA, the ZAMCOM has a broader mandate to promote the equitable and reasonable utilization of the Zambezi as well as the efficient management and sustainable management thereof. Due to the complexity of the issues to be addressed, the basin countries adopted a piecemeal approach, and it is assumed that ZAMCOM will remain weak in the short term. (Lindemann 2005: 174)

3.2. The Lesotho Highlands Water Project: Positive externalities

The cooperation between the Republic of South Africa and the government of the Kingdom of Lesotho in the Lesotho Highlands Water Project (LHWP) is one of the most far reaching examples of water cooperation on the African continent. Since bilateral cooperation is strongly based on the sharing of benefits resulting from the joint river development, this project is often seen as a model for an economic efficient and fair water cooperation elsewhere (Sadoff / Grey 2002). However, the LHWP is also one of the most controversial transboundary water management projects because of its significant negative social and environmental impacts, its bilateral character, its rather narrow scope and because it lacks the integration of local people and stakeholders.

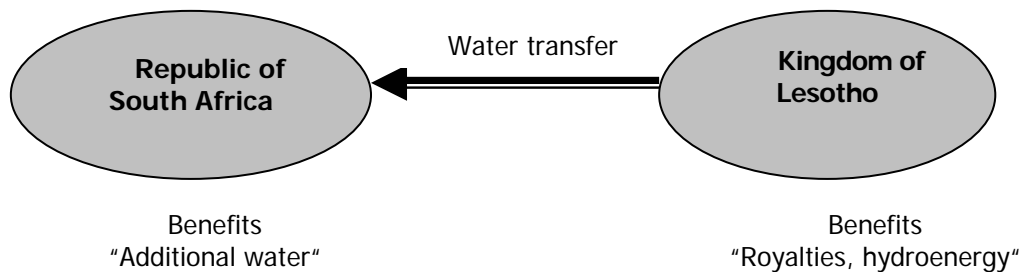
The physical core of the project is the construction of a cascade of six dams on the territory of upstream Lesotho – the Kingdom of Lesotho is a small mountainous and water rich state – in the upper reaches of the Orange-Senque river, 200 km of tunnels, associated water infrastructure including pumping stations and hydroelectric generators. It is a multiphase project and, once all three main phases will be finalized in 2021, an expected 2,200 MCM of water will be annually transferred from the mountainous areas of Lesotho to the South African Vaal river basin (see Figure 4). Albeit the main focus of the project is on water supply, it has a hydropower component too which enables Lesotho to produce hydroelectricity. However, full completion of the planned four phases of the project is not assured. Only the first two phases, i.e. the construction of the two giant Katse and Mohale dams and the associated tunnels and diversion weirs, are realised so far. The water receiving region is South Africa's Gauteng Province, i.e. the industrial heartland of the country that already faces significant water shortages. It is expected that limited water availability could be a long-term restriction for economic and social development of the region.

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 a bilateral organization and two implementing agencies enjoying autonomous status. Clearly, the LHWP demonstrates that bilateral functional water cooperation needs not only technical and financial cooperation but complex institutional arrangements in parallel. Already for the preparation of the project and the ex-ante assessment of costs and benefits, the two countries established a Joint Technical Committee in the early 1980s. A Joint Permanent Technical Commission (JPTC) was then established shortly after the LHWP treaty was signed in 1986. The JPTC was later changed into the Lesotho Highlands Water Com-

mission that is now responsible and accountable for water transfers and hydropower generation, and has monitoring and advisory functions vis-à-vis the two implementing agencies. (e.g. Turton 2004)

