

Title:

Issues and options regarding resource allocation and benefit sharing of shared watercourses in the SADC region

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Most surface water sources in southern Africa are shared among countries and river basin organizations (RBOs) find it hard to resolve the challenges of resource allocation and benefit sharing. The use of shared water resources is governed by the SADC Protocol on Shared Watercourses. With increasing demand for water, countries are increasingly turning to the use of shared water resources. The main objective of this paper is to review the main issues and options for benefit sharing *and* allocation of shared water resources.

The paper is based on a project carried out for SADC and USAID. Methods used were a desk top literature review, case studies of six river basins and results from a small survey and interviews among RBOs, SADC Water Division and ICPs.

The survey and interviews showed a lack of common interpretation of key concepts such as equitable and fair use, hampering progress with resource allocation and benefit sharing. The literature review showed a shift in emphasis from resource allocation towards beneficial use and benefit sharing. However, resource allocation, benefit generation and benefit sharing need to be negotiated together in an iterative process until the most suitable and acceptable situation has been achieved. Other conclusions are: 1. All countries need to benefit from joint management; 2. increasing the benefits is important and makes compromises easier; 3. Benefit must be shared between countries, sectors and population groups; 4. Benefit sharing may be an easier way of resolving historical injustices than re-allocation of water rights.

The six RBO case studies show that each river basin is unique and RBOs needs to find its own solutions for benefit sharing. Distinctive factors include: the number of riparian countries; degree of homogeneity among riparian countries; level of water use and infrastructure development; existence of prior bilateral forms of cooperation.

Finally, the paper outlines a broad mechanism for benefit sharing and allocation of shared water resources based upon: a. principles of best use, sustainable utilisation, conservation, and equitable distribution; recognition of the diversity of each river basin. Resource allocation, benefit generation and benefit sharing should constitute the core of RBO negotiations. The tool of water accounts can assist in this process as they deal with water use, benefit generation and sharing between countries and economic sectors. The RBOs should undertake an assessment of the water resource to identify the stocks, uses, user costs and the benefits emanating from the watercourse. Then identify and negotiate the way of maximizing the benefits of resource allocations while equitably sharing the net benefits.

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1 Introduction

A large portion of global fresh water resources are contained in watercourses shared by two or more countries (Pochat, undated; Watkins, 2006 and Bun 2008). Such basins are home to forty percent of the world's population and generate around 60% of global freshwater flow (Wolf *et al*, 1999). In southern Africa all major rivers are shared by two or more countries and about 70% of the region's water resources occur in shared river basins (Chiramba, undated). Therefore shared watercourse management is vital for global and southern African development.

The management of shared transboundary watercourses in the SADC region is guided by the Revised SADC Protocol on Shared Watercourses (2000). The main intent of the Protocol is to foster closer cooperation for judicious, sustainable and coordinated management, protection and utilisation of shared water courses and advance the SADC agenda of regional integration and poverty alleviation (Article 2). Use of shared water resources is subject to the provisions of this Protocol¹ (Pochat, undated). Resource allocation and benefit sharing is arguably the most difficult topic of discussion among member states (see e.g. Kampragou *et. al*, 2007). While sets of SADC guidelines have been agreed upon for the establishment of river basin organisations (RBO), funding of RBOs and their activities, the environment and stakeholder participation, guidelines for resource allocation and benefit sharing are still being debated. No agreement was reached during the 4th RBO workshop held in April 2010. This is not surprising given the daunting development needs of member states, the different historical levels of use of shared water courses and differences in economic and political power. It is not made easier by the fact that the Protocol does not provide much guidance about the nature of 'fair and equitable use and sharing'.

Resource allocation refers to acquired or allocated rights to use water resources from the river basin. Benefits are generated from resource use and management. Benefit sharing is described as the distribution of the benefits resulting largely as a result of cooperation (Scheumann and Neubert, 2006; and Sadoff and Grey, 2005). Cooperation in this sense is emphasized because such cooperation increases the overall satisfaction and value derived from water use involving coordination and optimization across country borders. Resource rights are tangible and can be quantified. However, monitoring of the use of rights is difficult and requires a monitoring system. Benefits are diverse in nature and some are tangible whilst others are intangible. Some can be quantified whilst others cannot. Actual benefits may differ from the expected ones, hence there is a degree of uncertainty with respect to benefits. These differences need to be recognized in the negotiation process towards joint management.

