

COOPERATIVE WATER GOVERNANCE FOR CLIMATE RESILIENCE: ARE INSTITUTIONAL ARRANGEMENTS IN SOUTHERN AFRICA FIT FOR PURPOSE?

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ABSTRACT

Water is a stress multiplier in Africa. Climate change and development decisions manifest in stressed water resources, while poor governance further undermines water security. Many of Africa's water resources are shared by two or more countries, adding further complexity – not least because of the consequent pressure on states to invest in and govern water resources jointly. The current level of transboundary cooperation is inadequate, with riparian countries often seeing problems rather than opportunities in governing the watercourse as a single unit. Thus there is a tension between obligations regarding international waters and national territorial sovereignty. There is also an increasing need for financed solutions, which include resilient infrastructure, and for greater water benefit increases in accordance with the cumulative impacts of stresses on water resultant from population, climate and development. This further highlights the need for cooperative governance. A measure of the strength of transboundary cooperation is the extent of regional integration. Effective multi-country water resource development relies heavily on strong regional integration, but there is little such integration in Africa. Sharing the benefits derived from shared watercourses through transboundary cooperation is an important outcome of regional integration, but the mechanisms for doing so still need to be adequately understood, defined and measured. The lack of clarity on basin-wide costs and benefits is, of itself, a threat. It has the potential to seriously curtail possibilities for cooperation and may lead to increased water disputes. On the other hand, water, as a 'high-pressure' sector, can also yield socio-economic opportunities throughout the wider system with co-benefits such as job creation and improved equity. Shared solutions arise from shared economic benefits, and in Southern Africa many of these benefits are closely related to effective water governance, as water-dependent sectors such as energy and food production enable economic growth and job creation. By building on the shared benefits of water use, riparian countries could unlock a much wider range of co-benefits than those currently prioritised. Shifting the focus to positive-sum outcomes requires knowledge of and transparent economic benefits, and the means to share and trade these.

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ABBREVIATIONS AND ACRONYMS

EAC	East African Community
IWRM	Integrated Water Resource Management
OKACOM	Permanent Okavango River Basin Water Commission
RBO	river basin organisation
UNECA	UN Economic Commission for Africa
ZAMCOM	The Zambezi Watercourse Commission
ZESCO	Zambia Electricity Supply Corporation
ZRA	Zambezi River Authority
ZRB	Zambezi River Basin

INTRODUCTION

Until recently the issue of regional integration in Africa – or the process whereby two or more states agree to enhance cooperation in order to promote peace, stability and wealth – has mostly revolved around the development and facilitation of trade. However, current trends in the management of environmental resources and related investments, particularly water resources, point to the necessity of regional integration across other spheres of transboundary governance.¹ In general, Africa is coming off a low base with relatively little regional integration in most of the continent's subregions. Climate change, which occurs across country boundaries and regions (although with differing levels of impact), heightens the urgency for integrated approaches to managing and benefitting from shared resources and promoting their security for populations and economies.² Sharply rising demand is threatening water security around the world as populations increase and urbanisation accelerates. This is exacerbated by climate change.

Water is a stress multiplier – climate change and development decisions manifest in stressed water resources³ and, in developing regions such as Africa, poor governance further undermines water security.⁴ Inadequate governance greatly contributed to load shedding in hydropower- dependent Zambia and Zimbabwe in 2015/16, otherwise attributed to the severe drought experienced across parts of Southern Africa at the time (as highlighted in Box 1).

Poor governance also constrains access to critical financial resources such as climate and development finance at a time when it is needed most. Establishing internationally accredited direct-access modalities, as set out in global development and climate finance regimes such as multilateral climate funds, is contingent on strong institutions, governance arrangements and financial disciplines that are premised on prudent decision making, and appropriate financial controls.⁵ The need for financed solutions, which include resilient infrastructure (such as dams) and greater water benefits (such as enhanced ecosystem services – or 'soft' water infrastructure), increases in accordance with the cumulative impacts of stresses on water (population, climate and development). This further highlights the need for enhanced governance.

Water is a stress multiplier – climate change and development decisions manifest in stressed water resources and, in developing regions such as Africa, poor governance further undermines water security

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- 1 UNECA (UN Economic Commission for Africa), 'Economic Report on Africa 2016: Greening Africa's Industrialization'. Addis Ababa: UNECA, 2016.
 - 2 OneWorld, *Readiness for Climate Finance-Experiences from Eastern and Southern Africa*. Cape Town: OneWorld Sustainable Investments, 2014; Midgley SJE *et al.*, 'Mapping Climate Risk and Vulnerability in the Zambezi River Basin: Synthesis Report'. Cape Town: OneWorld Sustainable Investments, 2012.
 - 3 Spalding-Fecher R *et al.*, *Water Supply and Demand Scenarios for the Zambezi River Basin: Climate Change and Upstream Development Impacts on New Hydropower Projects in the Zambezi Project*. Cape Town: University of Cape Town, 2014.
 - 4 UNECA, *op cit.*; Mørck Jensen K & R Baadsgaard Lange, *Transboundary Water Governance in a Shifting Development Context: New Development Finance, Development Spaces and Commitment to Cooperation: A Comparative Study of the Mekong and the Zambezi River Basins*, DIIS (Danish Institute for International Studies) Report, 2013:20. Copenhagen: DIIS, 2013.
 - 5 OneWorld, *op. cit.*

In Africa, natural resource security – particularly relating to scarce water resources – is increasingly reliant on sound transboundary governance and would benefit from improved regional integration and cooperation

Fortunately, transboundary and regional institutions do exist, including regional political and economic organisations such as SADC, development agencies such as the Zambezi River Authority (ZRA) that are established specifically to govern trade in water and related benefits such as energy, and river basin organisations (RBOs) or commissions that are usually established as umbrella institutions under water treaties to coordinate water governance and management.

HOW ADVANCED IS COOPERATIVE GOVERNANCE IN AFRICA?

In Africa, natural resource security – particularly relating to scarce water resources – is increasingly reliant on sound transboundary governance and would benefit from improved regional integration and cooperation (see Box 1). This is not least because so many of Africa's river basins are shared by two or more countries – a function of historical colonial divisions and topography. There are over 60 shared river basins on the continent, with some shared by four or more countries. This further complicates the picture. For example, the Nile River Basin includes 11 countries and the Zambezi River Basin (ZRB) eight. Water generates economic benefits that are traded or shared across boundaries, such as energy generation (from hydroelectric power), as well as food and livelihoods. Few, if any, industries – including mining – operate effectively without reliable energy and water access. In fact, many pollute water and overuse both water and energy. Furthermore, the globally acknowledged threat of climate change has negative impacts that are seldom confined to political boundaries. For example, the effects of the recent drought in Southern Africa have been felt across borders in terms of water, food and energy provisioning.