The benefit- and cost-sharing arrangements of the LHWP treaty demonstrate the exceptionality and complexity of the approach. Accordingly, South Africa bears the full cost of the LHWP relating to the delivery of water to South Africa, while Lesotho pays for the cost of the hydropower component (about 5 percent of the total costs of LHWP). South Africa receives increasing allocations of water while Lesotho retains the benefits of hydroelectricity production. Royalties (in the amount of 56 percent of the cost-savings realized by South Africa through implementation of the LHWP rather than the costlier best alternative, the only national Orange Vaal Transfer Scheme (OVTS)) are to be paid by South Africa for the water it receives. The royalties comprise two components: a fixed component is calculated on the basis of the investment differences between the LHWP and the OVTS. The variable component reflects differences in pumping costs and operation and maintenance costs. Purchase agreements are the mechanism for negotiating and allocating water quantities. In exchange for royalties, South Africa is to receive all the 'reserved supply' (i.e. water which is 98 percent sure), while what is left, 'excess water', will be shared. In addition to royalties, the LHWP treaty sets a price which South Africa pays for any excess water which it receives. Donor involvement played a certain role also in that the World Bank financed about 4 percent of the LHWP investment costs.

Figure 4: A deal with positive externalities



The LHWP concept came into being in a complicated political environment (Meissner / Turton 2003). The earliest plans to harness the upper reaches of the Orange-Senqu river in Lesotho and to transport the water to South Africa stem from the mid-1950s when Lesotho was still a very underdeveloped protectorate of Great Britain. Early negotiations failed over the sharing of the infrastructure costs and the price of water. In the 1970s and 1980s, a couple of domestic and international political issues jeopardised the realization of the scheme: inter alia, South Africa's apartheid policy, contested territorial demands between Lesotho and South Africa, South Africa's reservations towards becoming dependent on a foreign state for its water supply, and serious security concerns, in particular in the early 1980s when the Jonathan government of Lesotho supported the African National Congress (ANC). At that time, the pursuit of the LHWP was completely dependent on resolving the security issues and on changes of Lesotho's internal political situation. At that time, the South African government tried to use the LHWP as a bargaining chip against Lesotho to put pressure on the country to get rid of the ANC.

The implementation of the LHWP became possible only after a coup d'état took place in Lesotho in 1986. Not only international and, in particular, South Africa's influence as the regional hegemon contributed to the rapid regime change. Domestic policy changes and pressures played an important role too and eventually led to the installation of a much more pragmatic government (Baillat 2004). The focus of Lesotho's new government was on the economic benefits expectable from the LHWP which played an important role for the poor country that suffered 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, it would be misleading to analyze its development from a political bargaining and regional hegemony perspective only. Rather, the mutual economic benefits expected from the project and technical cooperation were key drivers that contributed to a surprising continuity in the preparation of the LHWP (feasibility studies, negotiation of technical details etc.) in the 1970s and 1980s.

However, the political climate in both countries strongly changed during the early 1990s with the end of the Apartheid regime and the establishment of a civil government in Lesotho. Thus, after 1993, the political environment was characterized by growing international cooperation concerning the project and a strong political support in both countries. Interestingly, while the ANC was principally against the LHWP during the Apartheid regime, the organisation changed its stance and emphasized the economic benefits of the project for both countries when it became the governing party later on.

From the early 1990s, national and international interest groups, e.g. environmental groups, human and social rights activists, church associations etc., emerged and raised objections against the project (Meissner 2000). These conflicts and disputes were not primarily characterized by a transboundary dimension but by clashes of different coalitions. The water supply and water engineering coalition perceived large dams as adequate responses to expected water shortages. In contrast, ecologists and social groups stressed the environmental and social costs of large-scale water infrastructure and doubted the fairness of the distribution of costs and benefits. However, as a result of political lobbying and bargaining in the 1990s and the democratization of the political systems, the style of the LHWP project implementation changed significantly, and decision-making turned out to be much more transparent, collaborative and open for non-state entities. In 1998, the Lesotho Highlands Development Authority (LHDA) and various interest groups in Lesotho signed a Memorandum of Understanding that set out rules for the involvement of interest groups in the LHWP and specifies the legal obligation of the state parties to safeguard the welfare of affected persons and communities. Furthermore, the LHWP administration and the interest groups agreed on Environmental Action Plans which provided the framework for developing mitigation, compensation, resettlement and development measures.

