

**UNIVERSITY OF NAIROBI**

**SHARED WATER RESOURCES IN THE SADC:  
A CASE STUDY OF THE ZAMBEZI RIVER**

*By*

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## DECLARATION

I hereby truthfully declare that I am the sole author of this thesis and that all content is my original work that has before not been presented for an award at any university or learning institution:

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## ABSTRACT

On mainland SADC region, water resources of international river basins is the most shared natural resource among member states. Almost always, the water resources occur with varying abundance or scarcity at different times of the year, and in different parts of individual states and the region. These international river basins also cut across and between states with varying legal, political, economic and social situations, resulting in the existence of diverse rights over the utilisation of the shared water resources and potential for conflicts. The Zambezi river basin is largest of all international river basins in the SADC and most complex in terms of utilisation rights as the basin is shared in varying proportions by 8 riparian states. Compounding this complexity is the pursuit of divergent water development strategies among the riparian states and the diverse physical characteristic of the river basin itself. Realising that basin-wide cooperation premised on the principle of equitable and reasonable utilisation of the UN Watercourses Convention and SADC Watercourses Protocol is the solution to the complex problem of sustainably developing and equitably utilising the shared water resources, the 8 riparian states entered into the Zambezi watercourse agreement creating the Zambezi river basin regime. However, some riparian states are reluctant to be state parties to the agreement on the basis that their interests in the utilisation of the water resources of the Zambezi river basin are not well served by the principle of equitable and reasonable utilisation as drafted in the ZAMCOM agreement. Absence of basin-wide cooperation among the riparian states arising from the disagreement over the ZAMCOM agreement potentially weakens the river basin regime and suggests that the principle as drafted in the agreement may be contrary to the relevant provisions of the UN Watercourses Convention and SADC Watercourses Protocol. Therefore, this case study researched within framework treaty law of the UN Watercourses Convention and SADC Watercourses Protocol the drafting of the principle in the ZAMCOM agreement to uncover the lacunas causing disagreement and establish if the agreement and the creation of the Zambezi river basin regime are based on true interpretation of relevant provisions of international water law and SADC regional water law. Findings are that mainly due to its origins the ZAMCOM agreement is more of a framework agreement than a river basin agreement as it does not determine equitable rights for riparian states as required by Article 6 of the UN Watercourses Convention and Article 3(8)(a) of the SADC Watercourses Protocol, and precisely define the water resources under consideration in the agreement as provided by Article 3(4) of the UN Watercourses Convention and Article 6(4) of the SADC Watercourses Protocol. Conclusion is that the Zambezi river basin regime shall remain a weak and marginally functional river basin regime of no real utility in the management and development of the Zambezi river basin water resources unless the agreement is amended. Recommendation is made that the ZAMCOM agreement requires appropriate amendment, through rectifying the omissions in it and taking into account the unique factors and characteristics in the basin, if to transform the Zambezi river basin into a useful regime able to facilitate the equitable and reasonable utilisation of the water resources among all the Zambezi river basin riparian states.

**Key words:** agreement, basin, convention, equitable, international, principle, protocol, reasonable, regime, riparian, river, sovereignty, utilisation, watercourse.

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## **DEDICATION**

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## **LIST OF ABBREVIATIONS**

CICOS		International Commission of the Congo-Oubangi-Sangha River Basins
ICJ	-	International Court of Justice
ILA	-	International Law Association
ILC	-	International Law Commission of the United Nations
IPCC	-	Intergovernmental Panel on Climate Change
IWRM		Integrated Water Resources Management
LIMCOM		Limpopo Watercourse Commission
LTA		Lake Tanganyika Authority
NGO	-	Non Governmental Organisation
OKACOM		Permanent Okavango River Basin Water Commission
ORASECOM		Orange-Senqu River Basin Commission
PJTC		Kunene River Basin Permanent Joint Technical Commission
RUVUMA JWC		Ruvuma River Basin Joint Water Commission
SADC	-	Southern African Development Community
SADC-WD	-	Southern African Development Community Water Division
SARDC	-	Southern African Research and Documentation Centre
TPTC		Incomati and Maputo Watercourses Tripartite Technical Committee
UN	-	United Nations
UNEP		United Nations Environmental Programme
UNESCO	-	United Nations Educational, Scientific and Cultural Organisation
ZACPLAN	-	Zambezi River Basin Action Plan

ZACPRO - Zambezi River Basin Action Project

ZAMCOM - Zambezi Watercourse Commission

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# CHAPTER 1: INTRODUCTION

## 1.1 Background to the Study

In the Southern Africa Development Community (SADC) region, large rivers are not normally confined to one country nor are basins to which these rivers belong contained within borders of a single state, such that where these rivers or their tributaries flow from one state to the other or form boundaries between states, they are referred to as transboundary or shared watercourse systems or international rivers.<sup>1</sup> Similarly, drainage areas or basins to which these international rivers belong are called international river basins.

The SADC region has 15 major river basins that are transboundary or watercourses shared by two or more states.<sup>2</sup> These major river basins cover as much as 70 percent of the regions' mainland surface.<sup>3</sup> Consequently, the most shared of natural resources in the SADC region is that of water and which occurs with varying abundance or scarcity at different times of the year in different parts of the region.<sup>4</sup> The water resources of these shared river basins play vital roles in the socio-economic development of riparian states and the integration of the SADC region. However, the water resources found in these watercourses cut across sovereign states of varying social, economic, legal and political situations.<sup>5</sup> Therefore, one of the characteristic features of the SADC region is that of shared watercourses systems with complex water rights and potential for conflicts over the utilization of the water resources.<sup>6</sup> This common heritage also presents

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<sup>1</sup> Heyns, Piet. 2003. *Water - resources management in Southern Africa*. In Nakayama, Mikiyasu (Ed). International Waters in Southern Africa. The United Nations University. New York, USA. p.5

<sup>2</sup> Southern African Development Community. 2005. *Regional Water Policy*. SADC. Gaborone, Botswana. p. v

<sup>3</sup> Granit, Jakob. 2000. *Management of Shared Water Resources in Southern Africa and Role of External Assistance*.

1<sup>st</sup> WARF/WaterNet Symposium: Sustainable Use Water Resources; Maputo, 1-2 November 2000. p. 2

<sup>4</sup> Ramoeli, Phera. *The SADC Protocol on Shared Watercourses: History and Current Status*. 2002. In Turton, Anthony and Henwood, Roland (Eds). *Hydropolitics in the Developing World: A Southern Africa Perspective*. Africa Water Issues Research Unit (AWIRU). Pretoria, South Africa. p. 105

<sup>5</sup> Southern African Development Community. 2006. *Regional Water Strategy*. SADC. Gaborone, Botswana. p. 9

<sup>6</sup> Southern African Development Community. 2005. *Regional Water Policy*. SADC. Gaborone, Botswana. p. v

tremendous opportunities for cooperation in managing the shared water resources for regional economic development and regional integration.<sup>7</sup>

Of the 15 major river basins in the SADC region, the Zambezi river basin is the largest and most shared among 8 riparian states. The basin comprising the main stem Zambezi river and associated dense network of tributaries and ecosystems is one of the SADC regions' most important and valuable natural resources and perhaps its best shared natural capital.<sup>8</sup> The Zambezi river basin has within its large expanse, water resources, land and soils, forests and wildlife which define the sub-region's economic activities ranging from energy generation, agriculture and forestry, manufacturing and mining to conservation and tourism, and scientific monitoring and research.<sup>9</sup> Thus, the river basin and its water resources are critical for sustaining economic growth, reducing poverty and meeting the basic needs of the people in the basin as well as supporting the rich natural environment.<sup>10</sup> Despite the importance of the Zambezi river basin, differences in water development strategies and political economies of riparian states and the diverse physical characteristic of the basin, water resources development approaches among its riparian states have primarily been unilateral.<sup>11</sup> Traditionally, each riparian state riparian monitors, assesses, plans, develops, conserves and protects water resources of that part of the Zambezi river basin within its territory.<sup>12</sup>

However, a river basin is composed of almost interrelated components of the same hydrologic cycle any action either naturally or through human intervention occurring in any one riparian state poses significant quantitative and/or qualitative repercussions on the share of the water that is

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<sup>7</sup> Ibid

<sup>8</sup> Munjoma, Leonissah. 2004. *Zambezi Watercourse Commission sets transboundary perspective*. The Zambezi - Special Issue Southern African Research and Documentation Centre (SARDC), 6 (1). p. 2

<sup>9</sup> Ibid

<sup>10</sup> World Bank. 2010. *The Zambezi River Basin: A Multi-Sector Investment Opportunity Volume 2 Basin Development Scenarios*. The World Bank Water Resources Management Africa Region. Washington DC, USA. p. 1

<sup>11</sup> Ibid

<sup>12</sup> Shela, Osborne N. 2000. *Management of shared river basins the case of the Zambezi River*. Water Policy 2 (2000). p. 67

available to the other riparian states, especially those downstream.<sup>13</sup> Therefore, basin-wide cooperation is the optimal solution to the problem of managing international river basins.<sup>14</sup> To incorporate all social, economic, environmental, physical, political and cultural characteristics of an international watercourse, it is necessary that it be managed based on the hydrological boundary of the river basin and not only on the administrative and political boundaries.<sup>15</sup> In the case of the Zambezi river basin, the cooperative development of the river basin and utilisation of its water resources by its riparian states shall not ensure the sustainable development of the river basin resources and increased economic productivity from use of the water resources, but also a means for accelerated basin-wide socio-economic advancement and sub-regional integration.

The cooperation of riparian states on transboundary rivers, lakes and aquifers is conceptualised as the process of water regime building.<sup>16</sup> The water regime concept, in general, points to the relevance of international institutions - so called regimes - that are perceived as crucial for the cooperative use, protection, or joint development of shared water bodies.<sup>17</sup> Additionally, international regimes have been a way to politically manage problems that exceed national boundaries, and in most cases regimes are issue-specific.<sup>18</sup> Essentially, a 'water regime exists when the affected states observe a set of rules designed to reduce the conflict potential, caused by the use, pollution or division of a given water resources; or the reduction of the standing costs; and the observance over times of these rules'.<sup>19</sup> Notwithstanding the conflict facet of the definition, international regimes thrive both in situations where states have common as well as

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<sup>13</sup> Teclaff, Ludwig A. 1996. *Evolution of the River Basin Concept in National and International Law*. Natural Resources Journal, 36 (2). p. 360

<sup>14</sup> Kliot, N., Shmueli, D. and Shamir, U. 2001. *Institutions for Management of Transboundary Water Resources: Their Nature, Characteristics and Shortcomings*. Water Policy 3 (2001). p. 231

<sup>15</sup> Rahaman, Muhammad Mizanur. 2009. Principles of International Water Law: Creating Effective Transboundary Water Resources Management. Int. J. Sustainable Society. Vol.1. No. 3. p.222

<sup>16</sup> Klaphake, Axel. And Scheumann, Waltina. 2006. *Understanding Transboundary Water Cooperation: Evidence from Africa. Working Paper on Management in Environmental Planning 014/2006*. Technical University of Berlin. Berlin, Germany. p. 1

<sup>17</sup> Ibid

<sup>18</sup> Lidskog, Rolf and Sundqvist, Goran. 2002. *The Role of Science in Environmental Regimes: The Case of LRTAP*. European Journal of International Relations, 8 (1). p.79

<sup>19</sup> Haftendorn, Helga. 2000. *Water and International Conflict*. The Third World Quarterly, 21 (1). p. 65

conflicting interests. This is so as conflict and cooperation over shared water resources are not necessarily contradictory and may occur simultaneously, with interactions spanning a continuum ranging from all sorts of conflicts, through neutral relations, to water treaty signature, establishment of a water regime, and to even as far as regional integration.<sup>20</sup>

Although both formal and informal norms are relevant in creating a water regime, assumption is made that most of the basic principles, rules, norms and procedures to govern the actions of riparian states in a water regime are established via international water law and basin-specific arrangements.<sup>21</sup> The purpose of international water law is to provide a normative framework and procedures for coordinating the behaviour, controlling conflict, facilitating cooperation and achieving values among the sovereign riparian states. On the other hand, taking into consideration factors and characteristics specific to the river basin ensures that the water regime is responsive to the unique needs of each riparian state and the basin environment.

