

The Comparative Dynamics of Water Sharing of Transboundary Waterways: Lessons from the Nile, Lesotho Highlands Water Project and the Okavango River Basin

*Isaac Mazonde**

Abstract

The current global climate change patterns seem set to usher in progressively drier climates in most developing countries, especially in Africa. This, coupled with population explosion in developing countries, is bound to cause increasing water shortages in countries such as Botswana. Reliance of countries on shared transboundary waters increases as water becomes scarcer, usually leading to tensions among the riparian states as the concerned states experience growing inadequacy of water. A lot has been written about transboundary waters. What has not been highlighted is a comparison of successful and unsuccessful transboundary water resource agreements. This paper presents the Basin of the Nile River as a case where problems have been experienced in the sharing of transboundary waters on the one hand, the water project based in Lesotho Highlands, as a case of a successful treaty governing the sharing of Transboundary waters signed between the governments of South Africa and Lesotho on the other, and finally the Okavango River Basin as a case study with more positive results in the sharing of a major regional water resource. The Okavango in Botswana, given its strategic regional planning and management committee, is projected as a case where the use of a common resource unites rather than divides the riparian states. Hence, the case is put forward as a model that the continent can use.

Introduction

Two of the phenomena currently facing the world are population explosion and global climatic change. In 2015 the world population stood at 7.4 billion, up from 6 billion in 1999 (Vernon 2015). The fastest population growth takes place in the developing countries (Vernon 2015). Coincidentally, water scarcity and floods resulting from global climatic change are found mostly, though not solely, in the developing countries. The impact of the combined effects of population explosion and drought in the developing countries is increased water scarcity, a phenomenon that calls for concerted efforts in planning and managing transboundary water resources.

Water is the source of all life, sustaining people, the economy, agriculture, natural resources and the environment generally. It is an international resource which traverses countries in various forms such as lakes, for example Lake Victoria, or as rivers such as the Nile and the Okavango rivers that are discussed in this paper. For example, in 2008, it was estimated that the share of the world population found within the river basins of internationally shared waters was around 55% (Wondwosen 2008). Unless legally enforceable water agreements are in place, tensions will rise among countries that share rivers once water becomes scarce. Thus, shared waters have a potential to be a source of conflict. As demonstrated in this comparative paper, there have been a number of conflicts among riparian states over the use of internationally shared waters in different regions of Africa such as North Africa and Southern Africa. Often, relations of states on either side of a river have been soured, mainly due to perceptions that water use within the river basin was inequitable. This paper firstly examines such conflicts in the world's longest river, the Nile. It secondly interrogates the Lesotho Highlands Water Project (LHWP) and thirdly the Okavango River Basin Water Commission (OKACOM), and presents OKACOM as a model for countries to emulate. With respect to the Nile River, the paper does not delve into the details of the disputes that have been taking place. Rather, it highlights the salient issues about the causes of such disputes and provides some framework on how

* Isaac Mazonde, Department of Environmental Science, University of Botswana. Email: mazondei@mopipi.ub.bw

solutions, based upon the OKACOM, can be worked out for the Nile and the LHWP, going forward.

The Nile River

With the entire area of its river basin totalling 3,349,000 square kilometres spread across 11 states, the Nile River is the longest river in the world. The number of people living within its basin is very high at 160 million. An estimated 300 million people live in the 11 countries through which it passes (UNESCO 2006). Of the 11 countries that constitute the Nile River Basin, Egypt, Ethiopia and Uganda have been the key countries in which arguments about inequities in the sharing of the waters of this river have emerged. In 1929 Britain, as the region's colonial master passed legislation to the effect that no state through which the Nile passed could dam the Nile without Egypt's consent since Egypt's agriculture and other economic activities depended very heavily on the waters of the Nile River. Egypt took interest to find out if any dams were being built along the Nile River. This is because the Nile River supplies 70% of Egypt's water (Wondwosen 2008). In spite of that legislation, there have been conflicts between upstream and downstream users of the waters of the Nile over the decades. Initially, Egypt had disagreements with the upstream countries of Uganda and Ethiopia, and it was threatening violence against Ethiopia which wanted to construct the Grand Ethiopia Renaissance Dam across the Nile (Wondwosen 2008). Ethiopia hopes to generate electricity for the country's growing economy and then export some of it to the neighbouring countries. Ethiopia, which considers itself a key player in the energy sector by virtue of it supplying the highest of the total volume of the waters of the Nile River (a staggering 85%), has gone ahead to construct a dam and has rejected Egypt's offer for financial assistance, a move that would make the two countries co-owners of the dam (Wondwosen 2008).