BOX 1 WATER GOVERNANCE AND COMPETITION FOR SCARCE WATER RESOURCES

Towards the end of 2015 Zambia's national electricity utility, Zambia Electricity Supply Corporation (ZESCO), instituted electricity rationing countrywide, with power cuts averaging 10–14 hours a day. This was as a result of low water levels in Lake Kariba and Itzhi-Tezhi, caused by below-average rainfall in the 2014/15 rainy season. At the end of December 2015 the Kariba reservoir was only about 14% full, compared with 51% a year earlier, reducing hydropower generation to a minimum. The power cuts affected industries, commerce and domestic customers and a UN Economic Commission for Africa (UNECA) report predicted that without rainfall hydropower plants would be forced to shut down.^a

The report went on to say that^b

[L]ow rainfall and overuse of water by Zambia and Zimbabwe the countries that share Lake Kariba have caused water levels in the lake to drop, and electricity generation in Zambia has fallen by more than one half in a country that is 95 per cent dependent on hydropower for its electricity. This has led to public outcry and anger against the national utility, necessitating a fuller investigation of the cause.

Furthermore, the report noted that,^c

[w]ithout a transboundary water management institution taking an effective lead, ZESCO assessed matters and concluded that both the low drought-related inflows (2014/15) and over-abstraction by the power plants at the Kariba Complex were the main factors.

The drought affected several sectors, including tourism (owing to reduced water at the Victoria Falls) and mining in Zambia (Africa's second-biggest producer of copper), where electricity use had to be reduced and diesel imported. Other hydropower investments around the ZRB (such as the Batoka Gorge Dam in Zimbabwe) were also failing to meet expected returns on investment. The effects of El Niño are expected to worsen under climate change, with serious implications for Southern and Eastern Africa. The report concluded that^d

[i]mproved transboundary water governance to manage dams and river basins is the solution to competing priorities between nation states so that they can agree on a process for managing scarcity. At the national level, priorities for the use of scarce water require careful thought for the long-term consequences of such trade-offs.

a UNECA, *Economic Report on Africa 2016: Greening Africa's Industrialization*. Addis Ababa: UNECA, 2016.

b EIZ (Engineering Institution of Zambia), Report On ZESCO Load Shedding, 2015, http://www.eiz.org.zm/wp-content/uploads/2015/10/151008_Report_On_ZESCO_Load_Shedding.pdf, accessed 7 July 2017.

c UNECA, *op. cit.*, p. 88.

d *Ibid.*

Investments in mitigating these threats – in the form of international climate finance – are rapidly increasing. In Africa, climate finance is primarily needed to protect already scarce or unevenly distributed and inconstant natural resources, such as water. At the same time, the growing number of transboundary agreements at river-basin and regional levels suggests that countries are joining forces to coherently manage and protect natural resources, with the intention of treating and managing the watercourse as one unit. However, there are few, if any, examples of coherent joint management actually happening. Few river basins have mechanisms in place for calculating the costs and advantages of generating shared benefits (such as hydropower, irrigation schemes or water transfers) across multiple countries. For instance, the cost of maintaining the headwaters of the Zambezi in upstream Angola and Zambia in a manner that ensures adequate water flows for the reliable generation of hydropower at downstream Lake Kariba, or to ensure the magnificence of the Victoria Falls, is borne by parts of the basin that do not share in the related electricity or tourism benefits. This is largely because most countries prefer to stick to historical and colonial approaches of protecting their sovereign interests, with little regional integration around the management of transboundary water resources.

As a result, there is now some urgency to expose and resolve the underlying governance issues and political economy interests that block transitions to regionally integrated resource management. Water management stakeholders and decision makers across Southern Africa recognise this urgency. This is evident in the work being undertaken to review water management treaties that predate current issues such as climate change, population growth and increasing water scarcity. Examples include reviews of the SADC Revised Protocol for Shared Watercourses, as well as the Zambezi and the Okavango agreements. Interviews regarding these projects have also highlighted the urgency of concretely advancing transboundary water governance.⁶ Key countries such as Zambia (the ZRB hegemon by virtue of the fact that it contributes substantially to the basin's waters and is the major abstractor) have indicated that there is a five-year window to resolve issues of cooperative management on water allocation and equitable utilisation across the ZRB.⁷ These and other water stakeholders also note that there is little regional integration in Southern Africa.

The strength of regional and transboundary cooperation can be measured in terms of the extent and effectiveness of regional integration

The strength of regional and transboundary cooperation can be measured in terms of the extent and effectiveness of regional integration. Regional integration manifests in transboundary trade and in benefit-sharing activities and mechanisms. There is a widespread belief that Southern Africa is not maximising the co-benefits of managing watercourses and basins collectively, as resources that are owned by many. A reason for this is that the related economic co-benefits are seldom quantified and therefore not well understood. As a result, there is little apparent incentive to establish enabling transboundary governance arrangements. Certainly, in situations where there is an understanding of the shared economic benefits (usually because of a specific project or development), corresponding governance arrangements are established. An example within the ZRB is the ZRA, a development agency established to manage Lake Kariba and the resultant trade in water and hydroelectric benefits between Zambia and Zimbabwe – the two countries that share this man-made lake. Although the management of the lake has not been optimal (for example in effectively mitigating the recent drought, as discussed in Box 1), the ZRA is still a stronger transboundary institution than most river basin commissions in Africa. River basin commissions across the continent tend to have weak mandates that do not empower them to do their jobs, particularly as water stress increases across Africa.

REGIONAL INTEGRATION AND COOPERATION IN AFRICA

Regional integration has been discussed and promoted in Africa for decades. The African Development Bank strongly promotes enhanced regional integration, stating that if it is successful it will 'allow countries to specialize in their comparative advantages and trade, leading to higher efficiency and growth. It [will] also improve critical integration

6 Interview, ZAMCOM Technical Committee member, Dar es Salaam, 27 and 28 March 2017.

7 Interviews, ZAMCOM Technical Committee members, Dar es Salaam, March and May 2017.

into global value chains, and reduce “between country” inequality.⁸ SADC plays a key role in the process of regional integration, as it has laid the foundations for cooperation on international rivers and has enhanced regional economic integration through the establishment of free trade zones, the Southern African Power Pool for transboundary energy trade, and various development corridors.⁹

Basin-level agreements partially provide for regional integration, usually by encouraging member states to employ their best efforts to collect and, where appropriate, process data and information on the shared watercourse, using standardised methodologies. Some RBO-level agreements, such as those for the Nile, Okavango and Zambezi river basins, go further. These provide for basin-level strategic planning and/or decision support systems that include processes for the identification, categorisation and prioritisation of projects and programmes for the efficient management and sustainable development of the shared watercourse. Increasingly, such tools and plans integrate climate change risks, and their utilisation enhances joined-up governance arrangements in transboundary or regional contexts. However, for a country to sign up to and implement a transboundary strategic plan it needs to understand and have quantified its own strategic priorities and resource utilisation, along with associated climate risks. Few countries in Southern Africa have done this comprehensively.

Effective multi-country water resource development planning relies heavily on strong regional integration. It is a critical factor for Africa’s development and cross-border natural resource management. Recent analysis points to the relationship between regional integration and transboundary water management: regions that have stronger trade relations also have enhanced transboundary water governance in place. This is demonstrated through regional energy planning and trade relations.¹⁰

However, low levels of regional economic integration are a typical feature of development across Africa. This is particularly true for Southern Africa, where intra-regional, inter-continental and global trade in goods and services is relatively low (compared to other subregions on the continent). Total trade volumes in Southern Africa amount to around only 1% of global trade.¹¹ Statistics show that, while SADC countries have the highest levels of intra-regional trade among African economic communities (19.9% of exports and 33.1% of imports), this trade is mostly directed towards South Africa.¹² Thus countries in shared regional basins such as the ZRB and the Okavango are less likely to benefit from regional trade.