A dominant subject in international water law, river basin water agreements and water regimes is the principle of equitable and reasonable utilization and its implementation. However, as origins of this principle are rooted in international custom or the practices of states, over time there emerged several variants of the principle. Since all these variants were not formally codified there was no universal uniformity in their interpretation and application. Thus, ever since, international lawyers have been attempting to bring uniformity in their interpretation and application as well as putting them on ‘on paper.’

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<sup>20</sup> Schmeier, Susanne. 2010. *Governing International Watercourses - Perspectives from Different Disciplines: A Comprehensive Literature Review*. Berlin Graduate School for Transnational Studies (BTS). Hertie School of Governance (HSoG). Berlin, Germany. p. 8

<sup>21</sup> Klaphake, Axel. And Scheumann, Waltina. 2006. *Understanding Transboundary Water Cooperation: Evidence from Africa. Working Paper on Management in Environmental Planning 014/2006*. Technical University of Berlin. Berlin, Germany. p. 2



Initial attempts at developing in a systematic way ‘a code of conduct’ concerning the utilization of international river basins were made by the International Law Association (ILA). The ILA is a non-governmental organization (NGO) body of eminent lawyers created in 1893 for the purpose of ‘the study, elucidation and advancement of international law.’<sup>22</sup> Eventually in 1966, the ILA managed to develop a comprehensive code of international customary law on the use of transboundary drainage basins and published them as the ‘The Helsinki Rules on the Uses of the Waters of International Rivers’ (Helsinki Rules).<sup>23</sup> The Helsinki Rules were the first to identify the principle of equitable utilisation as the basic rule of international water resources law that entitles each riparian state, within its territory, to a reasonable and equitable share in the beneficial uses of the water resources of an international drainage basin.

Following publication, the Helsinki Rules became widely regarded as appropriate norms for the utilisation of the water resources of international river basins, so that they were ultimately adopted in the form of multilateral conventions or were followed by states as state practice, and thus, became legally binding.<sup>24</sup> Even to date, in matters concerning the sharing of water resources of international river basins, the Helsinki Rules are the most referred to in statutes, by scholars and the most cited by the Courts.<sup>25</sup> Despite their soundness, the Helsinki Rules have continued to receive little recognition as official codification of international water law because the ILA operates as private NGO and therefore enjoys no official status in the development of

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<sup>22</sup> Vinogradov, Sergei et al. *Transforming Potential Conflict into Cooperation Potential: The Role of International Water Law*. UNESCO Division of Water Sciences. Paris, France. p. 12

VinoonKlaphake, Axel. Aend Scheumann, Waltina. 2006. *Understanding Transboundary Water Cooperation: Evidence from Africa. Working Paper on Management in Environmental Planning 014/2006*. Technical University of Berlin. Berlin, Germany. p. 2

<sup>23</sup> International Law Association. 1967. *Helsinki Rules on the Uses of the Waters of International Rivers - Adopted by the International Law Association at the fifty-second conference, held at Helsinki in August 1966*. International Law Association. London, UK. p. 1

<sup>24</sup> Schroeder-Wildberg, Esther. 2002. *The 1997 International Watercourses Convention-Background and Negotiations. Working Paper on Management in Environmental Planning 04/2002*. Technical University of Berlin. Berlin, Germany. p. 10

<sup>25</sup> Ibid

international law.<sup>26</sup> Accordingly, the work of the ILA has always been regarded merely as inspirational in nature and not as hard and fast rules for state conduct.<sup>27</sup>

In later years, mainly due to lack of definitiveness of the Helsinki Rules and growing tensions in various water-poor regions, the United Nations (UN) General Assembly commissioned the International Law Commission (ILC) to draft a set of legal rules to govern the non-navigational uses of transboundary waters. The ILC operates under the aegis of the UN as a body for the interpretation of international law with a view to its progressive development and codification, and as such, its work is highly respected as definitive elucidation of international law.<sup>28</sup> Following years of ILA untiring work and several discussions, the UN General Assembly adopted the 'UN Convention on the Law of the Non-Navigational Uses of International Watercourses of 1977' (UN Watercourses Convention).<sup>29</sup> Predominantly, the principles on the sharing of the water resources of international watercourses codified in UN Watercourses Convention are based on the Helsinki Rules.<sup>30</sup> As a result the UN Convention adopted as its key principle that of equitable and reasonable utilization.

In the SADC region, early effort at formulating regional water law aimed at establishing international water law principles for cooperation over the water resources of international river basins was the drafting of the 'Protocol on Shared Watercourse Systems of the Southern African Development Community Region of 1995' (SADC Protocol on Shared Watercourse Systems).<sup>31</sup>

Various international instruments but mainly the Helsinki Rules influenced the drafting of SADC

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<sup>26</sup> Eckstein, Gabriel E. 2002. *Development of International Water Law and the UN Watercourse Convention*. In Turton, Anthony and Henwood, Roland (Eds). *Hydropolitics in the Developing World: A Southern African Perspective*. African Water Issues Research Unit (AWIRU). Pretoria, South Africa. p. 83

<sup>27</sup> Ibid

<sup>28</sup> United Nations. 2005. *Convention on the Law of the Non-Navigational Uses of International Watercourses of 1977- Adopted by the General Assembly of the United Nations on 21 May 1997*. United Nations. New York, USA.

<sup>29</sup> Ibid, p. 4

<sup>30</sup> United Nations Development Programme (UNDP). 2006. *Human Development Report 2006*. New York, USA. p. 218

<sup>31</sup> Southern African Development Community. 1995. *Protocol on Shared Watercourse Systems in the Southern African Development Community (SADC) Region*. SADC. Gaborone, Botswana

Protocol on Shared Watercourse Systems. As such, the SADC Protocol on Shared Watercourse Systems provides that member states are to respect and apply the existing rules of general or customary international law relating to the equitable utilization and management of the water resources of shared watercourse systems.<sup>32</sup>

The adoption of the UN Watercourses Protocol in 1977 and resultant global influence of its principles as norms of international water law, prompted the SADC to re-align the SADC Protocol on Shared Watercourse Systems with the provisions of the UN Watercourses Protocol. The modified version renamed the 'Revised Protocol on Shared Watercourses' (SADC Watercourses Protocol) was re-adopted 2000. The SADC Watercourses Protocol provides that its overall objective is to foster closer cooperation for judicious, sustainable and coordinated management, protection and utilization of shared watercourses and advance the SADC agenda of regional integration and poverty reduction.<sup>33</sup> To attain this objective, the SADC Watercourses Protocol seeks to promote and facilitate the establishment of river basin water agreements and associated institutions to develop and manage international watercourses for advancing the equitable and reasonable utilization of the shared water resources in them.

Adoption of the SADC Watercourses Protocol paved way for SADC member states to initiate and conclude river basin water agreements of which 9 are already in existence. One of these is the Zambezi Watercourse Commission (ZAMCOM) agreement initiated in 2004 for the purpose of creating a river basin water regime among the 8 Zambezi river basin riparian states.<sup>34</sup> The ZAMCOM agreement requires riparian states party to it commit themselves to the efficient management and sustainable development of the Zambezi watercourse and the realization of the

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<sup>32</sup> Southern African Development Community. 1995. *Protocol on Shared Watercourse Systems in the Southern African Development Community (SADC) Region*. SADC. Gaborone, Botswana. p. 5

<sup>33</sup> Southern African Development Community. 2000. *Revised Protocol on Shared Watercourses in the Southern African Development Community (SADC)*. SADC. Gaborone, Botswana. p. 2

<sup>34</sup> Southern African Development Community. 2004. *Agreement on the Establishment of the Zambezi Watercourse Commission*. SADC. Gaborone, Botswana.

principle of equitable and reasonable utilisation of its water resources on the basis of the UN Watercourses Convention, the SADC Watercourses Protocol and in accordance with the latest scientific concepts and the best international law practices.<sup>35</sup>

## 1.2 Statement of the Problem

The Zambezi river basin is the fourth largest African freshwater catchment and largest basin located wholly within the SADC region. The river basin is also the most shared in the region among 8 riparian states comprising; Angola, Botswana, Malawi, Mozambique, Namibia, Tanzania, Zambia and Zimbabwe. The river basin covers almost all of the territory of Malawi, 72 percent of Zambia, more than half of Zimbabwe, significant portions of Mozambique, Botswana and Angola, and very small portions of Tanzania and Namibia. The contribution of precipitation to the river basin water resources by each riparian state are; Zambia 42.3 percent, Angola 19.7 percent, Mozambique 12.4 percent, Zimbabwe 12.2 percent, Malawi 9.1 percent, Tanzania 2.7 percent, Botswana 0.9 percent and Namibia 0.7 percent.<sup>36</sup> Apparently, Zambia has the largest part of its territory within the river basin and is by far the highest contributor to its precipitation.

Despite being parties to the SADC Watercourses Protocol, a framework treaty for cooperation in the development of the river basins and the equitable utilisation of water resources in the region, the management and utilisation of the shared water resources among the 8 Zambezi river basin riparian states have primarily remained non-cooperative or unilateral. Traditionally, each riparian state monitors, assesses, plans, develops, conserves and protects water resources of that part of the Zambezi river basin within its territory.<sup>37</sup> Consequently, the utilization of the water resources of the shared river basin is done at individual state level with little consultation and cooperation

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<sup>35</sup> Ibid, p. 2

<sup>36</sup> Beck, Lucas and Bernauer, Thomas. 2011. *How will combined changes in water demand and climate affect water availability in the Zambezi river basin?* Global Environmental Change 21 (2011). p. 1063

<sup>37</sup>Shela, Osborne N. 2000. *Management of shared river basins the case of the Zambezi River.* Water Policy 2 (2000). p. 67

among the river basin riparian states. In a few instances, riparian states rely on bilateral agreements in managing and apportioning the water resources of shared rivers and lakes, but have not seized the opportunity for basin-wide cooperation and entering into a river basin agreement to create the a river basin regime for the collective development and utilisation of the river basin water resources.