Up to 2003, the upstream countries were too poor to dam the river (Mason 2004). This has since changed as shown by Ethiopia's ability to finance the dam out of its resources. Seeing that development, Egypt tried to stop the construction of the dam but failed (Mason 2004). Subsequently, it took more diplomatic steps by increasing its trade with Ethiopia in a bid to soften the country's hard stance on the construction of the dam. But more importantly, there was no resolution of the dispute between Egypt and Ethiopia over the building of Ethiopia's Grand Renaissance Dam.

This dam project in Ethiopia is not the only conflict that Egypt has had with countries along the Nile River Basin. There have, in the past, been conflicts between Egypt and the other states in the basin. To try to solve the conflicts, all the 11 countries came together in 1999 to launch what is commonly known as the Nile Basin Initiative (NBI), whose secretariat is based in Entebbe, Uganda. The NBI was a joint programme of action meant to facilitate ways in which the countries could cooperate and integrate their economies and develop their resources in a more sustainable manner, while also enhancing their regional security (Nicole 2003). This was a temporary measure to quell conflicts pending a more permanent accord (Nicole 2003).

Even then, this was not the first attempt by the riparian states of the Nile River to reach some working relationship among themselves. In 1993, a committee was set up to look into the environmental protection as well as the overall development of the Nile River Basin. Two years later, the efforts resulted in the design of what was referred to as the Action Plan for the Nile River Basin. But given that the relations did not appear cordial among the riparian states, three development agencies, namely the Canadian International Development Agency (CIDA) worked jointly with the United Nations Development Programme (UNDP), and the World Bank in 1997 to attempt to get the riparian states to dialogue, in a bid to make the Action Plan operational (Kag 2005). All the countries entered into talks the following year, but without Eritrea, which did not come to the negotiating table, for reasons that have not been disclosed. The efforts of the UNDP, CIDA and the World Bank bore fruits because the aim of the discussions was to work out an amicable partnership at the regional level for better management of the Nile Basin. The discussions culminated in

the inauguration in February 1999 in Dar es Salaam, Tanzania, of a mechanism for cooperation, signed by the cabinet ministers responsible for water among the riparian states. At this point, the agreement was merely transitional and it was known as the Nile-COM, which graduated into the more permanent Nile Basin Initiative (NBI). Three years later, in 2002, the World Bank provided financial assistance to establish a Secretariat for the NBI in Entebbe, Uganda (Wondwosen 2008).

As is the case with similar organizations like the OKACOM in Botswana (OKACOM Secretariat 2012), the Executive Secretary heads the Secretariat of the Nile Basin Initiative (Wondwosen 2008).

Raising funds is one of the key tasks of the Secretariat. Almost without exception, water management secretariats in developing countries depend on the industrialized countries of the North for funding their operations. In that vein, the NBI secretariat approached the international donors attending the International Consortium for Cooperation on the Nile in Geneva (Switzerland) in June 2001. The NBI Secretariat had required the sum of US\$180 million. However, only US\$ 85 million was pledged at the Geneva conference, most of it going into the Trust Fund maintained by the World Bank (Schild 2005). This development encouraged riparian states to take the NBI seriously so much that the Parliament of Uganda passed legislation in 2001 in which it recognised the NBI Secretariat as having international legal status (Wondwosen 2008).

Eventually, there was a Nile Team, made up of a number of partners that included countries of the North such as the G8 member countries and major financial bodies like the African Development Bank (Schild 2005).