Certainly, the LHWP is an example of mostly unidirectional positive externalities resulting from infrastructure development in an upstream-downstream context even if the combination of water supply with the hydropower component allows to directly branching off important economic benefits to Lesotho. However, only the financial transfer from South Africa to Lesotho has made the project feasible. Furthermore, the project demonstrates the importance of

international institutions and organizations in the process of project implementation and monitoring. Finally, the development of anti-dam coalitions opposing the water engineering consensus in both countries has been an important emblematic issue.

3.3. Cooperation on the Senegal river: Everybody wins

The riparian states of the Senegal river are Guinea (upstream), Mali, Mauritania (both upstream) and Senegal (downstream). Cooperation started in 1963 when the Inter-State Committee for Development of the Senegal River was established. It was already under this agreement that the Senegal river was granted an “international status.” This inter-state committee was succeeded by the Organisation of the Senegal River Riparian States in 1968. The scope of the new organisation was broader than that of its predecessor, aiming at the economic and political integration of the four member states. In 1972 a new agreement established the Senegal River Development Organization (Organization pour la mise en valeur du fleuve Sénégal, OMVS). (e.g. Kipping 2005) So far, Guinea did not sign the treaty, but holds observer status.

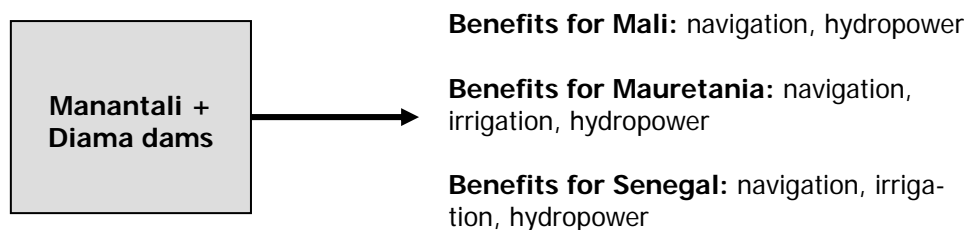
Although cooperation started long before 1972, major infrastructure projects on the river were only realized in the 1980s after the states experienced a period of drought lasting from 1968 to 1973. As a result of long-enduring and painful negotiations with international donors, two dams were constructed between 1981 and 1987, one at Diama and another at Manantali. The Manantali dam would regulate the river’s water level and guarantee a minimum flow in the river to allow for year around navigation; it too provides water for irrigating land in Mauritania (165,000 hectares) and Senegal (240,000 hectares), and produces electricity (installed capacity of 800 GWh). Due to topography, Mali’s irrigable potential in the Senegal basin is rather limited (10,000 hectares) compared with the Niger basin where 181,490 hectares are irrigated. (FAO Aquastat) The generation and use of hydropower, on the other hand, guarantees a regular year around water discharge downstream.² The Diama dam is located in the river delta, and built to prevent salt water intrusion; by storing water up to 2.5m above sea level, it provides, in addition, water for irrigation of about 42,000 hectares. In Mauritania where two lakes and one depression are fed by the river, the dam was assumed to reduce seasonal climatic risks for agriculture and fishing (later on, Diama was a debated issue and perceived unnecessary).

Following a common reasoning, Senegal as the most upstream state was in the position to realize infrastructure projects without cooperating with Mali and Mauritania. Despite this, Senegal was a driving force towards cooperation because, according to Fox and Le-Marquand, “the Senegal River is a case in which there is not only a common interest among the three lower riparian countries, but, in addition, the interest is complementary.” (1979:16, emphasized by the authors)

² Unlike the constellation between Kyrgyzstan and Uzbekistan where Kyrgyzstan produces energy during winter time, while Uzbekistan is in the need of irrigation water in summer.