The main objective of this paper is to highlight the main challenges confronting resource allocation and benefit sharing arrangements of RBOs and to suggest a way forward. This paper reviews literature on benefit sharing and resource allocation, discusses case studies from southern Africa and elsewhere and makes suggestions for a possible mechanism towards resource allocation and benefit sharing.

2 Methods and limitations

The paper is based on research under the Integrated River Basin Management project to establish guidelines for resource allocation and benefit sharing. The full report can be down loaded from

¹ The Revised Protocol on Shared Watercourses derives many of its provisions from the Helsinki Rules and the United Nations Convention on the Law of the Non- Navigational Uses of International Watercourses.

www.car.org.bw. Further research is being carried out and therefore the results presented in this paper must be considered as interim results.

The study comprised a general literature review and in-depth case studies of six RBOs (Okavango, Incomati, Senegal, Orange, Mekong, Senegal and Rhine). In addition, a questionnaire was circulated among RBOs and stakeholders. While the response rate was disappointing, the returned questionnaires provided valuable insights. The mail questionnaires and interviews were used to collect data from International Cooperating Partners (ICPs), RBOs and SADC-Water Division experts. An analysis of case studies of river basin organisations or commissions in southern and west Africa, Asia and Europe was undertaken drawing mainly from existing literature. The project was conducted in a short period, and therefore data collection and interviews have been limited. Moreover, not all relevant literature may have been identified and reviewed.

In line with the SADC Water Policy and Strategy, the study adopted Integrated Water Resources Management (IWRM) as its analytical framework. IWRM implies, among others, that water resources are treated as economic and social goods, raising issues of user charges, cost recovery and subsidies; that stakeholders should participate, hence water management should not be restricted to the public sector; and that resource management should be decentralised to the lowest relevant level. The IWRM implications for transboundary water resource management are that users and polluters need to pay for water consumption (subject to affordability and ecological sustainability), that RBOs should involve stakeholders in water management and that RBO water management needs to be fine tuned with national and local water management efforts of member states.

RBOs in southern Africa date back no more than fifteen years, and most are younger. In Europe, some RBO are much older (e.g. the Rhine) and have developed and matured in time. The activities and performance of RBOs differ based on their history and experiences. RBOs are usually classified into three groups (ODI/ Arcadis, 2001; Hooper 2006): the initiation phase; the development or infancy phase and finally the implementation or full operational phase. Most RBOs in developing countries are in the initiating or infancy stage. In some cases, they have been preceded by several bilateral agreements in parts of shared water courses, which are in the implementation and operational stage. Examples include the Lesotho Highlands Water Project in the Orange-Senque river basin, the Kariba Dam agreement between Zambia and Zimbabwe in the Zambezi river basin and finally the Maguga and Driekoppies Dams agreement between South Africa and Swaziland in the Incomati river basin.

3 Findings

3.1. General findings

The operationalisation of resource allocation and benefit sharing can draw from the SADC Protocol and the Helsinki rules. The latter rules are more explicit about the need to avoid wasteful water use, but less explicit about resource conservation and environmental water requirements. Neither treaty offers concrete mechanisms and guidelines for resource allocation (they do not mention benefit sharing). While the factors of reasonable and equitable use are listed, 'the weight to be given to each factor is to be determined by its importance in comparison with that of other relevant factors' and that these are 'to be considered together and a conclusion reached on the basis of the whole' (Article 8.b). Article 10 of the Helsinki Rules prioritises 'requirements of vital human needs' in resolving conflicts between uses, where there is no agreement or custom. Kampragou et al, (2007) posit that while international legislation provides

the framework for equitable and reasonable allocation of water resources, it does not set specific tools or methods for achieving this goal, assigning this task to the interested countries.

The experience with international RBOs is rapidly increasing, as the case studies show, but progress with resource allocation and benefit sharing has been slow and difficult. Increasing emphasis is put on beneficial use and benefit sharing, partly in response to difficulties in negotiating resource allocations. This puts joint management of shared river basins clearly in a more economic perspective of regional integration and economic growth. In order to be inclusive, all countries need to benefit from joint management. This also applies to dealing with historically unfair and inequitable resource allocations and benefit distribution.