For all these positive developments which saw the NBI implementing a programme with so much financial backing from the industrialized countries, the overall goal of a harmonious and equitable sharing formula of the waters of the Nile River has not been achieved. Up to 2010 conflicts over the use of the Nile River waters persisted among the river's riparian states. Riparian countries upstream and mid-stream such as Uganda, Sudan and Ethiopia still complained about Egypt dominating the use of the Nile River Basin waters. A clear indication of their discontent was evidenced when Tanzania and Rwanda, which had both not been complaining about Egypt's share of the water joined Uganda and Ethiopia in signing a post-NBI agreement at Entebbe, on more equitable ways of sharing the Nile River waters, notwithstanding strong resentment from Sudan and Egypt (Belay *et al.* 2010). Next, we turn to the case of the Lesotho Highlands Water Project Treaty, a different kind of an agreement which has less conflicts between the two participating countries.

The Case of the Lesotho Highlands Water Project Treaty

By its own admission, the Lesotho government regards the LHWP to be a successful agreement of transboundary water sharing with South Africa (Lesotho Government 1986). However, what is evident in this case is an example of a situation whereby an overbearing regional 'superpower', apartheid South Africa, nudged a smaller state, Lesotho, into an agreement that the latter enters into purely for financial gain. The 'superpower' lures the smaller state through an undertaking that it would cover the costs that the smaller state was unable to meet. The treaty was entered into by the two countries and signed by the respective foreign ministers in Maseru, Lesotho, on 24 October 1986.

As a contractual agreement, the Treaty governs several aspects such as the designing, building and running of the project, together with its maintenance (Lesotho Government 1986). The parties were careful to word the document such that it upheld the interests of both parties to the agreement. These interests include the amount of water that should be supplied to South Africa, based upon a clearly specified formula for sharing the benefits that include the royalties due to the Lesotho government. Furthermore, the financial obligations of each country are reflected in the agreement which states that all costs related to water transfer from Lesotho to South Africa, together with the costs associated with the maintenance of the water transfer facilities would

be borne by South Africa (Ginster *et al.* 2010). It would appear that South Africa was prepared to bear the costs because it badly needed the water from Lesotho to boost its own economy (Ginster *et al.* 2010). The Treaty recognizes that in the course of implementing the agreement, some communities would be displaced. The compensation of such displacements, it says, would also be the responsibility of South Africa. This further highlights South Africa's need for water. For its part, Lesotho was given the responsibility of funding the costs of providing the power required by the project (Lesotho Government 1986). All the provisions of the Treaty are captured in a handbook. It was deemed important to produce such a booklet because the project is generally regarded as the largest of its kind throughout Africa (Lesotho Government 1986). Whereas the NBI was funded by a consortium of developed countries and international funding organizations such as the World Bank, in the case of the Lesotho Highlands Project, funding came from the World Bank, which also mediated the agreement (Lesotho Government 1986).

The Treaty was not seen by both parties as a fixed and inflexible document. Quite naturally, changes became necessary in the governance of the Treaty in the course of its implementation. Eventually, some six protocols were added to it, three of them having been envisaged at the time when the Treaty was drawn (Lesotho Government 1986). The Treaty is considered successful over a number of issues. First, it is considered to have made the socio-political climate of the region more stable. Such stability then stimulated the economy of Lesotho, something that created more social benefits for the country's population (Lesotho Government 1986).

The Treaty contains within it a dispute resolution mechanism. The fact that this has never been evoked so far is taken to be a sign of its success. The Treaty has never needed to be adjusted since it was signed. Instead, it is commonly agreed that it has put to rest the political tensions that were known to characterize Lesotho and apartheid South Africa before it was signed (Ginster *et al.* 2010). Nevertheless, it is common knowledge that South Africa exerted its influence to protect its interests in 1986, when it is believed that it was behind the toppling of Lesotho Prime Minister Leabua Jonathan by the army led by General Lekganya, when Jonathan had become South Africa. The tensions had thus resulted from the geopolitical climate of a small state opposed to the racial policies of the larger and more economically developed regional power that completely surrounds it, and on which Lesotho depends for its own economic survival and access to the outside world. Notwithstanding their socio-economic inequity, the two states still needed one another, which is why they entered into this agreement.