Low levels of regional integration place transboundary water management at risk

8 AfDB (African Development Bank), *Growth, Poverty and Inequality Nexus: Overcoming Barriers to Sustainable Development, African Development Report 2015*, http://www.afdb.org/fileadmin/uploads/afdb/Documents/Publications/ADR15_UK.pdf, date accessed.

9 Mørck Jensen K & R Baadsgaard Lange, *op. cit.*

10 UNECA, *op. cit.*

11 AfDB, *Southern Africa Regional Integration Strategy Paper 2011–2015*, <https://www.afdb.org/fileadmin/uploads/afdb/Documents/Project-and-Operations/2011-2015%20-%20Southern%20Africa%20-%20Regional%20Integration%20Strategy%20Paper.pdf>, date accessed.

12 AfDB, 2016, *op. cit.*

Low levels of regional integration place transboundary water management at risk. This is because riparian countries continue to see more benefit in protecting their national interests than in promoting regional cooperation, even though the latter has the potential to maximise shared benefits.¹³

It is evident that there are solid arguments for river basins to be located at the centre of regional development. Most of Southern Africa's shared river basins reflect this. South Africa obtains hydroelectric power from the Lesotho highlands. The ZRB is shared by eight of SADC's 15 countries, making it an important economic centre. The Okavango, shared by three countries (also common to the ZRB), is home to one of the world's greatest natural treasures, the Okavango Delta – the third most important wetland in the world and one of the biggest international tourist attractions in the region. Climate and development pressures are placing these and other basins at risk, heightening the need for significant improvements in transboundary cooperation and regional integration. At the same time, there is early evidence of a regionally integrated approach working in other parts of Africa. The East African Community (EAC) and the Lake Victoria Basin Commission, nested within the EAC, both demonstrate the benefits of regional integration for transboundary water governance.¹⁴

SHARING THE BENEFITS OF ENHANCED REGIONAL INTEGRATION

The 2010 SADC Concept Paper on Benefit Sharing and Transboundary Water Management and Development defines benefit sharing, where benefits are derived from transboundary watercourses, as the 'process where riparians cooperate in optimising and equitably dividing the goods, products and services connected directly or indirectly to the watercourse, or arising from the use of its waters'.¹⁵ The water benefits that are typically prioritised and recognised in the region are clean and safe water, hydroelectric power and increased agricultural production. Although benefit sharing is considered by many to be a positive approach to strengthening regional cooperation and transboundary water management, a comprehensive benefit-sharing approach has yet to gain traction at a basin level in this region. A 'best practice' example of a concrete benefit-sharing mechanism does exist on the continent – the Senegal River Basin's joint investment programme between the West African countries of Mali, Mauritania and Senegal is a useful example of cost and benefit sharing around infrastructure development in the basin.

13 UNECA, *op. cit.*

14 UNECA, *op. cit.*; Nicol A, 'Transboundary River Basins in Africa: Opportunities and Obstacles for Inclusive and Sustainable Growth', Background Paper to the *European Report on Development 2011/2012 Confronting Scarcity: Managing Water, Energy and Land for Inclusive and Sustainable Growth*, ODI (Overseas Development Institute), DIE (Deutsche Institut für Entwicklungspolitik) & ECDPM (European Centre for Development Policy Management), 2012.

15 SADC, 'SADC Concept Paper on Benefit Sharing and Transboundary Water Management and Development'. Gaborone: SADC, 2010.

Southern Africa has made several attempts to develop benefit-sharing mechanisms. This has been tackled through two primary mechanisms: firstly through context-specific agreements for the maintenance and use of infrastructure developed specifically for economic benefits, and secondly through the more comprehensive and broader strategic approach of integrated water resource management (IWRM). In respect of the first mechanism, there are several context-specific agreements – usually concluded between two countries in Southern Africa – that clearly articulate the shared benefits of transboundary cooperation around water. [The Zambezi River Act](#), concluded between Zambia and Zimbabwe to regulate the management of the economic benefits derived from Lake Kariba, is a useful example of such a bilateral agreement. Lake Kariba (built primarily to generate hydroelectric power) is regulated by the act, which contemplates how the costs and benefits associated with the water infrastructure are shared by the two countries.

For some time, the second mechanism, the internationally acclaimed IWRM approach, was promoted as the primary tool through which benefit-sharing principles could be understood and applied. This approach, based on the key principles of international water law (see Box 2), is much more comprehensive than the first mechanism in that it attempts to ensure that water security is equitably enjoyed from national to subnational levels, as well as among the riparian countries in shared river basins. For example, the African Ministers' Council on [Water's Strategic Framework for Water Security and Climate Resilient Development](#) is aimed at providing AU member states with opportunities for identifying no- or low-regret investments at a basin level, which could 'enhance benefit sharing among riparian countries in the face of uncertain climate futures'.¹⁶ According to this framework, good practice in implementing a benefit-sharing approach would encompass water security and climate resilience, and be in line with regional priorities. In the context of the water, energy and food security nexus, the framework sees IWRM as the way to improve overall resource-use efficiency, achieve sustainable resource management and promote equitable benefit sharing.¹⁷ This envisages the development of an integrated cross-sectoral approach to resource management as an addition to existing approaches that only focus on the improvement of a specific sector.¹⁸

Critically, IWRM aims to secure equitable benefit sharing through a decentralised approach to water management. As such, responsibility for the resource is devolved throughout the water management 'value chain', down to community level. Catchment-level management agencies are a typical institutional feature of IWRM.

While institutional arrangements such as these are evident in water policies in several SADC countries, not many have made substantial progress toward implementing IWRM. One of the primary reasons for this is capacity constraint, as few countries have the skills available to manage local water management institutions such as catchment management

16 AMCOW (African Ministers' Council on Water), *Water Security and Climate Resilient Development: Strategic Framework*. Abuja: AMCOW, 2012.

17 *Ibid.*

18 *Ibid.*

agencies. Moreover, IWRM plans and approaches do not necessarily translate into basin-level agreements, with concrete mechanisms for transboundary cost and benefit sharing.

For these and other reasons, traditional IWRM principles have been replaced by a more context-specific benefit-sharing mechanism in the SADC region.¹⁹ Increasingly, decision makers and policymakers are of the view that benefit sharing is more likely to be successful in situations where tangible and quantifiable economic services can be shared by two or more parties. In explaining the application of the benefit-sharing approach, SADC's Concept Paper on Benefit Sharing and Transboundary Water Management and Development outlines positive-sum outcomes as 'the key to many negotiations relating to water and benefits, as agreement is much easier to attain when all riparians are predicted to experience enhanced conditions simultaneously over time'.²⁰ However, the concept paper focuses mainly on providing a theoretical basis for the benefit-sharing approach, with no reference to how it could specifically be implemented at a regional or basin level.