Current and future resource allocations and benefit sharing of shared water resources should take a number of issues into consideration, most of which are principles outlined in international water law, including the SADC Protocol on Shared Watercourses:

- Economic emphasis: optimal use requires beneficial and efficient allocation and use of water which involves making water available for the most economically productive activity and using the same water for a variety of uses. This boost economic growth and regional integration;
- Environmental emphasis. Sustainable use implies the prevention, reduction and control of pollution and environmental degradation of a shared watercourse that may cause significant harm to other watercourse states or their environment, including to human health or safety, to the use of waters for any beneficial purpose or to the living resources of the watercourse.
- Social emphasis. Equitable and reasonable use entails taking into account all relevant factors and circumstances including: basic natural conditions in the basin; the socio-economic and environmental needs of the watercourse states concerned, the population dependent on the resource; the effects of the use of a shared watercourse in one state on another's (upstream-downstream issues); conservation, protection, development and economy of use of water resources of the shared watercourse and the costs of measure taken to that effect; and the availability of alternatives, of comparable value, to a particular planned or existing use.

3.2 Views of stakeholders

The interviews showed that the degree of water scarcity is perceived to be the most important factor that influences the process of reaching and implementing shared water course agreements. Other important factors include the number of shared water course countries, existing water allocations and the level and quality of governance in shared water courses (SWC) countries. The interviews show that there is no common interpretation of the terms and concepts used in the Protocol, especially in relation to reasonable and equitable and optimal use.. This is a serious constraint for successful negotiations and implementation of joint SWC management. Views about the main terms are shown in Table 1. While weights need to be accorded to different factors listed in several articles of the Protocol (e.g. 7 and 8), there is no consensus about the weights of each factor. Interviewees identified the unequal capabilities of RBOs and representatives of SWC countries as another negotiation constraint. Weaker and smaller parties can easily feel bulldozed by large, powerful countries. Consequently, capacity building efforts and active involvement of civil society are essential.

Table 1: Stakeholder opinions about key SWC concepts

Terms from the Protocol	Views from interviews
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Reasonable and equitable use	All factors mentioned in art. 7 & 8 are important. Two different types of prioritisations emerged: <ol style="list-style-type: none"> 1. Priorities for needs and the environment; 2. Priority for natural factors that determine countries' contribution to the river flow Some argued that joint developments should be given priority (e.g. joint ownership of large dams and irrigation schemes)
Environmental needs	Environmental flows need to guide environmental needs. Environmental needs should be addressed at the RB level. EIA, alien species and water quality management are considered to be critical environmental issues too. While environmental water needs are relatively constant in time, social and economic grow and put pressure on the SWC and these needs extend beyond the boundaries of the specific SWC.
Optimal use	Support for greater economic emphasis to boost development and regional integration through attracting investments
Cross border impact	Effect on water use in other states may be negative or positive. For negative ones, compensation and mitigation is required. Positive ones or benefits need to be boosted. Harnessing of water and responsible regulation can improve availability and mitigate the effects of droughts and floods.
Alternative water sources of comparable costs	Strong emphasis on implementing water demand management. Less emphasis on re-use of treated effluent, use of groundwater and use of other water sources (e.g. other rivers). Caution that WDM must be realistic and some skepticism exists about its potential.

Interviews showed strong stakeholder support for the shift from resource allocation to benefit sharing. However, as one interviewee put it: ‘prevailing mentalities, focused on resource allocation, need to change and appreciate benefit sharing. This is a process, not an event’. A very broad definition of benefit sharing by Phillips and Woodhouse (in pres) is quoted in SADC, 2010: *In the context of transboundary water courses, benefit sharing may be defined as the process where riparian countries cooperate in optimizing and equitably dividing the goods, products and services connected directly and indirectly to the watercourse, or arising from the use of its water.*

Interviewees expressed strong reservations about fixed amount allocations (e.g. 100 MCM per annum) as they do not recognise the dynamics of the shared water course and instead they argued that flexible guidelines need to be developed. Furthermore, interviewees argued that civil society and women should play a major role in RBOs in order to ensure stakeholder participation and fair distribution of benefits, especially among social groups.