The Orange River, a major source of water inside South Africa, originates from Lesotho, and flows westwards across South Africa into Namibia, creating a situation almost similar to that of the Nile which has 85% of its water originating from Ethiopia. South Africa's agriculture and industry needed a lot of water for its growth and further development (Ginster *et al.* 2010). On the other hand, Lesotho is a developing country which badly needed economic help from South Africa, even in the form of economic aid. In particular, Lesotho needed electric power to build its industry but lacked the necessary resources to develop that on its own (Ginster *et al.* 2010). The development of Lesotho water resources required funding that the kingdom did not have. Therefore, it found itself heavily reliant upon South Africa, a country that held it to ransom since it completely surrounded it (Lesotho Government 1986).

A point of strength for Lesotho is that with its surface water standing at 4.73 cubic meters per annum and with its precipitation being higher than that of South Africa, the country's water resources exceed its demands (Lesotho Government 1986). Lesotho, therefore, has capacity to supply South Africa with water in accordance with the LHWP Treaty. It is for that reason that Lesotho pledged to supply South Africa with some 2.207 billion cubic meters of water every year until the project terminates in 2020. One other section of the Treaty which shows that the project has a strong developmental angle in favour of Lesotho is that before the water reaches South Africa, it is used to generate some 72 megawatts of electricity, which Lesotho needs (Lesotho Government 1986).

Lesotho's position as a country with the ability to supply water to others outside its borders is giving the country recognition across the region. Currently, Botswana, which is a water deficit country, has just entered into discussions with Lesotho, also exploring the possibilities of purchasing water from Lesotho (*Botswana Daily News* 15 May 2016).

As indicated earlier, the LHWP Treaty presents a successful transboundary water sharing arrangement since the two countries, Lesotho and South Africa, worked out a mutually agreed water sharing formula that was legally binding and was dictated by the actual broader economic needs of the two states. While post-apartheid South Africa has generally presented a politically friendly attitude towards its neighbours, there is a perception that its economic *modus operandi* is not very different from that followed by the apartheid regime. Hence, post-apartheid South Africa would not change much of what it inherited from its segregationist leadership. South Africa's Gauteng Province is the heavily industrialized economic heartland of the country contributing 45% of the country's gross domestic product (Statistics South Africa 2013). It has an ever growing population, which rose from 9,388,854 people in 2001 to 12,272,263 in 2011 (Statistics South Africa 2013) resulting largely from the combined effects of rural-urban migration within the country and the mass exodus of job seekers from the neighbouring countries like Lesotho among others, most of which have depressed economies (Statistics South Africa 2013). But the fact that Lesotho can also receive a cash inflow of US\$46 million per annum from the project (Lesotho Government 1986) means that the Treaty goes some way to meet the national needs of both countries. Nevertheless, the 'big brother' attitude that South Africa has over Lesotho is clear. Hence, the Agreement remains inequitable in that it favours South Africa, although Lesotho applauds it as a success.

The Permanent Okavango River Basin Water Commission

The LHWP is a successful agreement in that it satisfies both parties and was supposedly entered into without undue pressure, notwithstanding the political differences between Lesotho and apartheid South Africa, as well as the huge inequity in the sizes of the economies and the disparities in the levels of development between the two countries. The third case, namely that of the Permanent Okavango River Basin Water Commission (OKACOM), highlights an even better water sharing protocol because the agreement is between three countries, Angola, Botswana and Namibia, with relatively equal economic power. As was the case with the LHWP, the OKACOM agreement was a collective effort among the stakeholder countries and it was reached by consensus by these three states in Windhoek, Namibia on 15 September 1994. It has since worked smoothly without any dispute from since it was signed (OKACOM Secretariat 2012).

Although Southern Africa is a generally drought prone region, and dry spells have been increasing in their frequency and intensity, these have always been common occurrences in Namibia and Botswana. Both countries depend very much on tourism (OKACOM Secretariat 2012) with the sector being the second contributor to Botswana's GDP (Statistics Botswana 2010). The Okavango River is the anchor of tourism in both Botswana and Namibia as water based tourism is centred around the Okavango Delta. A key point to note is that while the delta is fed and sustained by the water system that originates in Angola and traverses Namibia, the delta is itself in Botswana. Therefore, the Okavango River plays a critical role in the economic livelihoods of people who live in its basin and also at the national level. The delta forms quite a great deal of the river system. There are half a million people who depend on the water, the flora and the fauna of the Okavango River.