As such, concrete mechanisms for benefit sharing are more readily found in bilateral (and sometimes trilateral) agreements within various larger river basins than in multilateral or basin-level agreements, simply because these agreements are designed to enable a context-specific development that yields quantifiable economic benefits. Another example similar to the Zambezi River Act is the Treaty on the Lesotho Highlands concluded between Lesotho and South Africa in 1986 in the Orange-Senqu River Basin, which is also shared with Botswana and Namibia. This agreement was designed to derive mutual benefits, such as energy, for the two countries, through the 'enhancement, conservation and equitable sharing of the water resources'.²¹

Despite this, and other examples of progress, the shared water costs and benefits and the mechanisms for doing so typically still need to be adequately understood, defined, measured and communicated by all the riparian countries in a shared river basin. Consequently, there has been relatively little progress in enhancing proactive transboundary water resource management cooperation, which poses risks for demand management. Trade-offs between water uses (in other words, where one use is explicitly prioritised over another) are thus often avoided in broader transboundary river basin contexts. Understandably, decision makers are reluctant to make trade-off decisions in the absence of coherent information on the entire river basin and its watercourse, as this makes it hard to justify the decision. This means that the opportunities for sharing the co-benefits that the joined-up resource management of a shared river basin could bring are often lost. Such co-benefits can include job creation, poverty alleviation and improved equality – central development challenges in all African states.

19 Turton A, 'A South African perspective on a possible benefit-sharing approach for transboundary waters in the SADC region', *Water Alternatives*, 1, 2, 2008, pp. 180–200.

20 SADC, *op. cit.*

21 FAO (Food and Agriculture Organization), *Treaty on the Lesotho Highlands Water Project between the Government of the Kingdom of Lesotho and the Government of the Republic of South Africa signed at Maseru, 24 October 1986*. Maseru: FAO, 1986.

The lack of clarity on basin-wide shared costs and benefits is, of itself, a threat. It could seriously curtail possibilities for cooperation between riparian countries and may lead to increased water disputes. At the same time, harmonised policies and approaches, which include clearly articulated benefit-sharing opportunities, could yield improved policies and decisions on downstream and basin-wide watercourse management.

The lack of clarity on basin-wide shared costs and benefits is, of itself, a threat

The aforementioned Zambezi River Act is an important example. The two countries party to this act are part of the greater Zambezi Basin, which is shared by eight countries. Zambia and Zimbabwe benefit from the tourism generated by the Victoria Falls, a major international tourist attraction in Southern Africa. As such, both countries rely on adequate water flows to maintain the awe-inspiring nature of the falls. In addition, Lake Kariba, constructed along the border of the two countries, was purpose-built for hydroelectric power generation, which is shared by both countries. Low water levels, resulting from the 2016 drought and the mismanagement of the dam and the hydropower plant, have highlighted how much each of these countries depend on this benefit (See Box 1). Moreover, these are the only two countries in the Zambezi Basin that benefit from the hydroelectric power and tourism that Lake Kariba generates.

Benefit-sharing approaches can promote conflict resolution and even prevention. Lake Kariba is a good example of conflict resolution through a benefit-sharing approach. Conflicts arose between the two countries because Zambia believed that Zimbabwe was benefiting more from the dam.²² The dispute eventually caused the dissolution of the Central African Power Corporation (the joint organisation for the management of the dam, created in 1963 by the governments of Northern and Southern Rhodesia). Later, as a result of the establishment of a 50:50 scheme between Zambia and Zimbabwe for the allocation of costs and benefits from the dam, the ZRA was created in 1987.²³ The Kariba Dam is currently equally owned by the two countries with the benefits and liabilities being allocated accordingly. Kariba is thus a border river project that has a benefit-sharing mechanism in place where ‘the cost of joint infrastructure is borne in proportion to benefits received’.²⁴ It shows that the application of a benefit-sharing approach to water-related developments has the potential to avoid or resolve conflict in a transboundary context.

Benefit-sharing approaches can promote conflict resolution and even prevention

Riparian countries in Southern Africa often associate benefit sharing with the need for a better approach to measuring and allocating the costs and benefits arising from specific investment activities undertaken in shared basins. One example is the perception of cost sharing for the Kariba Dam Rehabilitation Project, which is currently jointly managed by

22 Hensengerth O, Dombrowsky I & W Scheumann, ‘Benefit-Sharing in Dam Projects on Shared Rivers’, GDI (German Development Institute) Discussion Paper, 6/2012. Bonn: GDI, 2012.

23 Mokorosi PS, ‘Can benefits be Shared Equitably Among a Variety of Stakeholders in a Transboundary River Basin? Learning from Zambezi and Orange-Senqu River Basins’, *Physics and Chemistry of the Earth* 32, 2007 pp.1322–1329, Elsevier Ltd, <http://www.ag.unr.edu/saito/Classes/nres400/readings/mokorosi07.pdf>.

24 Hensengerth O, Dombrowsky I & W Scheumann, *op. cit.*

Zambia and Zimbabwe. The two countries have secured a \$294 million loan to assist the ZRA in improving the safety and reliability of the dam, which, among other important functions, is a flood-control mechanism for the downstream country of Mozambique.²⁵ Based on the indirect benefit enjoyed by Mozambique, both Zambia and Zimbabwe believe that Mozambique should also share the cost of the project.

Promoting a better understanding and application of the benefit-sharing approach (through enhanced data and improved sharing of information, and by establishing a clear basis for determining equity) is generally seen as one of the main roles of Africa's RBOs. They are also expected to assess and increase understanding of the risks of climate change to shared water benefits. However, multilateral agreements such as the Zambezi Watercourse Commission (ZAMCOM) agreement do not make provision for a concrete mechanism through which benefit sharing can be applied to water utilisation at a basin-wide level. They do, however, provide for compensation discussions in the case of a loss of benefits by one member state arising from activities by other states in the basin.

Thus, in many ways, best practice is evolving for implementing benefit-sharing mechanisms that are practicable and equitable across a river basin that shares a single watercourse. The solution lies neither in bilateral agreements nor in IWRM approaches, although both have their place. Rather, it lies in a mechanism that combines the principles inherent in IWRM with the concreteness of context-specific agreements, but that extends the practicability of the latter to the watercourse and basin level. In this way, benefit-sharing mechanisms can ensure that costs and benefits associated with the watercourse and its basin are widely and equitably shared by all riparian countries.

Attaining all the indicators of best practice for regional integration and cooperative benefit sharing across Southern Africa is a work in progress that is likely to be achieved incrementally. Nonetheless, there are examples of how important cooperative governance is to the security of water and other resources on the continent. The critical issue is timing. As discussed, some regional policymakers believe that current and future risks facing the region are heightening the urgency to resolve the continent's water and development governance issues. Few of these risks are purely sovereign in nature, meaning that the problems and, therefore, the solutions, are shared.

SHARED CHALLENGES

A range of challenges and risks are shared across borders, necessitating stronger transboundary cooperative governance. Key challenges and risks include overemphasis

25 World Bank, 'Kariba Dam rehabilitation project (RI): Overview', <http://projects.worldbank.org/P146515/?lang=en&tab=overview>, accessed 9 March 2017; OneWorld, 'Zambezi Watercourse Commission Water Law Equivalence Assessment Report', Submitted to the Zambezi Watercourse Commission under the World Bank-funded Contract for the Equivalence Assessment of National Water Laws among Zambezi Basin Riparian States in May 2017.

on sovereign interests, weak institutional arrangements, increasing water disputes and climate change.