Senegal was interested in diversifying its agricultural production through means of irrigation. Year-round navigation and electricity generation were meant to improve the conditions for exploiting its mining industry. Mauritania, too, wanted to open up land for irrigation and was interested in electricity generation, while Mali was eagerly pursuing the navigability of the river and hydro-power generation (see Figure 5). This rare harmony of non-conflicting objectives among the participating states might explain why they joined forces in particular in the Manantali dam construction which was expected to satisfy their multiple interests. Being a multi-purpose dam increased the rentability of the project, and economies of scale could be realized. International financial support too was stimulating cooperation and the establishment of OMVS, and it is argued that funding sources of these dimensions could only be attracted because of and through OMVS. During negotiations with donors, the three riparian states were able to insist on the construction of the Diama dam although international studies assessed it as unnecessary. (Kipping 2005)

Figure 5: Complementary interests on the Senegal river



However the common interests of all riparians to guarantee year around navigation was a major factor which positively influenced the states' decisions towards joint action. But maintaining a flow regime suitable for year around navigation put restriction on other uses. Therefore the OMVS countries who recognized the international status of the Senegal river, had to accept rigorous criteria to ensure an equitable sharing of the development costs and benefits of the agreed program. They used an economic model that separated the infrastructure's costs from the benefits each country would gain. Accordingly, Senegal bears 46.4 percent of the costs, Mali 36.9 percent and Mauritania 16.7 percent. Since Mauritania wished to participate in the hydropower component, cost sharing was changed accordingly.

However, the OMVS states had not to pay the total cost shares. The multilaterally provided credits are in actual fact donations because only 15 to 40 percent had to be repaid.³ The prospect of receiving external rents was a distinct incentive for water cooperation because the OMVS member states could make profits not only from the project but of foreign investments. (Kipping 2005: 67)

As mentioned before, the 1972 Convention which established the OMVS, declared the Senegal river and its tributaries to be an 'international river' - for the sake of project realization and management. Subsequently, the OMVS was established as a supranational organi-

³ The infrastructure project was financed by Saudi Arabia, Kuwait, Abu Dhabi, the European Union, France and Germany.

zation enjoying unique authority vis-a-vis their signatories. The dams built under the convention are termed 'common works' and are jointly owned by the three member states. In 1997, two companies were established to manage the Diama Dam and the Manantali Dam projects, i.e. the Société de Gestion et d'Exploitation du Barrage de Diamma (SOGED) and the Société de Gestion de Manantali (SOGEM).

With the dams being completed and operating, the OMVS is shifting its focus towards other objectives, among them environmental protection. In 1997, the OMVS initiated the Environmental Impact Mitigation and Monitoring Program because of the negative environmental impacts that appeared after the Diama and Manantali dams started their operation. During the same year, the OMVS started to collaborate with the World Bank for the Senegal River Basin Water and Environmental Management Project which is funded by the Global Environment Facility (GEF) and other development partners including the African Development Bank, the French Government, the Government of the Netherlands as well as the OMVS and the four national governments in the basin. The project focuses on establishing an integrated management strategy for the water resources in the basin. A series of activities at the national level are planned, together forming a comprehensive strategy for the basin which find its expression in the Senegal River Water Charta (2003) where the Heads of State and Government adopted principles and objectives for the sustainable development of the river basin.

3.4. Cooperation on the Incomati river basin: A package deal

The Incomati river basin is shared between South Africa, Swaziland and downstream Mozambique, notwithstanding the fact that Swaziland does not share the basin of the main tributaries such as Crocodile and the Sabié rivers. The main water consumer in the widely semi-arid basin is the irrigation sector (e.g. sugar production) which was rapidly developed in the three riparian countries. The construction of large dams, mainly for irrigation, increased in the late 1980s when several important works were commissioned. South Africa and Swaziland bilaterally agreed on joint dam projects, inter alia on the Maguga Dam (Komati sub-basin, territory of Swaziland) and the Driekoppies Dam (Lomati sub-basin in South Africa). In the late 1980s, downstream Mozambique unilaterally developed its water infrastructure and commissioned the biggest dam on the Incomati, the Corumama.