Thus on 13 July 2004 and under guidance of the SADC, the ZAMCOM agreement was initiated and signed by 7 riparian states to create the Zambezi river basin water regime for promoting the equitable and reasonable utilization of the water resources of the Zambezi watercourse as well as the efficient management and sustainable development thereof.<sup>38</sup> On 26 June 2011 upon ratification by the requisite 6 of the 8 Zambezi river basin riparian states as prescribed by the SADC Treaty, the ZAMCOM agreement entered into force creating the Zambezi river basin water regime.<sup>39</sup>

However, Zambia a key basin state with over 71% of its territory within the basin and contributor of more than 42% of the basin precipitation is reluctant to be party to the ZAMCOM agreement and Zambezi river basin water regime, on the basis that its interests in the utilisation of the water resources of the Zambezi river basin are not well served by the principle of equitable and reasonable utilisation as drafted in the ZAMCOM agreement. Similarly, Malawi which has almost all of its territory in the river basin and signed the ZAMCOM agreement on its initiation in 2004, is yet to accede to the agreement.

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<sup>38</sup> Southern African Development Community. 2004. *Agreement on the Establishment of the Zambezi Watercourse Commission*. SADC. Gaborone, Botswana. p. 4

<sup>39</sup> Southern African Development Community. 2012. *SADC Water Sector-ICP Collaboration Portal*. At <http://www.icp-confluence-sadc.org/rbo/66>. Accessed on 22 September 2012

Many properly designed international watercourse agreements lead to regime building, that is, by embodying accepted norms, principles and procedural rules, they provide the means to build trust among states and to encourage the development of friendly international relations.<sup>40</sup> This is particularly so, if the application and drafting of relevant principles in a river basin agreement are mutually consented to by the riparian states. However, in the case of the ZAMCOM agreement and the creation of the Zambezi river basin regime, disagreement among the co-riparians shown by the reservations and reluctance of Zambia and Malawi, may mean that the principle of equitable and reasonable utilisation as drafted in the ZAMCOM agreement has lacunas and these are the ones causing dissonance among the riparian states. The absence of basin-wide cooperation among the riparian states arising from the disagreement over the ZAMCOM agreement potentially weakens the Zambezi river basin regime and also suggests that the principle as drafted in the ZAMCOM agreement may be contrary to the relevant provisions of international water law and SADC regional water law.

Therefore, the research problem is to discover the lacunas in the principle of equitable and reasonable utilisation of the ZAMCOM agreement and establish if the drafting of the principle in ZAMCOM agreement and creation of the Zambezi river basin regime are based on true interpretation of relevant provisions of international water law and SADC regional water law.

### **1.3 Aim**

To examine within frameworks of the UN Watercourses Convention and SADC Watercourses Protocol the principle of equitable and reasonable utilisation in the ZAMCOM agreement so as to establish if the drafting of the principle in the ZAMCOM agreement and creation of the Zambezi river basin regime are based true interpretation of international water law and SADC regional water law.

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<sup>40</sup> Haftendorn, Helga. 2000. *Water and International Conflict*. Third World Quarterly, 21 (1). p. 66

#### **1.4 Hypothesis**

- a. The principle of equitable and reasonable utilization of the UN Watercourses Convention and SADC Watercourses Protocol guided the drafting of the ZAMCOM agreement and creation of the Zambezi river basin regime.
- b. Drafting of the ZAMCOM agreement and creation of the Zambezi river basin water regime are not based on the precise interpretation of the principle of equitable and reasonable utilisation of the UN Watercourses Convention and SADC Watercourses Protocol.

#### **1.5 Objectives**

- a. To establish the characteristics of the Zambezi river basin and uses of its water resources.
- b. To examine the evolution of the principle of equitable and reasonable utilisation in international customary law, international water law and SADC regional water law.
- c. To comparatively analyse the drafting of equitable and reasonable utilization principle in the ZAMCOM agreement to establish if the agreement and creation of the Zambezi river basin are based on international water law and the SADC regional water law.

#### **1.6 Research Questions**

- a. Describe the characteristics of the Zambezi river basin and the various uses of its water resources.
- b. Examine the development of the equitable and reasonable utilization principle in the Helsinki Rules, the UN Watercourses Convention and SADC Watercourses Protocol to establish the dominant principle.

- c. Analyse the drafting of the dominant principle in the UN Watercourses Convention and SADC Watercourses Protocol to identify key provisions for application in entering into an optimal river basin agreement for equitable and reasonable utilisation of the water resources of an international river basin.
- d. Using the identified key provisions of the UN Watercourses Convention and SADC Watercourses Protocol, analyse the drafting of the equitable and reasonable utilization principle in the ZAMCOM agreement to discover the lacunas causing disagreement among the riparian states.
- e. Establish if the principle equitable and reasonable utilisation as drafted in the ZAMCOM agreement and the creation of the Zambezi river basin regime are based on true interpretation of the provisions of equitable and reasonable utilisation as provided in the UN Watercourses Convention and SADC Watercourses Protocol.

## **1.7 Theoretical Framework of the Case Study**

The theoretical framework guiding this case study is international regime theory. Many international relations scholars have devoted significant attention in trying to understand why international cooperation occurs in spite of the presumed anarchic international system, and some try to explain the cooperation that occurs through international regime theory.<sup>41</sup> International regime theory assumes that cooperation is possible in the anarchic system of states, and indeed a regime by definition is an instance of international cooperation.<sup>42</sup> Thus, even though the realists approach dominates the field of international relations, since regime theory is by definition specifically a theory that explains international cooperation, it is traditionally regarded as a liberal

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<sup>41</sup> Jagerskog, Anders. 2002. *Contributions of regime theory in understanding interstate water co-operation: Lessons learned in the Jordan River basin*. In Turton, Anthony and Henwood, Roland (Eds). *Hydropolitics in the Developing World: A Southern Africa Perspective*. Africa Water Issues Research Unit (AWIRU). Pretoria, South Africa. p. 73

<sup>42</sup> Ebaye, Sunday E. N. 2009. *Regimes as mechanisms for social order in international relation*. *African Journal of Political Science and International Relations*, 3 (4). p. 117



concept.<sup>43</sup> Liberals broadly accept the structural condition of anarchy in the international system, but critically, anarchy does not mean cooperation between states is impossible, as the existence (and proliferation) of international regimes demonstrate.<sup>44</sup> In short, regimes and international institutions can mitigate anarchy by reducing verification costs, reinforcing reciprocity, and making defection from norms easier to punish.<sup>45</sup>

### 1.7.1 Definition of an International Regime

The most common definition of an international regime is that it is a set of implicit and explicit principles, norms, rules, and decision-making procedures around which the actors' expectations converge in a given area of international relations.<sup>46</sup> Principles are beliefs of fact, causation and rectitude; norms are standards of behavior defined in terms of rights and obligations; rules are specific prescriptions or proscriptions for action; and decision-making procedures are prevailing practices for making and implementing collective choice.<sup>47</sup> This definition is consistent with that of Keohane and Nye, who defines a regime as 'sets of governing arrangements' that include 'networks of rules, norms, and procedures that regularize behaviour and control its effects.'<sup>48</sup> Using a somewhat different terminology, Bull refers to the importance of rules and institutions of an international regime where rules refer to 'general imperative principles which require or authorize prescribed classes of persons or groups in prescribed ways'.<sup>49</sup>

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<sup>43</sup> Ibid, p. 118

<sup>44</sup> Dunne, Tim. 2001. *Liberalism*. In Baylis, John and Smith, Steve (Eds). *The Globalisation of World Politics: An Introduction to International Relations* (Second Edition). Oxford University Press Inc. New York, USA. p. 176

<sup>45</sup> Ibid

<sup>46</sup> Krasner, Stephen D. 1983. *Structural causes and regime consequences: regimes as intervening variables*. In Krasner, Stephen D. (Ed). *International Regimes*. Cornell University Press. Ithaca, USA. p. 1

<sup>47</sup> Ibid

<sup>48</sup> Keohane, Robert O. and Nye, Joseph S. 1977. *Power and Independence*. Little Brown. Boston, USA, p. 19

<sup>49</sup> Bull, Hedley. 1977. *The Anarchical Society: A Study of Order in World Politics*. Columbia University Press. New York, USA. p. 54

### 1.7.2 Basic Function of an International Regime

In a world of sovereign states, the basic function of an international regime is to coordinate state behaviour to achieve desired outcomes in particular issue-areas.<sup>50</sup> The idea is that conflict tends to be pervasive in international relations and that international regimes could be conceived of as social institutions that regulate conflict between states by constraining their behaviour through the observation of norms and rules in their dealing with disputed objects.<sup>51</sup> Keohane holds that international regimes are useful to governments as they facilitate agreements by raising the anticipated costs of violating others' property rights, altering transaction costs through the clustering of issues and by providing reliable information to members.<sup>52</sup> If the principles, norms, rules, and decision-making procedures of a regime become less coherent, or if the actual practice of a regime is increasingly inconsistent with its principles, norms, rules, and decision-making procedures, then a regime has weakened.<sup>53</sup>

### 1.7.3 Motivation for Cooperative Inter-State Relations in International Regimes

Being a liberalist concept, states to an international regime are motivated to enter into cooperative relations even if another state will gain more from the interaction, in other words, 'absolute gains' are more important for liberal institutionalists than 'relative gains'.<sup>54</sup> Therefore, regime-governed behaviour must not be based solely on short-term calculations of interests.<sup>55</sup> The utility function that is being maximised must encompass some sense of general obligation, with one such

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<sup>50</sup> Krasner, Stephen D. 1982. *Structural causes and regime consequences: regimes as intervening variables*. International Organization, 36 (2). p. 191

<sup>51</sup> Ebeye, Sunday E. N. 2009. *Regimes as mechanisms for social order in international relation*. African Journal of Political Science and International Relations, 3 (4). p. 120

<sup>52</sup> Keohane, Robert O. 1984. *After hegemony: Cooperation and discord in the world political economy*. Princeton University Press. New Jersey, USA. p. 97

<sup>53</sup> Krasner, Stephen D. 1982. *Structural causes and regime consequences: regimes as intervening variables*. International Organization, 36 (2). p.189

<sup>54</sup> Dunne, Tim. 2001. *Liberalism*. In Baylis, John and Smith, Steve (Eds). *The Globalisation of World Politics: An Introduction to International Relations (Second Edition)*. Oxford University Press Inc. New York, USA. p. 176

<sup>55</sup> Krasner, Stephen D. 1982. *Structural causes and regime consequences: regimes as intervening variables*. International Organization, 36 (2). p.187

principle being reciprocity.<sup>56</sup> When states accept reciprocity they will sacrifice short-term interests with the expectation that other actors will reciprocate in the future, even if they are not under a specific obligation to do so.<sup>57</sup> At any moment of time, though, the exchange is very unlikely to be reciprocally balanced'.<sup>58</sup>

## 1.8 Literature Review

### 1.8.1 SADC and its Role in Internationally Shared Natural Resources

The Southern African Development Community (SADC) is a regional organisation that was created in 1992 under the SADC Treaty for purposes of cooperation in all areas necessary to foster regional development and integration on the basis of balance, equity and mutual benefit for the regions' member states.<sup>59</sup> Though originally founded by 9 states, SADC membership has to date broadened to 15 sovereign states, comprising Angola, Botswana, Democratic Republic of Congo (DRC), Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Namibia, Seychelles, South Africa, Swaziland, Tanzania, Zambia and Zimbabwe.<sup>60</sup> Except for island states of Madagascar, Mauritius and the Seychelles located off the Eastern African Coast in the Indian Ocean, the other 13 states on mainland Africa.