The three countries, Angola, Botswana and Namibia make the delta an international resource. For this reason, the Okavango Delta was declared a RAMSAR site, (a wetland site designated of international importance under the Ramsar Convention of 1975) in recognition of its importance as a resource that exists not only at the regional level but also at the international level (OKACOM Secretariat, 2012). In whatever action Botswana takes with respect to the use of and sharing of the water resources of the Okavango

Delta, the country has to ensure that this delta remains a RAMSAR site, because that status is a magnet in attracting international tourists and in creating and maintaining international community interest in the delta (OKACOM Secretariat 2012).

Actually, current thinking is that the Okavango Delta, though physically found wholly within Botswana's borders, should share its gains with the countries that supply its waters (Dlamini 2017). This same argument arose initially within the context of the sharing of the benefits of the Nile River when a view was raised that Egypt should find a way of compensating the countries through which the Nile passes, given that there are agreed limitations to the amount of water that such countries may use from the Nile (Dlamini 2017). In contrast, the overarching objective in Botswana, Namibia and Angola signing the Permanent OKACOM Agreement was to manage the entire basin of this river as one piece (Dlamini 2017). The Agreement was signed in Windhoek, Namibia, in 1994. In terms of its mandate, OKACOM exists to continuously review the environment and the development policies of the three riparian states and then provide appropriate advice to these states on the optimal utilisation of the resources of the river basin and its natural resources (OKACOM Secretariat 2012).

Unlike the NBI which does not seem binding to the riparian states of the Nile Basin, the OKACOM Agreement is legally binding to the three countries (Angola, Botswana and Namibia) that constitute the Okavango Delta. Through the agreement, the three countries have committed themselves to work in such a way that will ensure equitable use of their transboundary water in a manner that also conserves the physical environmental of the delta (Dlamini 2017). The agreement brings into perspective the broader national development goals of the riparian states in its implementation. Again unlike similar agreements elsewhere, consideration is given to other activities that take place upstream such as irrigation, which might have effect on the water of the delta.

On the basis of the experience from international water sharing agreements like the Nile and the LHWP, more thought went into OKACOM. For example, as Dlamini (2017) notes, 'From the Okavango basin integrated water resource management strategy of June 1995, OKACOM developed a strategy that provided comprehensive information about the state of the environment over the whole Okavango basin, and the assessment of the prevailing situation and show potential for the future development of the basin in each watercourse state'.

One thing about the Okavango that is not the case with the Nile River basin is that there are not much developments such as dams along quite some length of the Okavango river. Furthermore, there is minimal pollution. This leaves the river basin in what can be referred to as a pristine condition, something that adds much to its value both nationally and internationally (OKACOM Secretariat 2012). Quite clearly, this pristine condition of the delta must have been one of the factors that were taken into account when it was declared a RAMSAR site.

As indicated earlier, the OKACOM Agreement was entered into based on the experiences of the design and implementation of similar transboundary water agreements in other parts of Africa. Its mandate is very specific. It provides technical advice to the riparian states in the utilization of the delta waters and other resources based in the delta. This mandate extends to all matters that deal directly or those that have some bearing on the delta. The prime goal is to coordinate the activities of the three countries both inside the delta and beyond the delta in anticipation of, for example, pollution that might originate away from the delta, say, in any one of the countries.

All these concerns and lessons learnt from other Agreements have resulted in the Okavango Commission forging a comprehensive and carefully crafted Agreement. That Agreement aims to work out and implement an approach that is coherent. It is also closely monitored by the OKACOM Secretariat through annual meetings at which reports are presented and interrogated to ensure that the many goals of the Commission are met. Those goals include equitable allocation of water and other resources as well as

sustainability of its use. The overarching goal is to have a sound management system. An excerpt from the OKACOM Agreement shows that the Commission has been given the legal responsibility to effect the following:

- Determine the long term safe yield of the river basin
- Estimate reasonable demand from the consumers
 - Prepare criteria for conservation, equitable allocation and sustainable utilisation of water
- Conduct investigations related to water infrastructure
- Recommend pollution prevention measures
 - Develop measures for the alleviation of short term difficulties, such as temporary droughts
 - Address other matters determined by the Commission

The LHWP Treaty has a clause on how often it will be reviewed. This is an international practice. OKACOM also has a similar review clause which it implemented in 2007. The OKACOM review was done within the parameters of the Revised Southern African Development Community (SADC) Protocol on Shared Watercourse (Dlamini 2017). Then the review achieved two additional gains, which were to give the Okavango Basin Steering Committee (OBSC) formal status and also to recognize it as an integral part of OKACOM. Clearly defined responsibilities were assigned the Okavango Basin Steering Committee and the roles and functions were also spelt out, along with the procedures to be followed in the operations of the Steering Committee (Dlamini 2017).