Other important water consumers are urban and industrial uses, where special reference should be made to Maputo, the capital of Mozambique, which might soon require water from the Incomati to assure its water supply. Furthermore, inter-basin water transfers, hydropower generation and freshwater ecosystems are important water users. Parts of the Incomati basin already face serious water stress and the whole hydrological regime of the river is strongly influenced by the many dams that cause negative impacts on water-dependent ecosystems and downstream water uses. Another important issue is flood protection because serious flood events regularly cause serious economic and social consequences in the basin. In the light of the high consumptive water use in the basin and the already existing water development plans, there is a clear need for upstream-downstream coordination.

However, water cooperation developed slowly in the last decades and was heavily influenced by the specific hydropolitical constellation, the long-lasting tensed political relations between the riparians, and by the organisational and financial support of donor organizations that promoted multilateral cooperation. Ways to conduct negotiations between Mozambique and South Africa were already found in the early 1980s but then the beginning of the civil war in Mozambique decreased the capacity of the government to deal with transboundary water issues. Although a Tripartite Permanent Technical Committee (TPTC) was established in 1983, it did not meet regularly and was not effective in the 1980s due to the political situation in Mozambique and the complicated political relations between the riparian states. (Carmo Vas and van der Zaag 2003)

There is, however, already a longer tradition of effective functional, project-specific cooperation between South Africa and Swaziland, in particular in form of the establishment of the Komati Basin Water Authority in connection with the bilateral dam projects mentioned above. Since financial support was provided by the World Bank, it was a 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 about 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 major dams in the Sabié sub-basin and from any additional major water abstractions without prior consultation with the TPTC until a water sharing agreement for the whole basin was concluded. Furthermore, and as an interim measure, South Africa guaranteed a minimum water flow at the border until a final agreement would be reached.

After this agreement, the negotiations on water sharing did not develop easily at first because, initially, Mozambique did not participate in the Joint Incomati Study while South Africa could not always guarantee the minimum flow during drought periods. Equally, South Africa announced the construction of a further dam in the Sabié basin that was considered a violation of the 1991 agreement by the government of Mozambique.

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 form of the 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. Another important factor was that Mozambique decided to participate in the Joint Incomati Study that could eventually be finalized in 2001. The study provided largely uncontested hydrological, environmental and water use data that could serve as a starting point for further agreements.

This process at last led to the signing of the Tripartite Interim Agreement between the three riparian countries in 2002. This Interim Agreement is a very comprehensive and complex document, setting out both some general principles and objectives concerning the cooperation and the protection of the water resources and specific regulations concerning water withdrawals in the three countries that are allowed under the agreement. Three of the most striking features of the agreement are the following: First, the agreement allows a sig-

nificant increase in the water uses of the Incomati by all countries. Herewith, the agreement is obviously 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. Second, the agreement includes provisions concerning the water uses of two watercourses: the Incomati and the Maputo rivers. It is obvious that the combination of the two watercourses into the agreement allowed for some 'trade off' in the negotiations. The fact that the Maputo basin issue became part of the agenda, broadened the negotiation base and allowed new combinations of negotiation positions in the form of package deals. Third, 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.

Although the 2002 agreement has an interim character and the implementation appears highly challenging, the Incomati-Maputo negotiations illustrate how an upstream-downstream conflict in water allocation and the guarantee of minimum flows can be solved. Crucial factors that contributed to the water regime formation are the involvement of international actors and donors, and the broadening of the negotiation base that made issue linkages and the establishment of package deals possible. Furthermore, this case illustrates the importance of an adequate and accepted information base (hydrological data etc.) and the impacts of changing internal and external political conditions with the SADC integration process as a particularly important driver.