Being a primary legal instrument of the SADC organization, the SADC Treaty outlines the organisations' vision, overall objectives, institutional framework, and specifies areas for regional cooperation and integration, including in natural resources and the environment.<sup>61</sup> Key organs of the SADC established by the SADC Treaty are the Heads of State and Government Summit that is

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<sup>56</sup> Ibid

<sup>57</sup> Ibid

<sup>58</sup> Hirsch, Fred. 1976. *The Social Limits to Growth*. Harvard University Press, USA. p. 78

<sup>59</sup> Southern African Development Community. 1992. *Treaty of the Southern African Development Community*. SADC. Gaborone, Botswana. p. 10

<sup>60</sup> Southern African Development Community. 2012. *SADC Webpage*. At <http://www.sadc.int/english/about-sadc/>. Accessed on 23 September 2012

<sup>61</sup> Southern African Development Community. 1992. *Treaty of the Southern African Development Community*. SADC. Gaborone, Botswana. p. 10

responsible for making policy and the SADC Tribunal that is responsible for developing and making SADC law and jurisprudence.<sup>62</sup> Article 22 of the Treaty requires member states to negotiate and conclude such Protocols as may be necessary in each area of cooperation, which shall spell out the objectives and scope of, and institutional mechanisms for, co-operation and integration.<sup>63</sup> A Protocol, after negotiation, signature and ratification by parties thereto, and approval by the Heads of State and Government Summit becomes an integral part of the 1992 Treaty.<sup>64</sup>

In the SADC region, the most shared natural resource among member states are international river basins which cover as much as 70 percent of the its land surface. The shared river basins play a significant role in the economic development and integration of the region and are utilized for example; for hydropower, irrigation, fishery, tourism and other productive uses.<sup>65</sup> Due to the importance placed on water resources of international river basins in the region, the Protocol on Shared Watercourse Systems of 1995 was the first sectoral protocol to be drafted and adopted by the SADC organization soon after the Treaty that created the SADC itself.<sup>66</sup>

### **1.8.2 International Law**

Classically, international law is defined as that body of rules and principles of action that are binding upon civilized states in their relations with one another.<sup>67</sup> However, international law is sometimes defined as a system of principles and rules of general application governing the

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<sup>62</sup> Southern African Development Community. 2012. *Southern African Development Community Tribunal*. At <http://www.sadc-tribunal.org>. Accessed on 18 May 2012

<sup>63</sup> Southern African Development Community. 1992. *Treaty of the Southern African Development Community*. SADC. Gaborone, Botswana. p. 11

<sup>64</sup> Ibid

<sup>65</sup> Granit, Jakob. 2000. *Management of Shared Water Resources in Southern Africa and Role of External Assistance*. 1<sup>st</sup> WARF/WaterNet Symposium: Sustainable Use Water Resources; Maputo, 1-2 November 2000. p. 2

<sup>66</sup> Ramoeli, Phera. *The SADC Protocol on Shared Watercourses: History and current status*. 2002. In Turton, Anthony and Henwood, Roland (Eds). *Hydropolitics in the Developing World: A Southern Africa Perspective*. Africa Water Issues Research Unit (AWIRU). Pretoria, South Africa. p. 106

<sup>67</sup> Brown-Weiss, E. 1966. *The Changing Structure of International Order. Inaugural Lecture; May 23, 1966*. Georgetown University. Washington DC, USA. p. 1

conduct of and relations of states.<sup>68</sup> International law is a consequence of explicit and implicit agreements among participating states; with explicit agreements termed treaties or conventions, and implicit agreements termed custom or general principles'.<sup>69</sup> International law has evolved to include international organizations and certain legal persons as 'subjects' within its scope.<sup>70</sup> International law serves the purpose of providing the normative framework and the procedures for coordinating behaviour, controlling conflict, facilitating cooperation and achieving values among sovereign states.<sup>71</sup>

What distinguishes international law from domestic law is that the former is both created and enforced by states (at the international level) primarily in order to regulate state-state relations in various areas, while the domain of national law concerns matters that occur within a state's borders and are left to the sovereignty of a particular state.<sup>72</sup> International law operates as a separate system of law with its own distinct rules and mechanisms, and consequences for a state that violates its rules are dealt with under the rules of state responsibility.<sup>73</sup> Disputes under international law are dealt by the International Court of Justice (ICJ), a principal judicial organ of the United Nations established in 1945 by the UN Charter.<sup>74</sup> The principle 'pacta sunt servanda', found in both customary law and the UN Charter - is a fundamental rule of international law that requires states to abide by the agreements they make.<sup>75</sup> International law represents a decentralized system wherein the nation-states create their own law and enforce it by themselves;

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<sup>68</sup> Vinogradov, Sergei et al. *Transforming Potential Conflict into Cooperation Potential; The Role of International Water Law*. UNESCO Division of Water Sciences. Paris, France. p. 9

<sup>69</sup> Kliot, N., Shmueli, D. and Shamir, U. 2001. *Institutions for Management of Transboundary Water Resources: Their Nature, Characteristics and Shortcomings*. Water Policy 3 (2001). p. 232

<sup>70</sup> Vinogradov, Sergei et al. *Transforming Potential Conflict into Cooperation Potential; The Role of International Water Law*. UNESCO Division of Water Sciences. Paris, France. p. 9

<sup>71</sup> Kliot, N., Shmueli, D. and Shamir, U. 2001. *Institutions for Management of Transboundary Water Resources: Their Nature, Characteristics and Shortcomings*. Water Policy 3 (2001). p. 232

<sup>72</sup> Vinogradov, Sergei et al. *Transforming Potential Conflict into Cooperation Potential; The Role of International Water Law*. UNESCO Division of Water Sciences. Paris, France. p. 9

<sup>73</sup> Ibid

<sup>74</sup> International Court of Justice. 2012. At <http://www.icj-cij.org/>. Accessed on 2 March 2012

<sup>75</sup> Vinogradov, Sergei et al. 2003. *Transforming Potential Conflict into Cooperation Potential; The Role of International Water Law*. UNESCO Division of Water Sciences. Paris, France. p. 11

it is thus a 'coordination law under equals'.<sup>76</sup> The role of the ICJ is to settle, in accordance with international law, legal disputes submitted to it by states and to give advisory opinions on legal questions referred to it by authorized UN organs and specialised agencies.<sup>77</sup>

### **1.8.3 International Water Law**

International water law also known as international watercourse law or international law of water resources is a term used to identify those legal rules that regulate the use of water resources shared by two or more states.<sup>78</sup> The development of international water law is inseparable from the development of international law in general, with such fundamental principles and basic concepts such as the sovereign equality of states, non-interference in matters of exclusive national jurisdiction, responsibility for the breach of state's international obligations, and peaceful settlement of international disputes equally applying in the area governed by international water law.<sup>79</sup> At the same time, this relatively independent branch of international law has developed its own principles and norms specifically tailored to regulate states' conduct in a rather distinct field: the utilization of transboundary water resources.<sup>80</sup> The foremost norm and principle is the right upon each riparian state to utilize the water resources situated within its territory in an equitable and reasonable manner and the correlative duty to ensure similar rights are enjoyed by all riparian states sharing the river basin.

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<sup>76</sup> Cano, Guillermo J. 1989. The Development of the Law of International Water Resources and the Work of the International Law Commission. *International Water*, 14 (4). p. 167

<sup>77</sup> International Court of Justice. 2012. At <http://www.icj-cij.org/>. Accessed on 2 March 2012

<sup>78</sup> Vinogradov, Sergei et al. 2003. *Transforming Potential Conflict into Cooperation Potential; The Role of International Water Law*. UNESCO Division of Water Sciences. Paris, France. p. 12

<sup>79</sup> Ibid

<sup>80</sup> Ibid

#### **1.8.4 Substantive Principles**

The primary role of international water law is to determine a state's entitlement to the rights and benefits of the watercourse (substantive principles) and establish certain requirements for riparian states behaviour while developing the shared water resources (procedural rules).<sup>81</sup> The term substantive principles normally define those customary or treaty rules that deal with the creation, definition, and regulation of rights and duties.<sup>82</sup> A fundamental issue in substantive rules is that of entitlement or right to utilise the shared water resources and as such these rules deal with the question 'what is the right to be allocated to a riparian state to use the water resources of an international river basin?' Thus, a river basin specific agreement should ascertain the right allocated to each riparian state to utilise the water resources of the international river basin.

#### **1.8.5 Procedural Rules**

Procedural rules are the most perceptible component of a river basin agreement as these are explicitly stated in the agreement and are critical in the processes of implementing substantive rules and compliance to the substantive rules by the among riparian states. Procedural rules prescribe the processes for implementing substantive rules and prescribe actions that member states party to an agreement are expected to perform or refrain from performing. Procedural rules also define the relevant actors in the processes involved, their expected behaviour and specific circumstances under which the rules are applicable. Thus, procedural rules make the substantive principles and norms operational, measurable and verifiable, and institutionalised.<sup>83</sup>

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<sup>81</sup> Vinogradov, Sergei et al. 2003. *Transforming Potential Conflict into Cooperation Potential; The Role of International Water Law*. UNESCO Division of Water Sciences. Paris, France. p. 12

<sup>82</sup> Ibid, p. 17

<sup>83</sup> Kibaroglu, Aysegul., 2002. *Building a Regime for the Waters of the Euphrates-Tigris River Basin*. Kluwer Law International, The Hague, The Netherlands. p. 249

### 1.8.6 Sources of International Water Law

The law governing international watercourses has evolved through both custom (or practice of states) and international treaties, and has been influenced by other ‘sources’ of law including general principles of law, judicial decisions, and resolutions and recommendations of international organizations.<sup>84</sup> However, distinct main sources of international water law are international custom, treaties (or conventions or agreements) and general legal principles.