3.3 Resource allocation

It is widely accepted (but not yet always part of policy) that basic human needs and environmental needs throughout the basins should be met prior to the discussion about resource allocation and benefits for economic growth and development. This form of demand prioritization is policy in South Africa and Namibia and is implicit in the Protocol. Resource allocations of shared water courses are conditional upon prudent and efficient use of ‘domestic’ water resources. Countries have first to exhaust national water resources of comparable costs.

Flow percentage allocations tend to be better than fixed amount allocations in highly variable environments. Fixed amount allocations entitle a country or user to a fixed amount of water per annum. A case in point is the 1994 peace Treaty between Israel and Jordan. The latter is guaranteed a minimum of 30MCM/year from the Jordan River to be supplied during the summer months (Beaumont, 1997, cited in Wolf, 1999). As a result of severe summer drought in 1999, Israel faced difficulties in delivering the agreed-upon amount, and suggested modifying the agreement (GWR, 1999); however, Jordan insisted that the 30MCM/year minimum is integral to the peace agreement.

Wolf (1999) argues that hydrology and/or history (who has been using the water longest) of use mostly determine resource allocations. Needs refer to water used for irrigation, domestic use, or the requirements of a specific project, such as hydropower generation. Because of its relative success, needs-based allocations have been advocated in recent disputes as well. For example, it was proposed for the Jordan River watershed where riparian disputes exist not only along the river itself, but also over several groundwater aquifers (Wolf, 1999). The uniqueness of each river basin suggests that any universal set of principles must, by necessity, be fairly general.

In order to achieve cooperation of all states, all parties should benefit and in this way joint management, resource allocation and benefits are closely interconnected. Each party needs to participate voluntarily, and to adhere to the outcomes of the negotiations. Therefore, river basin plans should be developed and approved by all the riparian countries (Mylopoulos, 2008). To make this work, it is necessary that each participant is better off compared to a non-cooperative outcomes and that all costs or benefits are allocated (Le Marquand, 1977).

3.4 Benefit generation and sharing

The notion of beneficial use implies that joint management should generate extra benefits (that can be shared). Unfortunately, the benefit sharing concept and models are not yet fully developed (Phillips *et. al.*, 2006) and there is no clearly defined framework for equitable sharing. This poses major challenges to today's RBOs and forces them to pilot and learn from trial-and-errors. Benefit sharing needs to be based on clearly identified (potential) benefits and understanding of hydro politics (Turton, 2002). Key issues are the identification and realisation of the types of benefits at stake and their distribution and sharing. Moreover, the concepts and framework used need to be simple, transparent and fully understood by the SWC countries. If not, limited progress will be made (e.g. Nile).

Benefit sharing requires a common understanding, interest and vision as well as the required political will to jointly manage river basins. The main challenge is to change prevailing mentalities, understand benefit sharing concepts and options and the links between resource allocation-benign use-benefit generation and benefit sharing. Sadoff and Grey (2002) distinguish four types of benefits that can be derived from cooperative management:

- Benefits to the river (environment); improved water quality, river flow characteristics, soil conservation, biodiversity an overall sustainability (Jagerskog et al, 2007).
- Benefits from the river (economic); river developments (e.g. dams), the distribution of associated costs becomes as important as the benefits derived from that development. Some benefits involve consumptive use (e.g. water abstraction); others are non-consumptive (e.g. recreation, hydropower and transport).
- Reduction of costs because of the river (political). Through cooperation, food (and energy) security can be pursued instead of more costly self sufficiency.
- Benefits beyond the river (catalytic). Cooperation over shared water resources has been credited with creating the opportunity for positive spillover effects that can enhance integration of regional infrastructure, markets and trade. The formation of regional coalitions such as SADC is important in the context of joint resource management such as transboundary river systems, fisheries and tourism (Heyns, 2005).

Benefits can also be typified by area/ discipline summarised in a so-called '*benefit wheel*' covering the following aspects: economics, environment, agriculture, social, political, hydrology, physical and trade (SADC, 2010). Most segments of the wheel are disciplines but trade is a sector and an opportunity to create benefits beyond the basin.