3.5. Cooperation on the Okavango: Asymmetry of interests

The Okavango river basin extends on the the territories of the states of Angola, Namibia and Botswana (downstream). The Okavango delta which lies in the inner landscape of Botswana, is one of the most precious and pristine aquatic ecosystems of the African continent and rarely affected by human interventions.⁴ For long, during the civil war, Angola had no interest in developing the water resources. In the other hand, both Namibia and Botswana could tap extensive groundwater resources with only few water taken from the river for small irrigation projects and household consumption. When demand increased, Namibia and Botswana engaged in developing the Okavango's water resources in the beginning of the 1990s.

It was at that time when coordinated efforts were required for the management and use of the Okavango's waters. The Permanent Water Commission on the Okavango River Basin (OKACOM) was established in 1994 "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 critical, technical cooperation facilitated the building of trust and understanding.

⁴ Since the river does not discharge into the Sea but in the inner landscape of Botswana, it is characterized as an *endoreic river*.

Cooperation on the Okavango's water resources faces a typical upstream-downstream problem because use in 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." (2003: 12)

Out of the three riparian countries, Botswana was most vulnerable to upstream uses and heavily relied on transboundary cooperation. For Botswana, the Okavango Delta bears importance for its tourist industry and its local population. Therefore, it eagerly declared the delta as a Ramsar Site in 1996 to restrict planned water use in Namibia and Angola. In its efforts the government of Botswana was supported by international and national non-governmental organizations. Intensive lobbying has taken place by the Okavango Liaison Group, a coalition of non-governmental organizations formed in 1996, comprising e.g. 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, Botswana was able to strengthen its position as the most downstream country, but also limited at the same time its own development efforts.

However, Namibia being a water-stressed country and in the need to import water from the river to supplement water supplies to its central area, proactively engaged in establishing OKACOM. Namibia followed a strategy which eased the creation of OKACOM. Rather than claiming certain water shares, it favoured 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 a Namibian water expert:

"(...) we had to get access to perennial water sources, and that we can only do if we have water commissions (...). We had to discuss this issues with our neighbouring states, so there was a concerted effort from the side of the Ministry of the Department of Water Affairs and the Ministry of Agriculture to develop these commissions, so that you can start with negotiations and discussions and building trust and confidence before you get to critical issues." (cited in Lindemann 2005: 149)

On the other hand, the Okavango Delta being a Ramsar Site after 1996, Namibia had to take into account the role IUCN, Greenpeace and international donors had encountered:

"Without a regime, (Namibia) has no chance of being able to access the river in a formal way (such as for transferring water to Windhoek). Any mention of transfers would have international nature conservation NGOs (e.g. IUCN) up in arms with threats to blacklist Namibia as an ecotourism destination. But if the other two states agree to Namibia using a portion of the water – as they would have to do in order to allow Namibia a "fair and reasonable share" – they will run into less opposition internationally." (cited in Lindemann 2005: 149)

Angola's interest to join OKACOM has been less forthright because, as 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?" (Swatuk 2003: 130)

In enabling transboundary institutions to flourish, however, the role of donors as external agents for change seems crucial.⁵ Due to the engagement of many donors and of international nongovernmental organizations, the Okavango river basin is sometimes labelled as being internationalized. Even though OKACOM has a short record and a rather limited mandate, i.e. it acts as technical advisor to the contracting parties, and has no permanent secretariat and no large staff complement, OKACOM "has managed certain things which would never have happened if this thing did not exist." (cited in Lindemann 2005: 152)

4. Discussion

The five cases presented allow drawing some general conclusions on the development of international water cooperation in Africa and the soundness of the theoretical arguments which were outlined above.