The need for a well functioning Secretariat was highlighted in the discussions of both the Nile Basin Initiative and the LHWP. Although OKACOM had felt the need for a Secretariat as early as 2004, it only signed an agreement to establish one in April, 2007 and inaugurated its office the following year. As in similar cases, the mandate and duties of the Secretariat were clearly spelt out, these being to ensure effective administration of the organ and administering its finances. The Commission appointed Botswana as the first state to host the Secretariat, which is located in Maun on the edge of the delta, led by the Executive Secretary, as is the case in Lesotho (OKACOM Secretariat 2012).

The Challenges of OKACOM

Notwithstanding the pre-eminence of its agreement over the agreements of other shared waterways discussed in this paper, the OKACOM is not without its challenges, partly due to the devastating impact of climate change and in part due to the increased water use that must follow the end of wars in the Democratic Republic of Congo and Angola upstream countries (Dlamini 2017). In this respect, Dlamini (2017) has observed that the commission is still faced with a daunting task of balancing physical and socio-economic impacts that affect the basin and are assumed will have an adverse effect in the near future. Climate change simulations from studies by the Environmental Protection and Sustainable Management of the Okavango River Basin (GEFEPSSMO) project indicate that the basin will experience very substantial changes to the magnitude of river flows in the Okavango River basin given the 2 degrees average temperature change in global warming. An assumed minimum of 10% change is expected in the mean annual river flow from the average flow (Dlamini 2017).

Global climate change is not the only challenge that the delta and the entire river basin have to deal with. In addition to those challenges, Anderson *et al.* (2006) also note that ‘predicted future developments in Angola could have serious consequences to the water availability of the downstream countries. After 27 years of civil war that forced more than four million people away from their homes, the 2002 cease-fire has raised the possibility of large numbers of refugees returning home where some of them might settle along the basin’. This, Anderson *et al.* (2006) observe, could have the potential to change the face of the

basin since it will be accompanied by developments to fulfil the needs of the basin's inhabitants, which developments might include urbanization, industrialisation and hydropower schemes. Yet, the OKACOM Agreement still remains more exemplary, notwithstanding these negative scenarios.

The Way Forward for Developing Shared Transboundary Water Agreements

As stated earlier the purpose or major finding of the paper is to present the OKACOM as the best model of an agreement that other riparian states could consider learning from. In spite of the challenges noted above, the OKACOM is better than any similar Agreement so far because:

- it is quality assured because it is based upon the experiences learnt from similar transboundary water agreements elsewhere
- it is an agreement that has been entered into among equals and without an underlying pressure
- it is quality assured for best water sharing arrangements through being aligned with the Revised SADC Protocol on Shared Watercourses
- It has a well established secretariat to implement its requirements
- Over and above all these, it is a development based agreement which takes into account the national development plans for the three riparian states and also addresses pollution control in its waters, hence preserves the environment

Finally, ways of averting misunderstandings that normally characterize shared water arrangements can be suggested. Terraviva proposes joint investments where all three countries would reap the rewards of productive investments at a basin, at the regional level, rather than at the national level (Terraviva 2010). Such an approach would address a key requirement for regional integration that SADC has been pursuing in the Southern African region for such a long time. This would be an ideal example of a case where countries in the region exploit the comparative advantages of each segment of the river through the coordinating effort of OKACOM (Terraviva 2010). Dlamini argues that this would also help in breaking the cycle on donor reliance for funding OKACOM's regional projects and strategies as a way of moving the river basin towards financial independence. If this were to work out this way, it would be another strong lesson for the Agreements across Africa and beyond.