SOVEREIGN INTERESTS PREVAIL

In practice, African countries tend to still prioritise short-term sovereign interests at the expense of a cooperative approach, even though the global trend has moved away from this approach. Today international law recognises the principle of limited territorial sovereignty. Embedded in the UN Convention for Shared Watercourses for Non-Navigational Use, this principle marks a significant shift from the previously entrenched principle of absolute territorial sovereignty, where every country was deemed to have the absolute sovereignty to make decisions over resources within its own borders, even if shared with other countries. Today the more balanced concept of limited sovereignty stipulates that all riparian countries or watercourse riparian states enjoy an equal right to the utilisation of the shared watercourse, and that each state must respect the sovereignty and correlative rights of other riparian countries. In other words, a country must not exceed its own right to utilisation.

The two fundamental principles of modern international water law are equitable and reasonable utilisation and the duty not to cause significant harm (see Box 2).

BOX 2 FUNDAMENTAL PRINCIPLES OF INTERNATIONAL LAW

THE PRINCIPLE OF EQUITABLE AND REASONABLE UTILISATION

The principle of equitable and reasonable utilisation is the cornerstone of the convention and the fundamental doctrine guiding water-sharing for international watercourses. It entitles a watercourse state to an equitable and reasonable share of the uses and benefits of the particular watercourse, and creates the reciprocal obligation not to deprive other states of their respective rights in this regard. This principle is codified under Article 5(1) of the convention and aims to reconcile conflicting interests across international borders, so as to 'provide the maximum benefit to each State from the uses of the waters with the minimum detriment to each'. Specific terms applied in Article 5 are relevant: 'sustainable use' refers to the need to balance economic, social and environmental values in the use of natural resources and to take into account the carrying capacity of international watercourses; and 'optimum utilization' means the most economically feasible and, wherever possible, most efficient use.

The UN guide emphasises that 'equitable utilization' does not necessarily mean equal use of shares and benefits or an equal portion of the resource. The application of this principle will not prohibit a use that causes damage unless that use exceeds the limits of the user states' equitable share of the watercourse. The fundamental, underlying principle of the convention is that every nation has limited territorial sovereignty, meaning that every

riparian country has to respect the sovereignty and correlative rights of other riparian countries or watercourse states, thus not exceeding its own right to equitable utilisation. The convention notes:

Every riparian State has a right to the utilization of the watercourse which is qualitatively equal to the rights of the co-riparians. However, this must not be mistaken for the right to an equal share of the uses and benefits; nor does it imply that the water itself has to be divided into equal shares.

Reasonable uses are relative, in that they are subject to an equitable allocation. In other words, what may be considered to be reasonable by one state can be inequitable when considered in the broader context of the whole watercourse and the various needs and interests of co-riparian states.

THE DUTY NOT TO CAUSE SIGNIFICANT HARM

The scope of the obligation not to cause harm to other riparian countries is clarified in Article 7 of the convention. The related obligation requires that states take all appropriate measures to ensure that, in utilising the shared watercourse, they avoid causing significant harm to co-riparian states. This means that no riparian state can use the watercourse in its sovereign territory in a way that causes significant harm to co-riparian states or to their environment – for example through polluting upstream waters. This is a widely recognised principle in water law and is also integral to broader multilateral environmental agreements. The obligation not to cause significant harm is derived from the theory of limited territorial sovereignty (also widely recognised as a foundational principle of international water law), which stipulates that all riparian states have an equal right to the utilisation of a shared watercourse while also respecting other states' equal rights of use.

Importantly, the duty 'not to cause significant harm' is a due diligence obligation of prevention rather than an absolute prohibition on transboundary harm. This means that a state's compliance is determined by its conduct and preventative behaviour in avoiding harm, rather than being solely dependent on the harm in question.

Source: UN Watercourse Convention, *User's Guide Fact Sheet Series. Number 4: Equitable and Reasonable Utilisation*, <http://www.unwatercoursesconvention.org/documents/UNWC-Fact-Sheet-4-Equitable-and-Reasonable-Utilisation.pdf>

Notwithstanding the long-standing, post-colonial practice of prioritising sovereign interests, African countries and regions are finding that while resource security is highly valuable, it is becoming increasingly difficult to attain. Growing resource insecurity is the consequence of the convergence of climate change, accelerated development (which increases competition for water resources), population growth, rapid urbanisation and the environmental risks of deforestation and land degradation. This convergence is hastening the need for changes to regional cooperative governance.

Shared benefits from use and allocation are a corollary of the most fundamental principles of international water law, but the benefit-sharing approach is not widely well understood. A benefit-sharing approach could create a shift in focus from the quantities of water used and allocated, to the benefits that can be derived from its use and allocation.²⁶ Moreover, the conditions under which benefit sharing could operate are controversial in many parts of Africa.²⁷ A range of factors contributes to the controversy, with the main factor being uneven infrastructure and development between countries, which can result in typically unplanned-for demand management trade-offs. Another contributing factor is the impact of climate change, which is exacerbated by climate change responses not being implemented and by water-related disputes.

TRANSBOUNDARY AGREEMENTS ARE OFTEN WEAK

Many RBOs are finding it increasingly difficult to respond to shared risks in the context of current water agreements and treaties, which are often weak or non-existent. In a transboundary water context, the complexity of finding a mutually beneficial solution increases in proportion to the number of stakeholders involved in the process. Since so many of Africa's river basins are shared, the number of stakeholders that need to agree is typically high. This becomes even more complicated in cases where riparian countries have varying economic capabilities and/or political power.²⁸ Given these complications, multilateral agreements are difficult to foster. Out of more than 140 international water governance treaties signed since the early 2000s almost all are bilateral agreements.²⁹ This means that, in a transboundary context, bilateral agreements become the main legal tool for cooperation between riparian countries and the main mechanism for the application of the benefit-sharing approach. However, recent research shows that the bilateral agreements are not enough. They are usually defined by a specific economic development and take time to negotiate. Concluding bilateral agreements on a needs basis, when the needs are accelerating in both breadth and depth, is no longer adequate.

The need for coordinated strategic planning and joint decision-making, as provided for in some of the more recent RBO agreements, is one of the primary drivers for developing multilateral approaches that harmonise development planning, manage disputes and respond to climate risks. Implementing joint planning and decision-making remains an unresolved challenge for the region.

Notwithstanding the long-standing, post-colonial practice of prioritising sovereign interests, African countries and regions are finding that while resource security is highly valuable, it is becoming increasingly difficult to attain

26 Soliev I, 'The Costs of Benefit Sharing: Historical and Institutional Analysis of Shared Water Development in the Ferghana Valley, the Syr Darya Basin', research presented at the 15th Biannual Global Conference of the International Association for the Study of the Commons, University of Alberta, 25–29 May 2015.

27 Interview, ZAMCOM, *op. cit.*

28 Qaddumi H, 'Practical Approaches to Transboundary Water Benefit Sharing', ODI Working Paper, 292. London: ODI, 2008, p. 8.