#### a. International Custom

International custom is historically the oldest important source of international water law and comprises unwritten rules not agreed upon in specific international agreements, but which develop over time as the practice of states i.e. the application of or reference to a rule in a concrete case.<sup>85</sup> International customary water law is especially important in fields not yet covered by international treaties or conventions, and currently presents the only global set of rules that is applicable when seeking to solve disputes over the utilization of international rivers, because the UN Watercourses Convention is not yet in force.<sup>86</sup> However, due to the general absence of a neutral enforcement mechanism, customary international water law has proven unable by itself to solve the problem of managing transboundary water resources, resulting in the settlement of disputes nearly requiring the negotiation of a treaty regime to resolve the sharing of transboundary watercourse water resources.<sup>87</sup>

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<sup>84</sup> Vinogradov, Sergei et al. 2003. *Transforming Potential Conflict into Cooperation Potential; The Role of International Water Law*. UNESCO Division of Water Sciences. Paris, France. p. 17

<sup>85</sup> Villiger, Mark E. 1997. *Customary International Law and Treaties: A Manual on the Theory and Practice of the Interrelation of Sources*. The Hague, Netherlands. p. 16

<sup>86</sup> Schroeder-Wildberg, Esther. 2002. *The 1997 International Watercourses Convention-Background and Negotiations. Working Paper on Management in Environmental Planning 04/2002*. Technical University of Berlin. Berlin, Germany. p. 9

<sup>87</sup> Dellapenna, Joseph W. 1997. *The Nile as a Legal and Political Structure*. In Brans, Edward H. P. et al. (Eds). *The Scarcity of Water: Emerging Legal and Policy Responses*. The Hague, Netherlands. 123



## **b. International Conventions, Treaties or Agreements**

International conventions, treaties or agreements are currently the primary instruments of cooperation in the field of water resources utilization as well as the most important source for international water law.<sup>88</sup> Although a treaty may be known by different names - convention, agreement, protocol, charter, accord, and statute among others - its legal nature is always the same; these instruments are binding on the state parties and establish their respective rights and obligations, together with 'the rules of the game' that govern their relations.<sup>89</sup> In case of a dispute, these are the primary evidence of international law and are given precedence when in conflict with a provision of customary law.<sup>90</sup> International conventions, treaties or agreements lay down binding international norms for interactions between states.<sup>91</sup> However, the absence of a real international legislature results in the fact that an international convention, treaty or agreement is only valid, if it rests upon the free consent of the parties to it.<sup>92</sup>

As a general rule, a treaty applies only to those states that have expressed their consent to be bound by it.<sup>93</sup> Therefore, nation-states need to express their consent to be bound by the obligations of the convention, treaty or agreement through ratification, acceptance, approval or accession. Even when a state signs an international treaty, it does not necessarily bind such a state to the terms of the treaty but merely obliges the state not to act in a manner that would defeat the object and purpose of the agreement.<sup>94</sup> A treaty becomes binding on a state only after the state

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<sup>88</sup> Vinogradov, Sergei et al. 2003. *Transforming Potential Conflict into Cooperation Potential; The Role of International Water Law*. UNESCO Division of Water Sciences. Paris, France. p. 14

<sup>89</sup> Ibid, p. 11

<sup>90</sup> Schroeder-Wildberg, Esther. 2002. *The 1997 International Watercourses Convention-Background and Negotiations. Working Paper on Management in Environmental Planning 04/2002*. Technical University of Berlin. Berlin, Germany. p. 11

<sup>91</sup> Ibid

<sup>92</sup> Villiger, Mark E. 1997. *Customary International Law and Treaties: A Manual on the Theory and Practice of the Interrelation of Sources*. The Hague, Netherlands. p. 139

<sup>93</sup> Vinogradov, Sergei et al. 2003. *Transforming Potential Conflict into Cooperation Potential; The Role of International Water Law*. UNESCO Division of Water Sciences. Paris, France. p. 11

<sup>94</sup> Eckstein, Gabriel E. 2002. *Development of international water law and the UN Watercourse Convention*. In Turton, Anthony and Henwood, Roland (Eds). *Hydropolitics in the Developing World: A Southern Africa Perspective*. Africa Water Issues Research Unit (AWIRU). Pretoria, South Africa. p. 89

has followed its own domestic procedure for approving and implementing the international agreement.<sup>95</sup>

Special cases of international conventions, treaties or agreements are referred to as frameworks as these are intended to generally establish a set of principles, norms, its goals and formal mechanisms for cooperation on an issue-area, rather than to impose major binding obligations on the parties to it.<sup>96</sup> Thus, state parties to a framework convention, treaty or agreement, in applying the principles have the freedom and choice to consider other local interests and exceptional features of the river basin when negotiating and entering into a river basin specific agreement; which if consented to impose binding obligations as provided by international law.

Regarding the adoption of successive conventions, treaties or agreements and their precedence in application, the Vienna Convention under Article 30 (3) and Article 30 (4) provides that where two or more conventions, treaties or agreements relate to the same subject matter, the convention, treaty or agreement adopted later in time shall prevail among states party to them.<sup>97</sup>

### **c. General Legal Principles**

General legal principles represent another important source of international water law to be resorted to in the absence of international conventions or customary rules.<sup>98</sup> This is so because in newly emerging fields in which a set of rules has not yet been agreed upon, lawyers tend to rely on the application of broad principles to uphold the ideology.<sup>99</sup> After their adaptation, most of

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<sup>95</sup> Ibid

<sup>96</sup> Schroeder-Wildberg, Esther. 2002. *The 1997 International Watercourses Convention-Background and Negotiations. Working Paper on Management in Environmental Planning 04/2002*. Technical University of Berlin. Berlin, Germany. p. 11

<sup>97</sup> United Nations. 2005. *Vienna Convention on the Law of Treaties: Done at Vienna on 23 May 1969, Entered into force on 27 January 1980*. United Nations, Treaty Series, 1155. p.331

<sup>98</sup> Caponera, Dante A. 1992. *Principles of Water Law and Administration-National and International*. Brookfield. Rotterdam, Netherlands. p. 191

<sup>99</sup> Scott, Shirley V. 1994. *International Law as Ideology: Theorising the Relationship between International Law and International Politics*. European Journal of International Law, 5 (3). p321.

these general legal principles also become valid in the field of international water law, with almost all of them serving as a basis for limitations on the sovereignty of riparian states sharing common water resources.<sup>100</sup> General legal principles of international law that are accepted globally comprise:

- i. The principle that there should be no abuse of rights (sic utere tuo alienum non laedas) which says that you should use things belonging to you in such a way that no other person is harmed.<sup>101</sup>
- ii. The principle of good neighbourliness between all basin states prohibits the conduct of activities that are likely to have negative impacts on another state's territory.<sup>102</sup>
- iii. The principle of equitable and apportionment and use of waters among riparian states.<sup>103</sup>
- iv. The obligation to pursue the peaceful settlement of disputes.<sup>104</sup>
- v. The principle of reciprocity; which says that if a state acts in accordance with its rights and obligations under international law, it expects the same conduct from other states.
- vi. The general duty to cooperate and to negotiate with a genuine intention to reaching an agreement.<sup>105</sup>

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<sup>100</sup> Ibid

<sup>101</sup> Caponera, Dante A. 1992. *Principles of Water Law and Administration-National and International*. Brookfield. Rotterdam, Netherlands. p. 191

<sup>102</sup> Ibid

<sup>103</sup> Ibid

<sup>104</sup> Wouters, Patricia K. 1996. *An Assessment of Recent Developments in International Watercourse Law through the Prism of the Substantive Rules Governing Use Allocation*. *Natural Resources Journal*, 36 (2). p 420

<sup>105</sup> Caponera, Dante A. 1992. *Principles of Water Law and Administration-National and International*. Brookfield. Rotterdam, Netherlands. p. 190

### 1.8.7 Theories of International Water Law

International water law derives from traditional theories and doctrines which over time have attempted to demarcate water utilisation rights among riparian states. As such, these reflect a range of historical and juridical approaches in both customary and codified law that evolved over time in response to the interests, claims and stakes of the various riparian states.

#### a. Theory of Absolute Territorial Sovereignty

States have historically exercised absolute sovereignty over the use of rivers and other natural resources located within the state's territory, no matter what the effects on their resource use on neighbouring states.<sup>106</sup> This is the theory of absolute territorial sovereignty which is also known as the Harmon Doctrine, after the US Attorney General Judson Harmon gave an opinion to a dispute between the US and Mexico over the formers' diversion and pollution of Rio Grande river on US territory, to the detriment of existing Mexican users. Attorney Harmon declared in 1885 that, since the US had sovereignty over that part of Rio Grande river in its territory, international law imposes no obligation upon the US to share the water with Mexico, or to pay damages for injury in Mexico caused by the diversion in the US.<sup>107</sup>

The theory of absolute territorial sovereignty or the Harmon Doctrine says that every riparian state can utilize the waters of an international river flowing within its territory as it likes, without the duty to consult other riparian states and regardless of the consequences on the other riparian states.<sup>108</sup> According to this theory, an upstream state is at liberty to divert all the water from a

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<sup>106</sup> Kiss, Alexandre and Shelton, Dinah. 1991. *International Environmental Law*. Transnational Publishers. New York, USA. p.119

<sup>107</sup> Akweenda, Sackey. 2002. *From Harmon to Helsinki: The evolution of key principles in international water law*. In Turton, Anthony and Henwood, Roland (Eds). *Hydropolitics in the Developing World: A Southern African Perspective*. African Water Issues Research Unit (AWIRU), Pretoria, South Africa. p. 97

<sup>108</sup> Correia, Francisco Nunes and Silva, Joaquim Evaristo da. 1999. *International Framework for the Management of Transboundary Water Resources*. *Water International*, 24 (2). p.89

shared watercourse leaving nothing to the downstream states.<sup>109</sup> The Harmon Doctrine has since become disfavoured as an anachronistic and narrow view for reconciling differences among opposing states where a shared natural resource is at issue.<sup>110</sup> Due to its extreme stance, most scholars in international water law dismiss the theory such that it has little support in state practice and therefore does not represent international water law.<sup>111</sup> However, the theory is still used as a bargaining tool by some upper riparian states to justify or excuse harm inflicted on downward riparian states.<sup>112</sup>

### **b. Theory of Prior Appropriation**

A distinct but similarly restrictive theory of water allocation is that of prior appropriation, which favours neither the upstream nor the downstream riparian state, but rather the state that puts the water to use first, thereby protecting those uses which existed prior in time.<sup>113</sup> Each riparian state along the watercourse may thus be able to establish prior rights to use a certain amount depending on the date upon which that water use began.<sup>114</sup> However, in doing so the theory may be inequitable where one state lags behind another in the economic or technical ability to develop its use of the river.<sup>115</sup> Further, in rewarding those who first put water to use, the theory does not take into account either thorough planning or environmental uses of the river.<sup>116</sup>

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<sup>109</sup> McCaffrey, Stephen C. 1996. *The Harmon Doctrine one Hundred Years later: Buried, not Praised*. Natural Resources Journal, 36 (3). p.549

<sup>110</sup> Kiss, Alexandre and Shelton, Dinah. 1991. *International Environmental Law*. Transnational Publishers. New York, USA. p.120

<sup>111</sup> Rahaman, Muhammad Mizanur. 2009. *Principles of International Water Law: Creating Effective Transboundary Water Resources Management*. Int. J. Sustainable Society, 1 (3). p.209

<sup>112</sup> Chenevert, Donald J. 1992. *Application of the Draft Articles on the Non-Navigational Uses of International Watercourses to the Water Disputes Involving the Nile River and the Jordan River*. Emory International Law Review, 6 (2). p.503

<sup>113</sup> Lammers, J. G. 1984. *Pollution of International Watercourses*. . Martinus Nijhoff Publishers. The Hague, The Netherlands. p. 364