On the basis of the foregoing, it is my view that future water sharing agreements, in order to be successful, require to be mutually beneficial and need to be entered into without any coercion on any of the participating parties. They have to be flexible enough to accommodate unforeseen developments in the future, such as droughts, which are becoming a frequent feature of especially southern Africa.

Conclusion

Climate change takes many forms. It can bring in floods and droughts. But, perhaps, more importantly, it is the change in the climate itself, which ushers in uncertainty. Climate change, whether drought or floods, affects both pastoral and arable farming negatively. Droughts have the potential to negatively affect other forms of human activities such as industrial development or the provision of adequate water for domestic purposes. Thus water shortage evokes wide spread fears from many perspectives. Increasing human population sizes exacerbate water shortage. This phenomenon brings to the surface the need to scrutinise water sources, including transboundary shared waters, and then reach the most equitable agreements of sharing this scarce resource. Within this context, this paper has used three cases to highlight and analyse the key problems of transboundary water agreements in Africa. The three cases have different histories and contexts. As such they highlight three different lessons. The overall aim of the paper is to highlight the causes of conflicts and to

project circumstances under which agreements are successful.

The first case used is the Nile River, the longest river in the world and one passing through 11 states and with its river basin totalling 3,349,000 square kilometres. The conflicts in the sharing of the waters of this river stem from legislation passed in 1929 by Britain, which, using its authority as the colonial master of the region legislated that no state through which the Nile passed could dam the Nile without Egypt's consent since Egypt's agriculture and other economic activities depended very heavily on the waters of the Nile River. This legislation caused friction between Egypt and other countries through which the river passed. Uganda held the position that it would not be proper for Britain to limit its use of the Nile river waters since the Nile river originated from that country. A related argument from Ethiopia was that it was wrong for Britain to deny Ethiopia the right to dam the Nile river, given that some 85% of the volume of the waters of the Nile originate from it. These were not the only conflicts in the Nile river basin. There were many others.

To try to solve these conflicts, all the 11 countries came together in 1999 to launch what is commonly known as the Nile Basin Initiative (NBI), with a secretariat that is based in Entebbe, Uganda. The NBI was a joint programme of action meant to facilitate ways in which the countries could cooperate for the sustainable and equitable use of the waters of this river. The launch of the NBI has not brought an end to the conflicts.

Whereas the Nile Basin Initiative was a multilateral effort, the second case, which is that of the Lesotho Highlands Water Project Treaty, presents a bilateral agreement between Lesotho and South Africa through which the latter buys water from the former. The treaty was entered into by the two countries and signed by the respective foreign ministers in Maseru, Lesotho, on 24 October 1986. The treaty upholds the interests of both parties to the agreement, based upon a clearly specified formula for sharing the benefits for both countries.

The Lesotho government admits that this is a mutually beneficial agreement and the country considers it to be successful. Granted, on the one hand South Africa needs water for its agriculture and its people and on the other hand Lesotho's water reserves are more than its needs and it needs money for its own economic development. Yet analysis shows that the Lesotho Highlands Water Project Treaty is a type of agreement in which coercion has been subtly used by South Africa, the economically superior partner to buy water from a poorer country under terms that favour the economically stronger partner.

The third and last case is the Permanent Okavango River Basin Water Commission Agreement (OKACOM) which was signed by three countries, Angola, Botswana and Namibia in Windhoek, Namibia in September, 1994, to provide appropriate advice to these states on the optimal utilization of the resources of the river basin and its natural resources based upon a continuous review of the environment and the development policies of the three riparian states. In other words, development programmes taking place along the basin of the Okavango river have to be sanctioned by the secretariat of the Commission. This is because the OKACOM Agreement is legally binding to the three countries (Angola, Botswana and Namibia) that constitute the Okavango Delta.

The OKACOM has worked smoothly since its inception. Nevertheless, it has to be noted that socio-economic development has not been easy in Angola due to war in that country. This means that the country's ability to control the effects of by-products of development such as pollution, has not been tested as yet. That notwithstanding, the OKACOM appears to be better than any similar Agreement reached and recorded so far because it is quality assured given that it was drafted following experiences learnt from similar transboundary water agreements elsewhere and particularly because it is aligned with the Revised SADC Protocol on Shared Watercourses. The strength of the Revised SADC Protocol on Shared Watercourses is that it takes into account the national development plans for the riparian states, including pollution control in the waters, a measure that significantly preserves the environment.