29 *Ibid.*

DEMAND MANAGEMENT CONTINUES TO BE UNCOORDINATED

The interactions between sectors and the broader social, ecological and economic systems in which they are situated are complex, with a high level of interdependency. Water is a critical renewable resource and is highly sensitive to rapid population growth and urbanisation. In many parts of Africa it is also a generator of electricity (through hydropower) and its availability to the food sector is a critical factor in increasing agricultural value added, and in advancing industrialisation across the continent. Water is among the ‘high-pressure’ sectors that can also yield socio-economic opportunities throughout the wider system – with multiple co-benefits such as job creation and improved equity. This is also true for the energy sector.

Realising these co-benefits is crucial. A large portion of the population of Africa’s river basins lives in conditions of extreme poverty. This makes economic development and job creation priorities for riparian countries, as is set out in the numerous national development goals and plans for these countries. Given this priority, and the expected extra pressure on water resources, economic development will require significant investment in water management infrastructure throughout most river basins. The current inadequate infrastructure, low levels of development and high levels of poverty signal the challenges, while demonstrating the significant potential for future development. The resultant investment opportunities have important implications for the regional political economy of water and are likely to bring desirable new corporate stakeholders into the region. However, developments that seek to bring about economic transformation and sectoral growth pose challenges to the balance between transboundary and national interests in shared river basins.³⁰ Population growth is an exacerbating factor – it increases the pressure on economic growth to meet the growing demand for resources and the risk of trade-offs between water, energy and food. Considering the trade-off risks created by various planned development priorities in shared river basins, cross-sectoral and international planning for water resource management becomes a critical success factor. This is only possible when information about water demand is coordinated, robust and transparent with a view to preventing or resolving disputes and increasing benefit sharing.

However, few countries routinely develop and review integrated water resource development plans domestically. Trade-offs between development decisions are seldom discussed across sectors and climate change planning still tends to be sectoral, with responses amalgamated into national climate change strategies that result in long lists of priorities.

This provides little basis for strategically allocating water, and sectors such as mining and agriculture often abstract more water than they have been allocated. In Zambia, for example, the Water Resource Development Department is aware that water-dependent development decisions could improve substantially and understands the actions necessary to address this. There is awareness that the mining sector is both over-abstracting and

30 Mørck Jensen K & R Baadsgaard Lange, *op. cit.*

polluting. There is also an understanding of the benefits of locating irrigation schemes downstream of hydropower developments as a means of better managing environmental flows and maximising investments. Yet little is being done to enforce pollution controls, streamline licensing systems and choose optimal locations for investments. The relevant stakeholders seldom meet or plan together and there is no platform for doing so.

INCREASED WATER-RELATED DISPUTES ARE THREATENING REGIONAL PEACE

Growing water scarcity increases the risk of cross-border water-related disputes. The Southern African region enjoys a welcome era of peace following the border and civil wars that characterised the post-colonial era and apartheid South Africa. While this is a status quo the region explicitly seeks to protect and enhance, there are disparities in the levels of commitment of riparian countries to multilateral cooperation. This threatens the ability of regional entities such as SADC and the RBOs to govern shared watercourses and basins and resolve disputes.

Growing water scarcity increases the risk of cross-border water-related disputes

There is ample evidence that increased demand for water resources and competing developments can generate disputes between riparian countries. Externalities emerging from national development plans, such as in Zambia and Mozambique, begin to surface and create tensions.³¹ In recent decades, cross-border disputes have typically been resolved between the countries party to the dispute and seldom escalated beyond the borders of those countries. As a result, the SADC Tribunal was inoperative until recently and dispute-resolution frameworks such as those contained in RBO agreements are mostly untested. Nonetheless, there is a need for new methods of managing controversial developments to prevent or, where necessary, resolve such disputes.

There have been some regional dispute resolutions that can be used as examples of good practice. The SADC Water Protocol provides guidance on how to notify other riparian countries of planned developments. One such example is Mozambique's notification of the Mphanda Nkuwa Dam, a large-scale project for hydroelectric power generation located on an international river. This proved to be an effective conflict prevention mechanism.³² It is also a welcome development that SADC has re-established the tribunal to ensure compliance and resolve conflicts between member states.

However, there are ongoing disputes. In many cases these result from treaties that were drawn up in colonial times but continue to plague the region, primarily because of recent economic developments. Some disputes require regional structures such as the tribunal to assist with resolution and/or clarification of the roles and responsibilities of the region's RBOs in conflict management. An important example is Lake Nyasa, more commonly known as Lake Malawi, as outlined in Box 3.

31 *Ibid.*

32 *Ibid.*

BOX 3 DISPUTED BORDER AND WATER BENEFITS BETWEEN MALAWI AND TANZANIA

Malawi and Tanzania do not agree on who owns Lake Nyasa. The Anglo-German Treaty concluded in 1890 gave the lion's share to Malawi, a small portion to Mozambique and nothing to Tanzania, the third country that shares the lake. While the 1890 treaty gave Tanzania fishing rights to the lake, it wants full control of its portion. Malawi disagrees. Although this has been cause for dispute between Malawi and Tanzania since independence in 1963, the issue has gained greater importance recently as a result of the promise of significant oil and gas reserves underneath the lake. The geological conditions are thought to be ideal, with thick sedimentary rock sequences and structures capable of trapping oil. This emerged from the early exploration activities of Surestream Petroleum, a British company that was granted an exploration licence by Malawi in 2011.^a The ongoing dispute has also prevented Malawi from ratifying the ZAMCOM agreement, which was ratified by enough countries to ensure its enforcement in 2014.

This places Malawi at odds with the remaining seven riparian countries in the basin, including its immediate neighbours Tanzania and Mozambique. If this dispute cannot be resolved by the region, the matter will be taken up by the International Court of Justice. This is not the widely preferred or desirable route for the region's riparian countries and could set an uncomfortable precedent.

The case is complex. Malawi's argument is that the lake borders are indisputable because the terms of the 1890 treaty are clear, and because the AU has explicitly committed to colonial-era boundaries. This is affirmed in the AU's founding charter, to which Tanzania is a signatory. However, Tanzania too has a sound argument. In terms of international norms, where a lake divides two countries the line is drawn down the middle and the countries share and control the lake in equal measure. A nearby example is Lake Victoria, which is shared by Tanzania and Uganda. In the context of the map of Africa (and other pre-colonial regions such as Asia), Lake Nyasa is an aberration in that it is the only transboundary lake that is not shared equally between riparian countries following colonial divides. In addition, Tanzanian waters contribute substantially to the lake and it is subject to shifting tides and the impact of climate change, which affect the shorelines. Because the border runs along the shore this means that it must also change with the tides and shifting shorelines – an obviously untenable situation.

^a The dispute has resulted in threats of military action, with one Tanzanian lawyer and ex-diplomat stating that Tanzania was prepared to go to war over the issue. Interview, Dar es Salaam, 3 May 2017.

This current dispute between Malawi and Tanzania is complicated by the promise of unprecedented economic gains. This points to the need for new approaches to resolve this and similar issues. One way would be to turn the dispute into a story of transboundary cooperation that is predicated on quantified, shared costs and benefits between the lake

riparian countries and perhaps even across other parts of the ZRB and the Southern African region.