<sup>114</sup> Lazerwitz, David J. 1999. *The Flow of International Water Law: The International Commission's Law of the Non-Navigational Uses of International Watercourses*. p.3. At <http://web.macam.ac.il/~arnon/Int-ME/water/International%20Water%20Law.htm>. Accessed on 09 September 2012

<sup>115</sup> Ibid

<sup>116</sup> Ibid

Consequently, although the theory is the legal basis for the allocation of water resources in the western part of the United States of America, it has received little international support.<sup>117</sup> In Africa, a good example is the Nile river basin where two pre-independence agreements purported to give Egypt and the Sudan full control of the Nile river waters and to protect and enhance their future claims to the basin's waters.<sup>118</sup> These two agreements have therefore established a framework for conflict over water allocation between upstream riparian states in Eastern Africa on one hand, and downstream riparian states such as Egypt and the Sudan on the other hand.<sup>119</sup>

### c. Theory of Absolute Territorial Integrity

In direct contrast to the theories of absolute territorial sovereignty and prior appropriation, is the theory of absolute territorial integrity that regards an international river as the common property of its co-riparians, meaning that no state is allowed to deprive the others of the benefits of the waters in question.<sup>120</sup> Consequently, the downstream riparian has the right to demand the continued and uninterrupted flow of water from the territory of the upstream riparian, 'no matter what the priorities of the upstream state'.<sup>121</sup> The downstream riparian state would have a veto power over any upstream state's water utilization that could disturb the natural flow, such as the alteration of the course or flow rate or the volume or quality of its waters.<sup>122</sup> As expected, downstream riparian states tend to support this theory as it guarantees them unlimited use of the water of an international watercourse in an unaltered condition. Some downstream riparian states also use this theory to strengthen their position in arguments concerning projects in upstream

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<sup>117</sup> Lammers, J. G. 1984. *Pollution of International Watercourses*. Martinus Nijhoff Publishers. The Hague, The Netherlands. p. 366

<sup>118</sup> Akech, Migai. 2008. *Transboundary Freshwater Governance and the Environment: An Overview*. International Environmental Law Research Centre. Nairobi, Kenya. p. 7. At <http://www.unep.org/environmentalgovernance/LinkClick.aspx?...en...> Accessed on 09 September 2012

<sup>119</sup> Ibid

<sup>120</sup> Baradat, Jorg and Kaplan, Aytul. 1998. *International Water Law: Regulations for Cooperation and the Discussion of the International Water Convention*. In Scheumann, Waltina and Schiffler, Manuel (Eds). *Water in the Middle East: Potential for Conflicts and Prospects for Cooperation*. Heidelberg. Berlin, Germany. p. 15

<sup>121</sup> Lazerwitz, David J. 1999. *The Flow of International Water Law: The International Commission's Law of the Non-Navigational Uses of International Watercourses*. p.3. At <http://web.macam.ac.il/~arnon/Int-ME/water/International%20Water%20Law.htm>. Accessed on 09 September 2012

<sup>122</sup> Ibid

states.<sup>123</sup> Due to its extreme stance just like the Harmon Doctrine, this theory has limited support in state practice, jurisprudence, and among scholars.<sup>124</sup>

#### **d. Theory of Limited Territorial Sovereignty**

As utilisation of international watercourses became more intense and due to the fact that the theories of absolute territorial sovereignty and absolute territorial integrity did not allow tranboundary cooperation, the theory of limited territorial sovereignty came into being to guide the conduct of states.<sup>125</sup> The theory reflects the general legal principle ‘sic utere tuo alienum non laedas’ and is based on the assertion that every riparian state is free to use the water of shared river flowing within its territory as long as such utilization does not prejudice the rights and interests of the co-riparians; meaning that the sovereignty of all riparian states over a shared river is relative and qualified.<sup>126</sup> This means that the co-riparians have reciprocal rights and duties in the utilisation of the waters of their international watercourse and each is entitled an equitable share of its benefits.<sup>127</sup> The advantage of this theory is that it simultaneously recognizes the rights and interests of both the upstream and downstream riparian states as it guarantees the right of reasonable use by upstream states in a framework of equitable use by all riparian states.<sup>128</sup> Thus, it is only this theory that gained global acceptance in international customary law and as such is the historical basis for the formulation and codification of international water law for non-

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<sup>123</sup> Schroeder-Wildberg, Esther. 2002. *The 1997 International Watercourses Convention-Background and Negotiations. Working Paper on Management in Environmental Planning 04/2002*. Technical University of Berlin. Berlin, Germany. p. 13

<sup>124</sup> Rahaman, Muhammad Mizanur. 2009. *Principles of International Water Law: Creating Effective Transboundary Water Resources Management*. Int. J. Sustainable Society, 1(3). p.210

<sup>125</sup> Schroeder-Wildberg, Esther. 2002. *The 1997 International Watercourses Convention-Background and Negotiations. Working Paper on Management in Environmental Planning 04/2002*. Technical University of Berlin. Berlin, Germany. p. 13

<sup>126</sup> Ibid, p. 14

<sup>127</sup> Caponera, Dante A. 1992. *Principles of Water Law Administration-National and International*. Brookfield. Rotterdam, Netherlands. p. 213

<sup>128</sup> Correia, Francisco Nunes and Silva, Joaquim Evaristo da. 1999. *International Framework for the Management of Transboundary Water Resources*. Water International, 24 (2). p.89

navigational purposes.<sup>129</sup> However, a seriously controversial and open question still persisting to date is the amount of limitation on the exercise of sovereignty on the utilisation of the water resources of an international river basin that international law imposes on the riparian states.

### **1.8.8 Doctrine of Equitable and Reasonable Utilisation**

The theory of limited territorial sovereignty gave rise to the most important doctrine in international water law, namely the use-oriented doctrine of equitable and reasonable utilization.

The doctrine of equitable and reasonable utilisation reflects the principle of the sovereign equality of states by entitling each basin state to an equitable and reasonable use and share in the beneficial uses of an international watercourse.<sup>130</sup> The primary aim of the equitable and reasonable

utilization principle is to distribute the water of an international river basin in such a manner as to satisfy all the co-riparian's conflicting economic and social needs to the greatest extent possible and, thereby, to achieve maximum beneficial and minimum detrimental effects among states.<sup>131</sup>

Thus, there exists a relative rather than absolute equality of the river basin states, and the respective share for each basin state has to be identified on a case by case basis.<sup>132</sup> The doctrine of equitable and reasonable utilization is generally favoured by upstream states because it most effectively safeguards their right to develop later, even if this requires impairment of earlier uses downstream.<sup>133</sup> This doctrine is also overwhelmingly supported by riparian states with marginal stakes in the water resources of the river basin as it guarantees them a basic right in the use of

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<sup>129</sup> Lazerwitz, David J. 1999. *The Flow of International Water Law: The International Commission's Law of the Non-Navigational Uses of International Watercourses*. p.3. At <http://web.macam.ac.il/~arnon/Int-ME/water/International%20Water%20Law.htm>. Accessed on 09 September 2012

<sup>130</sup> Gleick, Peter. 1993. *Water and Conflict: Fresh Water Resources and International Security*. International Security, 18 (1). p. 106

<sup>131</sup> Schroeder-Wildberg, Esther. 2002. *The 1997 International Watercourses Convention-Background and Negotiations. Working Paper on Management in Environmental Planning 04/2002*. Technical University of Berlin. Berlin, Germany. p. 14

<sup>132</sup> Chenevert, Donald J. 1992. *Application of the Draft Articles on the Non-Navigational Uses of International Watercourses to the Water Disputes Involving the Nile River and the Jordan River*. Emory International Law Review, 6 (2). p. 506

<sup>133</sup> McCaffrey, Stephen C. 1996. *The Evolution of the Law of International Watercourses*. Austrian Journal of Public and International Law, 5 (2). p 108



these water resources. Today, the equitable and reasonable utilization doctrine is the controlling principle governing the uses of international watercourses.<sup>134</sup>

### **1.8.9 Domesticating of International Agreements**

Generally, it should not be assumed that once an international convention, treaty or agreement enters into force for a particular state, it automatically becomes part of that states' national laws. Therefore, for most international agreements the means for states party to them to fulfilling their obligations lies in domesticating provisions of the agreements into respective national laws through appropriate legislative processes or procedures. A rare exception occurs where the international agreement has self-executing provisions, in which case there is no need for further legislative processes or procedures as the international Agreement automatically becomes part of national laws in the states party to it.

Broadly speaking, there are two ways of giving international agreements effect in domestic law, namely, monism and dualism. For a state that constitutionally practices the monist approach, an international agreement automatically becomes part of its domestic law once it enters into force. On the other hand for those states following the dualist approach, the rights and obligations created by the international agreement have no effect in domestic laws unless deliberate legislation processes or procedures are executed to give effect to the provisions of the international Agreement. Among the 8 riparian states in the Zambezi river basin, Namibia is the only state that follows the monist approach as provided by Section 144 of the Namibian Constitution.<sup>135</sup> The other 7 riparian states in the basin follow the dualist approach, which requires that an international agreement be domesticated through appropriate national legislation if to have effect.

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<sup>134</sup> Godana, Bonaya adhi. 1985. *Africa's Shared Water Resources: Legal and Institutional Aspects of the Nile, Niger and the Senegal River Systems*. London, UK. p. 64

<sup>135</sup> Government of the Republic of Namibia. 2010. *The Constitution of The Republic of Namibia*. Windhoek, Namibia. p. 62

## **1.9 Methodology of the Case Study**

This case study is a qualitative research prepared from secondary data sources comprising published textbooks, technical and legal reports, government and public policy documents, the Internet materials, and scholarly journals, articles and reports. A major strength and advantage of utilizing the qualitative method in this case study was the unique opportunity of accessing the many and different sources of quality data and scholarly information on the widespread practice among riparian states of using the principle of equitable and reasonable utilisation in concluding international river basin agreements for creating river basin regimes.

The study analyses within the framework treaty law of the UN Watercourses Convention and SADC Watercourses Protocol the drafting of the principle of equitable and reasonable utilisation in the ZAMCOM agreement with a view to establish if the agreement and the creation of the Zambezi river basin regime are based true interpretation of relevant provisions of international water law and SADC regional water law. Therefore, the independent variable in the study is the equitable and reasonable utilization principle as provided in UN Watercourses Convention as international water law and SADC Watercourses Protocol as SADC regional water law. The unit of analysis is the manner of drafting of the principle of equitable and reasonable utilization in the ZAMCOM agreement. The dependent variable is the existence of a ZAMCOM agreement and a functional Zambezi river basin regime premised on the provisions of the UN Watercourses Convention and SADC Watercourses Protocol.

## **1.10 Organisation of the Thesis**

This thesis is organized into 5 Chapters. Chapter 1 is the introduction and comprises the background to the study, statement of the problem, hypothesis, aim, objectives, research questions, literature review, methodology and the organization of the thesis. Chapter 2 outlines the characteristics of the Zambezi river basin and the various uses for its water resources. Chapter

3 traces the evolution of the principle of equitable and reasonable utilization from the Helsinki Rules through the UN Watercourses Convention to the SADC Watercourses Protocol to establish the key provisions for use in an optimal river basin agreement for equitable utilisation of the water resources of an international river basin. Chapter 4 comparatively analyses the drafting of the principle of equitable and reasonable utilization in the ZAMCOM agreement to establish if the agreement and creation of the Zambezi river basin regime are based on relevant provisions of the UN Watercourses Convention and SADC Watercourses Protocol. Chapter 5 comprises conclusions and recommendations on the findings of the case study.