References

Official documents

- Lesotho Government 1986. *The Lesotho Highlands Water Project Treaty (LHWP)*. Maseru: Government Press.
- Republic of Botswana 2013. *Botswana Integrated Water Resources and Water Efficiency Plan Volume 2*. Gaborone: Government Printer.

Secondary sources

- Anderson L, Wilk, J, Todd, MC, Hughes, DA, Earle, A, Kniveton, D, Layberry, R, Savenije, GH 2006. 'Impact of Climate Change and Development Scenarios on Flow Patterns in the Okavango River', *Journal of Hydrology*, Vol. 331, pp.43-57.
- Belay, A, Musoke, HM Semakula, H, Wambura, GJ, Jan, L 2010. 'SWOT Analysis and Challenges of Nile Basin Initiative: An Integrated Water Resource Management Perspective'. *Chinese Journal of Population, Resources and Environment*, Vol. 8, 1 pp.123-124.
- Dlamini, T 2017. 'Improving the OKACOM Agreement. An Essay Submitted for Evaluation in the Integrated Water Research Management (IWRM) Programme', Okavango Research Institute, University of Botswana.
- Ginster, M, Gouws, C, Gouws, CM, Maki, H, Mathipa, R, Motloug, S, Nyandoro, M and Tempelhoff, JWN 2010. 'Views on Unlawful Water Abstractions along the Liebenbergsvlei River, South Africa', *TD: The Journal for Transdisciplinary Research in Southern Africa*, Vol. 6, 1, pp.1-24.
- Mason, SA 2004. *From Conflict to Cooperation in the Nile Basin*. Zurich: Swiss Federal Institute of Technology.
- Nicol, A 2003. 'The Nile: Moving Beyond Cooperation, Water Policy ProgramME', ODI, UNESCO/IHP/WWAP.
- OKACOM Secretariat. 2012. *Thinking Transboundary: Information and Communication Strategy for OKACOM*. Maun: Botswana.
- Parida, BP and Moalfafhi, DB 2008. 'Regional Rainfall Frequency Analysis for Botswana using L-Moments and Radial Basis Function Network', *Physics and Chemistry of the Earth*, vol. 33, pp.614-620.
- Schild, T 2005. *The Nile: A Bonding Element in International Cooperation? Transfrontier Development*. Eschborn: Deutsche Gesellschaft für Technische Zusammenarbeit.
- Terraviva, O 2010. *SADC Fourth Regional Workshop on Strengthening River Basin Organisations*. Gaborone, April 2010, IPS AFRICA.
- Tsheboeng, G 2016. 'Population Structure, Species Composition and Distribution of Riparian Woody Plant Communities in the Okavango Delta, Botswana'. PhD Thesis, Okavango Research Institute, University of Botswana.
- Vernon, R 2015. 'World Population Likely to Keep Growing into the 22nd Century', *The Journal of Population Matters*, Issue 1, Spring, pp.213-214.
- Western, D and Maitumo, D 2004. 'Woodland Loss and Restoration in a Savanna Park: A 20-Year Experiment'. *African Journal of Ecology*, vol. 42, 2, pp.111-121.
- Wolski, P, Murray-Hudson, M, Fernkvist, P, Lidén, A, Huntsman-Mapila, P and Ramberg, L 2005. 'Islands in the Okavango Delta as Sinks of Water-borne Nutrients', *Botswana Notes and Records*, vol.37, pp.253-263.
- Wondwosen, TB 2008. 'Transboundary Water Cooperation in Africa: The Case of the Nile Basin Initiative (NBI)', *ALTERNATIVES: Turkish Journal of International Relations*, vol. 7, 4, pp.34-43.

Newspaper sources

Botswana Daily News 15 May 2016. 'Tourism in the Okavango Delta'.

Kag, A July 2005. 'Major Conflicts in Africa over the Next 25 Years Could be Due to that Most Precious of Commodities –Water', *The Standard Newspaper (Kingdom of eSwatini)*.