CLIMATE CHANGE IS ALREADY THREATENING WATER RESOURCES

The experienced and anticipated impacts of climate change are accelerating the need for integrated transboundary governance. Climate change is widely recognised as being the largest transboundary environmental problem today. It has a spatial and a time dimension; its effects (negative and positive) will be felt globally for many years to come. The transboundary nature of water resources means that climate change impacts on water resources are likely to be felt throughout the watercourse and/or sub-catchments. For instance, although rainfall is location specific, both temperature and regionally experienced phenomena such as El Niño have an impact on seasonal rainfall across continents, as evidenced by the drought in parts of Southern Africa in 2016.

The combined effects of climate change and rising demand for water resources are already causing problems for hydropower generation in several countries in the ZRB. Incorporating climate considerations into future investment planning, such as the design of large dams, becomes a critical factor for the improvement of water management.³³ The risk of trade-offs between energy and irrigation development planning is another significant factor demonstrating how development decisions in one sector impact on another, while reducing the adaptive capacity of water-related sectors to climate change.

Areas that experience more frequent and more intense droughts and floods are likely to be negatively affected in respect of crop and livestock production, which threatens livelihood activities and food security. The resultant risks are malnutrition and hunger, coupled with the loss of livelihoods for the most vulnerable population groups. This is evidenced in the Kafue, an important sub-catchment of the ZRB, as outlined in Box 4.

BOX 4 CLIMATE CHANGE VULNERABILITY IN THE KAFUE SUB-BASIN

The Barotse and Kafue sub-basins of the Zambezi are home to about 4.9 million people^a who are among the poorest and most vulnerable in Zambia, with the region suffering from socio-economic isolation and adverse climatic conditions and impacts. It is characterised by warm climatic conditions, a variable annual rainfall of <800mm/year, high soil erosion, and exposure to recurrent floods and droughts.^b In recent years Zambia has been experiencing intensifying recurrent droughts and floods, which have resulted in significant adverse impacts on livelihoods and key infrastructure.^c

33 UNECA, *op. cit.*

According to the Risk and Vulnerability Assessment of the Kafue sub-basin,^d

[t]he knock-on effects for livelihoods and the economy have been detrimental, sometimes severely so. For example, significant rainfall deficits at critical stages of crop growth have frequently led to a serious shortfall in crop production. Notable droughts in Zambia over the last 25 years include the 1991–1992 and 2004–2005 droughts that severely damaged or destroyed many crops. This affected about two thirds of the country, leaving no choice but to import food from its neighbours and seek relief food from donors. In 2006–2007 Zambia experienced severe floods and again in 2009–2010, which affected more than 2 000 households. The evident impact of droughts and floods led to a significant decrease in the productivity of primary sectors like agriculture, fisheries, wildlife and tourism. Water security has been deeply affected, with an impact on agriculture and food security.

In addition, the report notes ‘an increase in health epidemics due to poor sanitation practices or infrastructure, such as the outbreak of waterborne diseases’.^e Furthermore, ‘water underpins every economic activity through its impact on energy security’.^f Extreme weather events such as floods have an impact on infrastructure such as roads, bridges, houses and schools, disrupting economic flows, communication and day-to-day life.

Some of the other areas impacted are biodiversity and the related tourism sector:^g

The tourism sector, one of the fastest growing economic sectors in the country, is also impacted by climate hazards. In the Lower Kafue, tourism is fundamentally dependent on the flow regime, because the biodiversity and ecological processes that attract tourists to these areas are supported by the variable hydrology. This is especially pertinent to the sensitive ecosystems, natural reserves and game management areas, which are highly sensitive to extreme weather events. Thus climate hazards impact on tourism and the livelihoods that depend on it.

Furthermore, the report found that the Kafue sub-basin is ‘a significant hotspot for climate vulnerability – [m]apping produced key aspects of vulnerability and risks evident in the District Risk Profiles (DRPs), such as maize and livestock vulnerability and length of growing period and land degradation.’^h

Regarding competition for water resources, the report noted thatⁱ

[i]nter-sectoral competition for the water resource is increasing, including between important development sectors in the Kafue sub-basin. Hydropower currently accounts for an overwhelming share of electricity generation (noting that Zambia’s electrification rate is only around 20 percent), while water allocations for irrigated, commercial agriculture appear to be compromising water access for domestic users and smallholder farmers. This is particularly difficult in districts that have high visibility of large open water bodies that promote the perception of water abundance.

- a MFNPRZ (Ministry of Finance and National Planning of the Republic of Zambia), *Strategic Program for Climate Resilience: Zambia*, June 2011.
- b Petrie B *et al.*, *Strengthening Climate Resilience in the Kafue Sub-basin (SCRiKA)*. Cape Town: OneWorld Sustainable Investments, 2016.
- c MFNPRZ, *op. cit.*
- d Petrie B, *op. cit.*, p. 21.
- e *Ibid.*
- f *Ibid.*, p. 22.
- g *Ibid.*, p. 23.
- h *Ibid.*, p. 26.
- i *Ibid.*, p. 39.

Climate change is a significant risk for energy production at all existing and planned hydropower plants in Southern Africa. Climate variability has the potential to reduce power generation capacity by between 8% and 15% for all existing hydro plants in the region, except Kafue Gorge Upper and Boroma.³⁴ Drought has already affected water levels, reducing the level of the Kariba Dam to below 10%. This has led to power shortages and power cuts, which in turn have curtailed economic activity in Zambia and Zimbabwe. This shows that climate change impacts are a significant risk factor for economic development across the ZRB.

At the same time that Africa's nascent industrialisation is threatened by climate change, it is seeing rapid population growth and accelerated rates of urbanisation. The sectors central to industrialisation in Africa – food and agriculture, water, energy and mineral extraction – are also central to economic growth and livelihoods. They operate within wider systems: the global economy, the global green agenda, continental economic growth and regional integration, population, urbanisation and employment.³⁵ They are also the sectors most vulnerable to the largest global systemic risk to resource security – the impacts of climate change.³⁶

The transboundary nature of and risks to natural resources and their development are the primary drivers of new and/or improved approaches. Climate change is accelerating the need for regionally integrated resource management and cooperative governance, requiring a roadmap for moving from business as usual to a new normal of cross-border

34 Spalding-Fecher R *et al.*, *Water Supply and Demand Scenarios for the Zambezi River Basin: Climate Change and Upstream Development Impacts on New Hydropower Projects in the Zambezi Project*, Climate & Development Knowledge Network. Cape Town: University of Cape Town, 2014.

35 UNECA, *op. cit.*

36 IPCC (Intergovernmental Panel on Climate Change), *Climate Change 2007: Impacts, Adaptation and Vulnerability: Summary for Policy Makers*, <https://www.ipcc.ch/pdf/assessment-report/ar4/wg2/ar4-wg2-spm.pdf>.

water resource management. For instance, accessing climate finance for transboundary climate challenges to water resources will be close to impossible in the absence of enhanced governance.