## **CHAPTER 2: ZAMBEZI RIVER BASIN CHARACTERISTICS AND UTILISATION OF ITS WATER RESOURCES**

### **2.1 A Basin as the Basis for Understanding the Management and Utilisation of River Basin Water Resources**

River basins are gaining pre-eminence as the new territoriality for water resources management due to the confluence of three types of sciences, namely; geography, hydrology and ecology.<sup>136</sup> The concern for including the ecosystem rests on the foundation of ecology, a science with great interests in the delineation of natural systems, and the practice of frequently using river basins and watersheds as ecosystem boundary proxies<sup>137</sup>. Geographical and hydrological features especially make the river basin a natural basis for identifying the occurrence and distribution of the water resources in the basin and upon which to analyse the equitable utilisation among riparian states of the shared water resources in the basin. Using the river basin as a basis, Chapter 2 examines the key characteristics of the Zambezi river basin and major uses of its water resources with a view to understanding the existing and potential water resources utilisation patterns among the riparian states.

### **2.2 Geography of the Zambezi River Basin**

The Zambezi river constituting that the main stem of the Zambezi river basin originates at 1 450 metres above sea level in the Kalene Hills of the Central African plateau in north western Zambia, after which it meanders a distance of 2 650 kilometres crossing and straddling international boundaries before terminating into the Indian Ocean on the Mozambique coast. The Zambezi river is the largest African river flowing into the Indian Ocean.<sup>138</sup> Numerous tributaries originating mainly in Angola, Zambia, Zimbabwe and Tanzania join into the Zambezi river on its

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<sup>136</sup> Wester, Philippus and Warner, Jeroen. 2002. *River basin management reconsidered*. In Turton, Anthony and Henwood, Roland (Eds). *Hydropolitics in the Developing World: A Southern African Perspective*. African Water Issues Research Unit (AWIRU), Pretoria, South Africa. p. 67

<sup>137</sup> Ibid

<sup>138</sup> Swain, Ashok. 2004. *Managing Water Conflict: Asia, Africa and the Middle East*. Routledge. London, UK. p.149

way to the Ocean. Major tributaries are the Luena, Lungue-Bungo and Cuando (or Chobe) rivers from Angola, the Kabompo, Kafue and Luangwa rivers from Zambia, the Gwanyi and Sanyati rivers from Zimbabwe and the Shire river from Tanzania that passes through Malawi and joins the Zambezi river in Mozambique.

The map at figure 1 shows the geography of Zambezi river and associated network of tributaries that form the Zambezi river basin. In addition to being the fourth largest river basin on the African continent after the Congo, Nile and Niger, the Zambezi river basin is the most shared river basin in the SADC region among 8 riparian states of Angola, Botswana, Malawi, Mozambique, Namibia, Tanzania, Zambia and Zimbabwe. The river basin drains a total area of 1 359 821 square kilometers or 24 percent of the combined geographic area of 5 661 700 of its 8 riparian states.

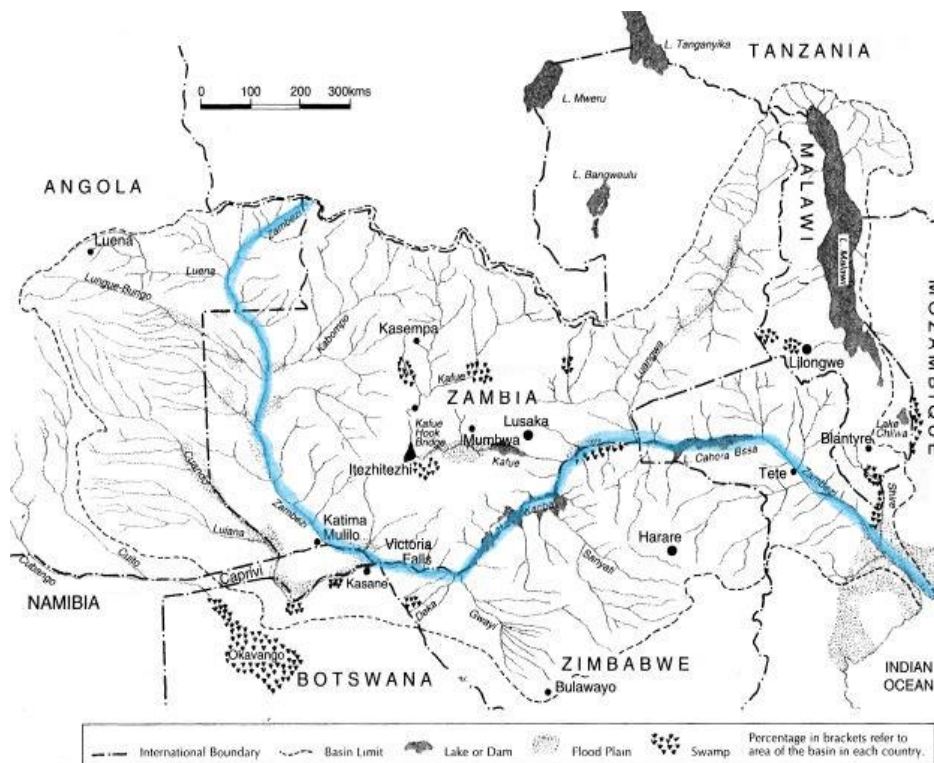


Figure 1. Geography of the Zambezi River Basin (Adapted from Shela.2000<sup>139</sup>)

<sup>139</sup> Shela, Osborne N. 2000. *Management of shared river basins the case of the Zambezi River*. Water Policy 2 (2000), p. 66

The largest natural lake in the Zambezi river basin is Lake Malawi (28 750 square kilometres surface area) and Africa's third largest freshwater lake after lakes Victoria and Tanganyika and the third deepest in the world.<sup>140</sup> Two major artificial lakes in the basin are the Kariba (5 400 square kilometres surface area) that straddles the territories of Zambia and Zimbabwe, and the Cahora Bassa (2 739 square kilometres surface area) in the territory of Mozambique.<sup>141</sup> Large manmade water reservoirs are the Kafue dam (809 square kilometres surface area) and Ithezi thezi dam (365 square kilometres surface area) both in Zambia.<sup>142</sup> The basin also has five major swamps, namely; the Barotse, Busanga and Lukanga swamps in Zambia; and the Eastern Caprivi in Namibia all with a combined surface area coverage at the height of the flood period of 20 000 square kilometres.<sup>143</sup>

### 2.2.1 Hydrology

The Zambezi river basin replenishes its water from the rainfall that normally occurs during a single rainy season from October/November to March/April, an occurrence that leads to water scarcity in the remaining dry season months. Rainy seasons are longer in the north and north east, and much shorter in the south west of the basin.<sup>144</sup> Typically, northern parts of the river basin comprising Malawi, Tanzania and northern and north-western Zambia have average annual rainfall of 1 200 millimetres per annum and this decreases southwards to an average 700 millimetres per annum in the southern and south western parts of the basin.<sup>145</sup> Due to the even distribution of rainfall, northern tributaries contribute much more water to the basin than southern ones, e.g. the upper Zambezi river contribute 25 percent, the Kafue river 9 percent, the Luangwa

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<sup>140</sup> Munjoma, Leonissah. 2004. *Zambezi Watercourse Commission sets transboundary perspective*. The Zambezi - Special Issue, Southern African Research and Documentation Centre (SARDC), 6 (1). p. 4

<sup>141</sup> Euroconsult Mott MacDonald. 2007. *Rapid Assessment - Final Report: Integrated Water Resources Management Strategy for the Zambezi River Basin*. SADC-WD/Zambezi River Authority. p. 27

<sup>142</sup> Heyns, Piet. 2003. *Water - resources management in Southern Africa*. In Nakayama, Mikiyasu (Ed). International Waters in Southern Africa. The United Nations University. New York, USA. p. 26

<sup>143</sup> Ibid

<sup>144</sup> Euroconsult Mott MacDonald. 2007. *Rapid Assessment - Final Report: Integrated Water Resources Management Strategy for the Zambezi River Basin*. SADC-WD/Zambezi River Authority. p. 7

<sup>145</sup> Shela, Osborne N. 2000. *Management of shared river basins the case of the Zambezi River*. Water Policy 2 (2000). p. 65

river 13 percent, and the Shire river 12 percent - forming 60 percent of the total Zambezi river discharge.<sup>146</sup> Similarly, although the Chobe, Lungue-Bungo, Gwanyi and Sinyati rivers in the southern and south western parts of the basin occupy large portions of the Zambezi river basin, they effectively make little contribution to its flows as these sub-catchments are relatively dry.<sup>147</sup> Overall, the hydrology of the Zambezi river basin is not uniform with generally high rainfall in the north and lower rainfall in the south parts.<sup>148</sup>

## 2.2.2 Geographical Positions of Riparian States

According to the International Relations approach on institutionalised cooperation over the water resources of an international river basin, one proven casual factor of leverage on processes of water agreement negotiation and the creation of a river basin regime hinges on the relative geographical positions of riparian states in the river basin structure (upstream-downstream relationships). Generally, it is assumed that the geographical position of a riparian state in the river basin influences and shapes its basic incentives for entering into a water agreement and the creation of a river basin. Downstream states are more inclined or amenable to entering into river basin agreements and creation of regimes whereas upstream states are not as they apparently have little to gain from these cooperative arrangements.

The map at figure 2 shows the relative geographical positions the 8 riparian states in the Zambezi river basin. Territories in blue colour are conclusively upstream while those in red colour unambiguously downstream. However, territories in yellow colour are either common pool areas (e.g. Lake Malawi) or contiguous (e.g. Lake Kariba) or parts not clear as to how much they are influenced by upstream areas or how much they influence downstream areas. Due to the many

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<sup>146</sup> World Bank. 2010. *The Zambezi River Basin: A Multi-Sector Investment Opportunities Analysis, Volume 3: State of the Basin*. The World Bank Water Resources Management Africa Region. Washington DC, USA. p. 4

<sup>147</sup> Shela, Osborne N. 2000. *Management of shared river basins the case of the Zambezi River*. Water Policy 2 (2000), p. 67

<sup>148</sup> World Bank. 2010. *The Zambezi River Basin: A Multi-Sector Investment Opportunities Analysis, Volume 3: State of the Basin*. The World Bank Water Resources Management Africa Region. Washington DC, USA. p. 4

inter linkages in terms of river flows among and between riparian states, it is mostly difficult to clearly distinguish between upstream and downstream territories. This is resulting in the classification of the territories in yellow colour into either upstream or downstream depending on somewhat arbitrary river basin circumstances.