First, we could illustrate that the very nature of the transboundary problem is relevant for explaining the water regime formation process. Certainly, the Zambezi case and the cooperation on the Senegal river are examples of water cooperation issues that are either symmetrical or harmonious in nature and did allow to enter into strong organizational forms of regional cooperation. Both cases are examples of successful cooperation which is functional in scope, and the approaches adopted are focussing on the solution of specific problems or challenges in the basins. Equally, the Zambezi and the Senegal cases illustrate that effective water cooperation often focuses on the joint development and management of water infrastructure, i.e. dams, which more easily allow a 'fair' distribution of costs and benefits. In both cases, cooperation is rather narrow in scope but endowed with strong regional organizations that have a broad mandate.

The Okavango case, however, is an example of difficulties stemming from unidirectional transboundary externalities and a highly asymmetrical distribution of costs and benefits. Apparently, the hitherto established cooperation does not solve the problem of diverging water use interests in the basin and the potentially negative effects of an increased upstream water use. Until now, there is certainly a lack of cooperative incentives, and it can be assumed that benefit-sharing arrangements will be necessary to overcome cooperation obstacles.

Instead, the Lesotho Highlands Water Project and the Incomati case show how difficulties stemming from externality problems can be overcome. In both cases, benefit-sharing mechanisms have been used in order to balance the distribution of costs and benefits in a

⁵ GEF, UNDP, FAO, EU, SIDA, USAID to mention some.

fair manner: In the Lesotho case, South Africa did agree to pay the investment costs of the water infrastructure and royalties for the delivery of water. On the Incomati river, the allocation of water quantities and the agreement on minimum flows were possible only because the water allocation on the two rivers - Incomati and Maputo - were negotiated simultaneously; the agreed allocation formula allowed to distribute the benefits in a balanced way. The Incomati river negotiations also illustrate the importance of issue linkages that are certainly an institutional approach to overcome asymmetrical incentive structures in cases where financial transfers are neither feasible nor realistic.

In addition to the very nature of the transboundary problem, we argue that transaction costs in negotiating water agreements and in enforcing respective provisions are of pivotal importance. In all cases, water negotiations were seriously hampered by asymmetrical information and uncertainties regarding water availability, potential risks and economic consequences of different water allocation schemes. However, information costs can be reduced by joint studies of the water availability and joint feasibility studies in case of planned water infrastructures measures. We further argue that the exchange of data and of planned measures are already highly politicized issues wherefore independent experts and international organization play an important role as knowledge brokers and facilitators of joint actions. The Incomati case indicates that uncontested state-of-the-art water flow models are often an important prerequisite for water allocation agreements.

Assessing the relevance of the political relations and the potentially favorable effects of political integration on water cooperation, we receive somehow ambiguous results. The Incomati and the Okavango cases indicate the relevance of the SADC integration process and show that the political and economic integration of riparian countries might reduce transaction costs of water cooperation and make cooperation more likely and stable. The SADC integration, in particular the SADC Revised Water Protocol, has certainly paved the way for water cooperation in the very complicated context of water allocation on the Incomati basin. There are further examples that endorse the supposition that an improvement and intensification of the political relations between the riparian states usually have positive effects on the handling of transboundary water disputes. The Lesotho Highlands Water Project, for instance, became only possible shortly after the strong tensions between the two states (security issues) passed into pragmatic relations. However, water cooperation in Southern Africa is still strained by the history of political tensions and violent conflicts that characterized the regional history in the last decades. Other examples illustrate that water cooperation can also develop even if political riparian relations are tensed (Senegal river).