Current resource allocations and benefit distributions are mostly determined by the level of economic development, political cloud and existing resource rights. The distribution is often uneven (e.g. Nile) and raises the question of resource re-allocation and / or benefit sharing. There are several levels at which benefit sharing can be done. These can be:

- *Benefit sharing between states* usually entails negotiation over sharing the benefits of water projects that are carried out on internationally shared rivers (e.g. dams, large scale irrigation and interbasin transfers). The best known example in southern Africa is the Lesotho Highland Water Development Project.
- *Benefit sharing between different sectors*. Traditionally, the agricultural sector gets the bulk of the river water, and yet its output is lower than that of most other sectors. Resource allocation and benefit sharing would typically involve measures that aim to increase the efficient use of water (e.g. through water demand management) and that optimise the economic returns of water resources through encouraging higher value uses (Gupta and van der Zaag, 2008). National and regional policies have to-date neglected the issue of optimal water allocations across economic sectors.
- *Benefit sharing between society and the environment*. In the past water allocation has been limited to consumptive uses and users, and has resulted in changes in the flow regimes of many rivers. A challenging question is how much water is required to sustain specific levels of environmental benefits.
- *Benefit sharing between social groups and within countries*. In many cases benefit sharing arrangements lack a well defined framework for equitable sharing to ensure community access to benefits (Mokorosi and van der Zaag, 2007).

Before any resource allocation takes place or benefits are shared, a holistic analysis of utilisation of transboundary water needs to be in place (Phillips *et al* (2006). This analysis should be based on Integrated Water Resource Management (IWRM) and can use the IWRM/WDM layers of augmenting available water resources and reducing demand (SADC, 2010): reduction of losses, re use of wastewater, desalination, inter-basin transfers, optimizing green water use and trade based on comparative water advantages (also called virtual water).

As every river basin is unique, resource allocation and benefits sharing mechanisms must be situation specific. Factors that need to be considered in resource allocation and benefit sharing include (Phillip *et al*, 2006):

- increasing water use efficiencies within the riparian countries prior to benefit sharing negotiations;
- quantification of benefits (and their relationship to volumetric allocations of water);
- recognition that the status quo is not always an appropriate starting point in negotiating benefit-sharing as powerful countries tend to have access to more than an equitable share. Inadequacies of the current situation may be best addressed by benefit sharing and incorporation of these concerns in future resource allocations.

3.5 Case studies

The case studies show a significant diversity in physical and socioeconomic conditions in the six transboundary basins. The main physical differences refer to the length of the river, the size of the basin, rainfall and mean annual run-off. Table 2 shows that most river basins are long, large and

have a significant run-off. Incomati river is the exception it is relatively short and has a modest run-off². Obviously, run-off is a function of the length, basin size and rainfall.

Table 2: Physical features of the river basins

River basin	Length (km)	Basin area (km ²)	rainfall	MAR
Orange-Senque	2 300	1 000 000	Ranging from 50 mm (Namibia to 2 000 mm (Lesotho) p.a.	11.5 MCM p.a.
Okavango	1 960	706 000	350 to 1320 mm with average of 680 mm p.a.	11 MCM p.a.
Incomati	480	50 000	Mean is 740 mm p.a.	5 MCM p.a.
Senegal	1 800	436 000	450 to 2 000 mm p.a.	8 MCM p.a.
Mekong	4 500	800 000		475 MCM p.a.??
Rhine River	1 300	195 000		Av. Discharge at mouth is 2 200m ³ /s

Source: Arntzen et al, 2008.

The basins are more diverse in socio-economic terms. The number of basin countries varies from 3 to 9; the population varies from less than 1 million (Okavango) to 76 million (Mekong) and the infrastructure and development varies from minimal (Okavango) to high (e.g. Incomati and Orange-Senque). The Rhine River differs in that pollution and flood control are more important issues than the level of abstraction. Two basins have constructed shared water infrastructure (Incomati and Senegal) while cost sharing arrangements exist for the Rhine River to ensure that pollution control takes place. The EU and SADC have a regional framework in place that guides the joint management of river basins.