Climate risks further highlight how important international climate finance is likely to be in securing regional resources. Accessing climate finance for transboundary initiatives is intrinsically linked to appropriate governance mechanisms. Bilateral and multilateral funders place significant emphasis on governance and institutional arrangements that can effectively manage, distribute and report on financial flows. This has been an inherent, if evolving, feature of all climate finance mechanisms African entities have attempted to access. The Clean Development Mechanism was established on an complex foundation of institutional and governance arrangements.³⁷ The recent shift toward direct access modalities (reflected in the Paris Accord of 2015 as strongly motivated for by African countries and other developing regions) has led to a set of onerous governance requirements and intricate institutional arrangements that African countries are still struggling to comply with successfully. For example, the requirement of global climate funds such as the Adaptation Fund and the Green Climate Fund for beneficiaries to establish national or regional implementing entities continues to challenge countries, particularly in complying with the associated governance criteria. Identifying and mandating a national institution or institutions is often politically contentious, even within one government. Once designated, these institutions must then provide the assurance to international funds that they have the right risk profile, the ability to manage and disburse funds effectively and wisely, and systems in place to monitor and report – commonly known as climate finance readiness.

Enhanced climate finance readiness is often beyond the reach of regional entities such as RBOs. These institutions are, in the main, not readily mandated or empowered to access and spend climate (and other development) funds for implementations across countries. The point of treating a natural resource such as a shared watercourse as one ‘unit’ that is shared by more than one country is an iterative and incremental process. This needs to be built on international good practice examples while framed by existing regional agreements, protocols and policies.

In examining shared solutions to transboundary problems, the central question is: what will enable the transition toward regional integration in Africa to ensure the security of shared water resources?

SHARED SOLUTIONS

Shared solutions arise from shared economic benefits. In Southern Africa many of these shared benefits are closely related to effective water governance, as water-dependent

37 Gudrun B *et al.*, ‘From Public–Private Partnership to Market: The Clean Development Mechanism (CDM) as a New Form of Governance in Climate Protection’, SFB-Governance Working Paper Series, 10, 2008. Berlin: DFG (German Research Foundation) Research Center (SFB) 700.

sectors such as energy and food production continue to enable economic growth and job creation. Both these sectors also increase adaptive capacity to climate change: societies and communities with access to clean, safe water, adequate food and energy tend to be more climate resilient than those that do not. This is because energy and safe water enable improved education, literacy, healthcare, employment and equality – all of which are key elements of adaptive capacity or resilient communities.

Benefit sharing is an important mechanism for regional integration. The Southern African region already enjoys the advantages of the benefit-sharing approach in bilateral projects and agreements, which demonstrates that water benefits can be costed and shared. Applying the benefit-sharing approach to basin-level transboundary resource management has the potential to change the way water is perceived and valued by riparian countries. The main channel for this transformation is shifting the focus of cooperation from physical water supply to the economic, social, political and environmental values derived from water use. It is necessary to begin viewing transboundary water management issues as positive-sum outcomes (optimising the benefits at a transboundary level) rather than zero-sum outcomes (dividing water between riparian states).³⁸ By building on the shared benefits of water use, riparian countries could unlock a much wider range of co-benefits than those currently prioritised, including equity.

Shifting the focus to positive-sum outcomes requires knowledge of and transparent economic benefits, and the means to share and trade these. Shared benefits and the related co-benefits are often not understood and, even when they are, are seldom explicitly quantified – for example, in terms of the number of jobs created or the extent to which poverty is reduced. Similar information is needed to properly examine trade-off decisions – why one development should be prioritised over another, particularly when giving consideration to the related environmental impacts and climate resilience issues. Integrated water resource development planning at the national level will generate the information and analysis needed. Strengthened institutional arrangements at the transboundary level are needed to ensure that the information is effectively translated, channelled and applied to support climate resilient benefit sharing.

National and transboundary water resource development investment planning must integrate climate risks to unlock financial flows. Public and private sector investors are by nature risk sensitive and increasingly unwilling to invest in infrastructure projects where the related climate risks are unknown and/or not planned for. Similarly, sound institutional arrangements and concrete or practical benefit-sharing approaches are likely to attract greater flows of finance. Stronger governance and conflict-preventative environments are widely acknowledged as being coupled with reduced or lower risk, leading to lower costs of investment, making these attractive investment environments.

The nature and foundational principles of governance arrangements in shared systems need to change. Although sovereign interests prevail, water resource security is an increasingly common objective among most Southern African nations. International

38 Qaddumi H, *op. cit.*, p. 1.

good practice is evolving and questions are being raised as to the nature and efficacy of existing regional agreements, protocols and policies. Strengthening these with concrete benefit-sharing mechanisms and clear water allocation policies or strategies is central to advancing Southern Africa's water resource cooperative governance agenda.

The principles of international law establish the framework for developing benefit-sharing approaches to regional cooperation and, where necessary, new approaches to dispute resolution. Regional integration and cooperative governance are the cornerstones of benefit sharing and together these can promote effective resource security and climate change responses in Africa. This, in turn, will minimise conflict over water resources and reduce related water disputes. Countries are less likely to enter a dispute where water resource costs and benefits are clearly articulated and equitably shared among countries. The associated institutional arrangements in turn enhance water governance and increase transboundary cooperation. This kind of specificity promotes peace, whereas it is evident in increasingly water-scarce and competitive environments that non-specificity is a risk.

Southern African countries need to internalise the principles of international water law. Internalisation means codifying the principles in national laws as well as in regional treaties and policies in accordance with specific contexts and needs. For instance, at the time of writing, the Permanent Okavango River Basin Water Commission (OKACOM) was preparing a discussion paper on its underpinning agreement. The primary question raised of the OKACOM agreement, established in 1994, was whether it was 'fit for purpose' in terms of current trends in water management dealing with climate change impacts, increased development and transboundary strategic and investment planning.³⁹ It also raised questions of compliance with the principles of international and regional water law, such as the principle of no harm and equitable and sustainable utilisation. Notably, only two countries in Southern Africa have ratified the UN Convention for Shared Watercourses for Non-Navigational Use – Namibia and South Africa.

CONCLUSION

There are two primary barriers to regional integration and cooperative governance of water management in Southern Africa. Firstly, the prioritisation of short-term sovereign interests continues to block transitions to cooperative governance – even after 20 years of regional peace in the post-colonial and post-apartheid era. Ironically, fear of disturbing that peace is the other major obstacle to effective regional cooperation on water governance. Riparian countries that have managed to conclude transboundary river basin agreements such as OKACOM and ZAMCOM took a long time to negotiate these instruments. That they did so successfully signals commitment and sets a precedent, meaning that it will be difficult for the countries to reverse the trend toward managing the water resource as a single unit. Moreover, their ratification was contingent on consensus-based instruments that place few, if any, obligations on member states. As a result, legal disputes are few and far between.

39 OKACOM (Permanent Okavango River Basin Water Commission), *Terms of Reference for the Development of a Discussion Paper on the Permanent Okavango River Basin Agreement*. Maun: OKACOM Secretariat, February 2017.

As member states do not have any meaningful obligations to each other there are few circumstances where a legal dispute could arise. Few agreements thus clearly articulate dispute resolution mechanisms, highlighting an aversion to providing for conflict.

The critical question is whether or not peace can continue to prevail in a context where scarce water resources, which are common property, are threatened but where short-term sovereign interests rule. The answer to this question lies largely in the future. It is time to take cooperative water governance to new levels of commitment in Southern Africa.

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