Table 1: Relevant factors influencing regime formation

Rivers / projects	Problem characteristics	Factors influencing regime formation	Institutional form, competencies	Purpose / scope of the regime (transaction costs)
Zambezi	Common interest	Colonial roots. Donors.	ZRA: management unit. ZAMCOM: advisory without executive power.	Mono-functional / limited Broad mandate
Lesotho Highlands Water Project	Positive externalities	Financial transfers (royalties), internal and external political factors, donors.	LHWC: responsible for water transfer and hydropower, monitoring of implementation. LHDA / TCTA: national implementation.	Water transfer, hydropower. Later: Integration of environmental and social issues.
Senegal	Complementary interests	Donors	OMVS: supranational authority	Infrastructure development; broad mandate
Incomati / Maputo	Negative externalities caused by dams (quantity, environmental minimum flow)	Package deal (inclusion of Maputo river basin), donors, improvement of political relations	TPTC: advisory without executive power	Water quantity, minimum flow, information exchange,
Okavango	Negative externalities (quantity, ecosystem requirements)	INGOs, Namibia's / Botswana's strategies, donors	OKACOM: advisory without executive power	Broad mandate, multi-purpose

Regarding the relevance of asymmetric power relations in the basins as an explanatory factor, there is no clear empirical evidence. Certainly, the Republic of South Africa is the regional hegemon in terms of economic and military power, and it is uncontested that the strategic interests of the country have promoted cooperation in the case of the Lesotho Highlands Water Project. Contrarywise, cooperation along the Senegal river cannot be interpreted as the expression of the long-term strategic interests of the regional hegemon, i.e. Senegal. The Okavango case demonstrates that a weaker downstream state can strengthen its position vis-à-vis a stronger upstream riparian (Namibia), if the latter fears the threat of losing international reputation and economic losses (tourism industry) by pursuing unilateral actions.

In addition, our cases strongly reveal the importance of third-actor involvement, in particular of bilateral and multilateral donor organization. In the case of the Senegal river, the financial support and the capacity-building measures implemented by several donor organizations were a crucial condition for the implementation of the agreement. In the case of the Incomati river, the development of cooperation would not be imaginable without the involvement of the World Bank that promoted cooperative structures and developed the necessary information base for actions. In the case of OKACOM, multilateral and bilateral donors played an important role with respect to the mobilization of financial resources and the set-up of a river basin commission. While it is generally assumed that donor involvement might influence water co-

operation patterns in a positive manner, negative effects and ambivalent results should not be ignored. Donor-induced water cooperation usually tends to be unstable once the financial transfers are phased out wherefore the sustainability of several cooperation forms was not guaranteed per se. A lack of national ownership can be observed if cooperation excludes major stakeholders who are in charge of water resources development and management (e.g. Zambezi).

As regards to the assumed importance of domestic policy structures and actors, we can argue that several cases (e.g. Lesotho, Incomati, Senegal, Zambezi) confirm the relevance of domestic policy changes and events to the water regime formation. Certainly, the water cooperation between South Africa and Mozambique did not only benefit from the regional political and economic integration but from internal political processes (democratization, liberalization) in the countries concerned which promoted the development of water agreements in parallel. Cooperation and conflicts on the Senegal river were also heavily influenced by domestic policy developments and the interests of national political actor groups, which applies too to the construction of the Kariba Dam. The case of the cooperation on the Senegal river might also indicate the relevance of rent-seeking behavior, clientelism and of the politically symbolic value of water infrastructure.

Lastly, our findings underline the hypothesized relevance of transboundary advocacy coalitions and the associated internationalization of water cooperation: The case of the Lesotho Highlands Water Project, in particular the conflicts regarding the social and environmental effects, illustrates how water cooperation might change from purely intergovernmental negotiations and administrative actions to a multi-actor setting with intensive public debates, several forms of public participation and intense negotiations between civic society actors and state actors. The case of the Okavango is definitely a further example of international water cooperation being heavily influenced by international organizations (IGOs) and international NGOs (INGOs), while the early ZACPLAN demonstrates that international actors can only be successful if they liaise with dominant elites that wield great power in the policy process.

It appears that third-actor involvement is an issue which deserves more in-depth studies. This refers to the role bilateral and multilateral donor organizations as well as to the role of international non-governmental organizations (INGOs) although in different ways.

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