Table 3 : Socio-economic features of river basins

Basin	No of countries	Population (million)	Development	Infrastructure
Orange-Senque	3	19	Highly used; cannot accommodate all future plans	5 dams with 452 MCM capacity; 2 water transfer schemes
Okavango	3	0.6	Low; mostly used for tourism in Delta Plans for more irrigation and water abstractions	None
Incomati	3	2	Heavily used (1 800 MCM out of 3 587 MCM p.a.) for irrigation, forestry and transfer schemes.	8 dams with 1 951 MCM capacity; some are shared; water transfer schemes

² The physical characteristics are similar to many SADC SWC basins.

			Only 200 MCM left for further abstraction	
Senegal	4 (Guinea left and rejoined)	3.5	Mostly agricultural use; a third of the irrigable land is used	At least two large dams jointly operated
Mekong	6 (China and Myanmar observers only)	76.2	Abstraction low at 12%	Large dams exist and more planned
Rhine River	9	60	Pollution and flood control are the primary concerns; not abstraction. Key for drinking water and for navigation	River canalized with dams

Source: Arntzen et al, 2008.

The case studies show that each river basin is unique in physical and socio-economic terms and therefore mechanisms for resource allocation and benefit sharing need to be sufficient flexible to accommodate this diversity. Factors that influence joint management include the following:

- Degree of water scarcity and water left for further allocation. The Incomati and Orange experience show that joint management is moving faster with scarcity;
- The number and governance of riparian countries: the more countries participate, the more difficult the negotiation process becomes;
- Non- participation of upstream countries restricts the work and results of joint management (e.g. Mekong)
- It is easier to promote joint management in under developed basins (e.g. Senegal and Okavango)
- Bilateral arrangement can be used to accelerate joint management but the interests of the other parties need to be fully incorporated (e.g. Namibia in the Lesotho Highland Water Development Project or LHWDP);
- Instability and diversity (e.g. historical, economic, cultural and governance) among countries make it more difficult to achieve joint management (e.g. Guinea in Senegal)
- Joint management is a process that requires time, development of mutual trust and ensuring of benefits to all.

Furthermore, the Incomati Basin and the Orange- Senque Basin show that it is easier to rectify historical injustices in allocations and benefits through new projects where the previously disadvantaged countries clearly benefit more.

Out of the six basins, only the Incomati basin has a formal water allocation formula that was scientifically developed and agreed upon by all countries. The other basins have no formal basin wide resource allocation procedure. However, they offer examples of costs and benefit sharing. Cost sharing of dam construction and the benefits thereof is practiced in the Senegal, the Incomati and Orange - Senque basins. In the Senegal, countries have agreed to develop all major infrastructure works jointly based on proportional costs sharing. Management of new dams in the Incomati is such that sufficient water be left for Mozambique. In the case of the Rhine, countries agreed to share costs of up-stream flood control measures. The Netherlands financially contributes to measures in Germany to absorb excess water during floods in order to prevent flood damage in The Netherlands. The same was agreed for reduction of salt dumping by France (Barraque & Mostert, 2006).

4 Discussion and recommendations

This chapter advocates ‘diversity in unity’ with respect to joint management of SWC, which requires a two-step approach towards guidelines. Firstly, a *broadly defined SADC- wide framework* needs to be developed, which provides general guidance to the management of southern African river basins based on the SADC Protocol. Negotiations need to be based on a common understanding of the basin and the concept of fair and equitable sharing of costs and benefits as well as the linkages between resource allocation/ rights and benefit generation and sharing. Secondly, *SWC specific plans* need to be developed in recognition of the basins’ diversity. This requires a thorough understanding of the specifics of the basin and sharing of data and expertise.

4.1 General part

The general approach comprises the following components: guiding principles for water management, conservation and utilisation; strategic directions; general framework for resource allocations, benefit generation and benefit sharing; toolkit.

Proposed guiding principles

1. Management of shared water courses need to be based on integrated water resources management and the precautionary principle.
2. Shared water course management needs to create benefits or lower costs and *all* countries need to benefit. Only beneficial water use is warranted. Countries that lose out because of shared water management need to be compensated.
3. RBOs and SWC countries should focus on the *economic* benefits and costs. These include the *financial* costs and benefits plus externalities (positive and negative) and future costs and benefits. Some costs and benefits will be hard to quantify, but still need to be considered.
4. Resource allocations and benefit/cost distribution need to be considered at the regional, national and local level. Local benefits are essential for compliance with the RBO agreement.
5. SWC management must be pursued within the broader context of promoting regional economic integration and growth as well as transboundary resource management. Management of shared water course needs to be based on cooperative rather than confrontational management.
6. Management of shared water courses needs to prioritise meeting the basic needs and ecological water requirements.

7. Information acquisition and data sharing are essential for cooperative management of shared water resources and for the operationalisation of the benefit sharing concept. Data must also be available to the relevant stakeholders, including civil society.

Strategic direction

The management approach needs to have the following characteristics:

- Be pro-active and forward looking (also in addressing historical injustices);
- Participatory and inclusive in terms of countries and stakeholders;
- Be practical and realistic and adopt an incremental approach;
- Develop common approach towards agriculture and major dams;
- Balancing regional and national interest in terms of benefits, costs and sovereignty;
- Balancing development and conservation.

SWC countries and RBOs may have to compromise in two important areas. Firstly, the requirements that all countries should benefit from shared management may compromise established environmental management principles of the user and polluter pays principles. These principles put a larger burden on upstream SWC countries and could lead to a situation where these countries do not benefit from SWC management (e.g. example of the Rhine). Secondly, water allocations and use prior to the Protocol may be unjust, not equitable and unreasonable. SWC countries and RBOs need to resolve this by relocation of water rights, changes in benefit sharing or a combination of both. Benefit sharing is likely to be more acceptable.

Resource allocations & benefit sharing

Three components are critical for resource allocation: the mechanism of allocations (regulations or market), demand prioritisation (basic needs and environmental flows) and the spatial level and detail of allocations (basin wide quota for permissible abstraction or country specific quotas). RBOs that operate in underutilised water courses (e.g. Okavango) could encourage greater resource use and allocation (jointly or to individual countries), while RBOs in basin that are already heavily used would focus more on protection of environmental water requirements, shifts in water uses among countries or sectors (towards higher value use) and benefit sharing. Interbasin transfers (IBT) need special consideration by each RBO. The implications for downstream countries (e.g. Namibia for the Orange- Senque) should become a concern of the RBO.

Benefit identification and generation

Prior to the issue of benefit sharing, the benefits of shared water course management need to be identified and appreciated by the water course countries and all stakeholders (public, private and civil society). RBO may use two benefit classifications:

- Benefit wheel
- Benefits from, to and beyond the river and cost reductions due joint management

In order to assess the net benefits two cost categories need to be deducted: costs of SWC management and costs of mitigation and compensation. The costs of shared water course management are often overlooked but need to be identified and allocated.

A fundamental requirement for SWCM is that **all** countries benefit. Therefore, there is need for mitigation, compensation and sharing of net benefits. Possible ways of benefit sharing include:

- Water credits trade
- Fund for incentives & compensation

- Inter country and sector compensation payment
- In-kind benefit transfers (e.g. skills & technology transfer)
- Benefits to other sector (non-water dependent).

Currently, inter-country payments and benefit transfer are most common. Water credits and a benefit sharing fund are not yet used. Benefit and costs can also be shared by establishment of jointly owned infrastructure (e.g. LHWDP, Senegal and Incomati dams).

Toolkit to assist RBOs with resource allocation and benefit sharing

No blueprint for resource allocation and benefit sharing exists, nor should it given the diversity of the SWC basins. A number of tools have been developed that will assist RBOs in their efforts to negotiate benefit sharing and resource allocations. Their successful use requires a thorough understanding of the tools. In a presentation to the 4th RBO workshop on the Nile Basin, Azza argues that countries are still deadlocked about volumetric allocations because they do not understand the one year old benefit sharing framework. RBOs can make use of the following tools:

- Transboundary Water Opportunity (TWO) analysis, which seeks to identify the magnitude of the basket of benefits;
- Benefit typologies: Sadoff and Grey and/or Phillips et al. A combination of both classifications could be used;
- Water accounting, which shows economic uses of fresh and wastewater, the amount of water resources (ground & surface water), the water infrastructure and the economic benefits of uses. Water accounts generate water use efficiency indicators at the level of the basin, countries and sectors. SADC is currently developing a methodology for water accounting in SADC member states and in SWC basins.
- Best practices and lessons from southern Africa and elsewhere should be combined in a lessons learnt tool. Some lessons are available from websites of WaterNet, Cap-Net, Global Water Partnership and the SADC-DBSA-WDM programme

4.2 SWC specific part

Step 1: Basic agreement towards cooperation

Countries need to reach an agreement about the definition of the basin area and the water course countries. In addition, the stakeholders, management priorities and key resource issues need to be identified and agreed upon. These should emerge from the Transboundary Diagnostic Analysis (TDA)

Step 2: Development of a common understanding and agreement about fair and equitable resource use in terms of resource allocation and benefit sharing.

The determinants and their weights need to be identified. Once the variables are agreed upon, data need to be collected to complete countries' score. Next, each criterion needs to be given a weight. In the example, supply, demand and management each carry equal weight (one third) and within each category weights are attached to each individual criterion. The country score and the weight give a country score for each variable. After each variable has been scored and weighed, aggregate country scores emerge. In the example, C 1 would have the highest use quota for productive use (44%).

Step 3: Identify key aspects of sustainable water use and protection of the water course.

This step includes the assessment of environmental flow requirements (e.g. from the TDA) and impacts of climate change.

Step 4: Collection of baseline information for the determination of water supply, needs and uses

A large amount of data is required for SWC management. It is unlikely that all data exist at the start of the RBPO operations. It is advisable to have a reasonable reliable minimum set of key data for SWC management and start SWC management rather than collect data prior to SWC management (Dørge & Windolf, 2003). It is essential that the basic water needs are assessed and prioritized.

Step 5: Development of a WC vision about and strategy towards resource use, benefits & development based on equitable, fair, sustainable and optimal use of the water resources

The Vision would offer a long term perspective and direction for WC management, which is not constrained by current water allocations and uses. It links the implementation of the SWC Protocol and RBO plan to regional integration and specialisation, economic growth as well as to other Protocols and environmental issues such as biodiversity, transboundary wildlife and fisheries management and tourism.

The following issues need to be considered as part of the vision and strategy: demand prioritisation, sovereignty, use of regional and/or national quotas, resource investment and capital development and finally the identification, packaging and prioritisation of future projects. This could include the adoption of a shared water resources infrastructure development plan.

Step 6: Resource (re-)allocation and benefit sharing

Resource allocation and benefit sharing are closely intertwined and hence their determination is an iterative, lengthy and negotiated process. The benefits of allocated resources and proposed projects are estimated, leading to the need for compensation, mitigation, sharing of benefits and also reconsideration of proposed resource allocations.

Compensation measures need to be *sustainable*, i.e. offer affected parties the opportunity to maintain their livelihoods at the same level as before the implementation of the project/programme.

Each RBO needs to consider prioritisation of water allocations along the following lines:

- Priority 1: Basic and subsistence needs;
- Priority 2: Environmental needs;
- Priority 3: Productive needs, which contribute to economic growth, employment generation and poverty reduction. Therefore, the allocation would be determined by economic factors.

The maximum abstractable amount is determined by the total run-off minus the environmental requirements and the basic needs.

Within the boundaries of the abstractable amount for productive use, resource allocations are reviewed in conjunction with benefit generation and sharing. Net benefits are the essential parameter, calculated as the gross benefits minus the costs. The net benefits are calculated by deducting the costs, which include the cost of SWC management: e.g. average O & M costs of RBO per project; cost of sustainable compensation and mitigation measures (emerging from the EIA); project costs (usually given in the project description); and cost of other environmental externalities and foregone benefits (often forgotten and yet important; e.g. emerging from a social cost-benefit analysis)

Some water resources are already heavily used (e.g. Incomati and Orange-Senque) while others are under-utilised (e.g. Senegal and Okavango). For heavily used rivers, the RBO emphasis will emphasise fair sharing of benefits and/or re-distribution of water rights in order to increase development benefits and their fair distribution. In under-utilised basins, the emphasis will fall on developing benign projects and infrastructure to support development and economic growth. Joint development of water infrastructure has the potential to benefit all countries involved (e.g. Senegal).

The protocol emphasises benefit distribution between countries. It is essential that benefits are equitably and fairly distributed *within* countries too. Local communities must experience the benefits of shared WC management in order to support such efforts. This can be done by prioritising water demand for domestic and subsistence use and promoting CBNRM approaches towards tourism, recreation and other areas such as fishing.

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