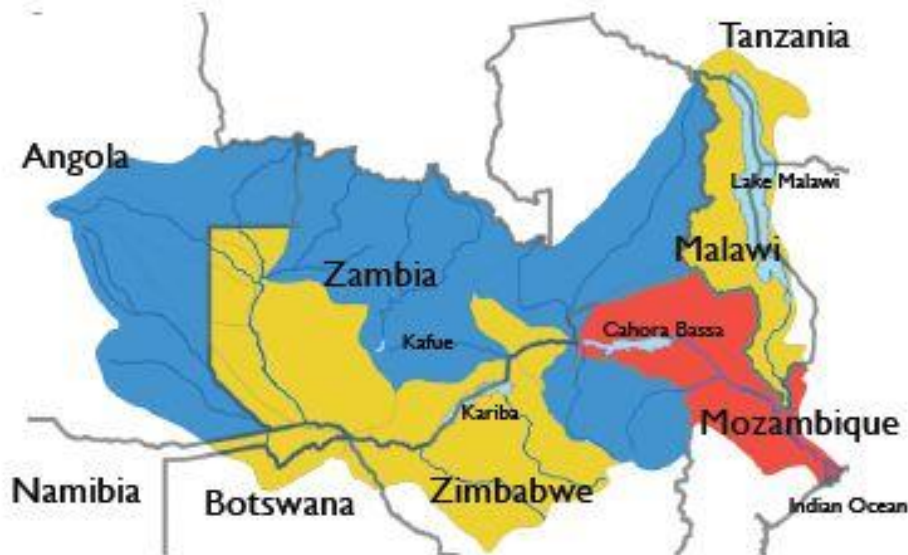


Figure 2. *Upstream and Downstream Relationships* (Source: Beck and Siegfried. 2010<sup>149</sup>)

### 2.2.3 Territory Shares in the River Basin

Table 1 gives the breakdown of each riparian state's territory share in the river basin and respective proclaimed upstream or downstream territory sizes.

<sup>149</sup> Beck, Lucas and Siegfried, Tobias. 2010. *The Geography of Conflict in International River Basins*, September 3, 2010. p.20. At <http://www.columbia.edu/~ts2392/files/BeckSiegfried.pdf>. Accessed on 01 August 2011



<b>Riparian State</b>	<b>Territory of State (square km)</b>	<b>Area of Territory in the river basin (square km)</b>	<b>Territory upstream (square km)</b>	<b>Territory downstream (square km)</b>
Angola	1 246 700	245 970	245 970	0
Botswana	582 000	20 861	0	20 861
Malawi	118 000	103 268	0	103 261
Mozambique	802 000	159 046	2 480	156 566
Namibia	824 000	15 793	0	15 793
Tanzania	945 000	28 273	0	28 273
Zambia	753 000	568 755	284 025	284 730
Zimbabwe	391 000	217 855	74 210	143 645
<b>Total</b>	<b>5 661 700</b>	<b>1 359 821</b>	<b>606 685</b>	<b>753 136</b>

*Table 1. Territory Sizes in the River Basin (Source: Lucas and Siegfried.2010)<sup>150</sup>*

Whereas only the Angolan river basin territory is plausibly upstream, the territories in Botswana, Namibia, Malawi and Tanzania despite being geographically positioned upstream are considered as downstream. On the other hand, Zambia that has the largest territory in the river basin and is centrally positioned prefers to consider half of itself territory as upstream and the other half downstream. Although the geographical position of Zimbabwe is obscure, it considers its territory in the river basin as 34 percent upstream and 66 percent downstream. Roughly, 45 percent of the combined Zambezi river basin territory is considered upstream while the remaining 55 percent is downstream. Clearly, classification of territory or part thereof as either upstream or downstream is done not particularly based on geographical positions but also because of many other spatial considerations.

Where geographical positions of riparian states in a river basin are distinct, upstream states often favour the theory of absolute territorial sovereignty as it justifies or excuses their misuse or harm to water resources inflicting downstream states, while downstream states often favour the theory of absolute territorial integrity as it guarantees them the use of water resources in an unaltered condition and strengthens their arguments against water projects in upstream states. Further,

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<sup>150</sup> Ibid

upstream states generally favour the doctrine of equitable utilization as it most effectively safeguards their right to develop at a later in time those water resources in their territory. However, in the case of the Zambezi river basin, there is apparent difficulty in distinguishing between upstream and downstream states or territories. The result is that respective river basin riparian states' interests in negotiations over basin agreement and the creation of a regime are equally intermingled and difficult to discern. Similarly, whereas in the International Relations discourse upstream and downstream geographical positions and territory sizes in a river basin routinely influence negotiations and leverage the creation of a river basin regime, in the Zambezi river basin as a consequence of diffused geographical positions these established factors are seemingly inconsequential.

#### 2.2.4 Population Sizes in the River Basin

An important factor in the equitable and reasonable utilization principle of water resources of an international river basin is that of the population directly dependent on the water resources. A breakdown of population sizes among the 8 Zambezi river basin riparian states is given in table 2.

Riparian State	Population of the Year 2005/6		
	Total State Population	Population residing in the River Basin	As % of Total Population residing in River Basin
Angola	15 800 000	532 000	3.4
Botswana	1 600 000	17 000	1.1
Malawi	13 100 000	10 281 000	78.5
Mozambique	20 000 000	2 616 000	31.1
Namibia	2 000 000	112 000	5.6
Tanzania	38 200 000	1 240 000	3.2
Zambia	11 900 000	7 568 000	63.6
Zimbabwe	11 700 000	7 603 000	65.0
<b>Total</b>	<b>112 300 000</b>	<b>29 969 000</b>	

Table 2. Constituent Population Sizes in the Zambezi River Basin (Adapted from Munjoma, Leonissah. 2004<sup>151</sup> and World Bank. 2010<sup>152</sup>)

<sup>151</sup> Munjoma, Leonissah. 2004. *Zambezi Watercourse Commission sets transboundary perspective*. The Zambezi - Special Issue, Southern African Research and Documentation Centre (SARDC), 6 (1). p. 4

During the year 2005/6, the Zambezi river basin was home to nearly 30 million or 26.7 percent of the combined population of 112 300 000 of all the 8 basin riparian states. Of the 30 million people in the river basin, 85 percent were domicile in Malawi, Zimbabwe and Zambia. Malawi that has more than 78 percent of its population living within the river basin is apparently the most dependent upon water resources of the Zambezi river basin. Zimbabwe and Zambia are also heavily dependent upon the water resources of the Zambezi river basin as respectively 65 percent and 63.6 percent of their population dwell in the river basin. On the other hand, the state of Mozambique that is positioned farthest downstream and has a fair 31 percent of its population living in the Zambezi river basin may fear to lose most from harmful activities and over utilisation of the water resources by the other upstream riparian states. Despite Angola, Namibia, Botswana and Tanzania having only small proportions of their populations living within the river basin, these riparian states still have strong interests in the management of the river basin and utilization of its water resources due to the rising and projected future water resources demands in their respective territories.

### **2.2.5 Population Growth and Rapid Urbanisation**

In line with trends in other parts of Africa, there is a steady growth in the population residing in the Zambezi river basin. Basing on a modest population growth rate prediction of 2.9 percent per annum, the population in Zambezi river basin is to rise to 47 million people by 2025; an increase of 56 percent over the basin's population of 2005/6.<sup>153</sup> Additionally, as the Zambezi river basin is endowed with a variety of other natural resources, there are many economic development activities notably in the mining, agriculture, fisheries, tourism and manufacturing sectors with associated processes depending on the electricity produced from hydropower plants constructed within the rivers of the basin.

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<sup>152</sup> World Bank. 2010. *The Zambezi River Basin: A Multi-Sector Investment Opportunities Analysis, Volume 3 State of the Basin. The World Bank Water Resources Management Africa Region*. Washington DC, USA. p. 7

<sup>153</sup> Euroconsult Mott MacDonald. 2007. *Rapid Assessment - Final Report: Integrated Water Resources Management Strategy for the Zambezi River Basin*. SADC-WD/Zambezi River Authority. p.46

As a result of the rising job opportunities associated with the many economic activities in the river basin, there is rapid urbanization basin-wide. Whereas in 2005/6 the urban population in the river basin was 7.6 million or equivalent to 25.6 percent of the total population of the basin, trends predict that urbanisation will increase to 44 percent by 2025.<sup>154</sup> Among the rapidly expanding cities, towns and urban centres in the river basin are Luena in Angola, Kasane in Botswana, all towns and urban centres in Malawi, Tete in Mozambique, Katima Mulilo in Namibia, Mbeya in Tanzania, all industrial and commercial towns in Zambia, and most towns and urban centres in Zimbabwe. Growth in population and corresponding rapid urbanization is dramatically increasing competition and demand for the finite water resources among the riparian states, thus necessitating institutionalization of equity in the utilization of the finite water resources in the basin.

## 2.2.6 Investment Potential in River Basin Water Resources

Table 3 shows the gross domestic potential investment potential per cubic meter of the Zambezi river basin water resources among its 8 riparian states.

Riparian State	Gross Domestic Product (GDP) Investment Potential per cubic-metre of river basin water resources (US\$)
Angola	0.21
Botswana	5.26
Malawi	0.18
Mozambique	0.07
Namibia	1.04
Tanzania	0.17
Zambia	0.09
Zimbabwe	0.28

Table 3. Investment Potential in River Basin Water Resources (Source: Beck and Bernauer.2011<sup>155</sup>)

<sup>154</sup> World Bank. 2010. *The Zambezi River Basin: A Multi-Sector Investment Opportunities Analysis, Volume I Summary Report*. The World Bank Water Resources Management Africa Region. Washington DC, USA. p. 7

<sup>155</sup> Beck, Lucas and Bernauer, Thomas. 2011. *How will combined changes in water demand and climate affect water availability in the Zambezi river basin?* Global Environmental Change, 21 (2000), p. 1063

Among the 8 river basin riparian states, Botswana has by far the highest GDP investment in potential for the exploitation of water resources of the Zambezi river basin. The remaining riparian states investment commitments in the development of the Zambezi river basin water resources are a comparatively, minimal ranging from US\$ 1.04 per cubic-metre for Namibia to the lowest at US\$ 0.09 per cubic-metre in Zambia. These wide variations may suggest that the wealthier riparian states with higher financial investment potentials may inequitably apply them in utilizing the shared water resources to the disadvantage of those riparian states presently with lower investment potentials. This necessitates institutionalization of basin-wide measures to make certain that all riparian states regardless of their economic power and investment potential, equitably benefit from the development of the Zambezi river basin and the utilization of its water resources.

### **2.2.7 Occurrence of Floods and Droughts**

Floods and droughts are part of the hydrological features of the Zambezi river basin and occur almost cyclically.<sup>156</sup> Severe floods and droughts are the most crucial natural disasters in the river basin with severe droughts occurring every 10 to 15 years. Since the majority of the rural population across the Zambezi river basin practice subsistence agriculture in flood plains, swamps, wetlands and on the shores of water bodies and banks of rivers, floods frequently inundate extensive areas resulting in serious damage to crops, infrastructure, and loss of lives and property.<sup>157</sup> Equally, as the basin is prone to recurrent drought conditions that span large areas, these cause famine, reduced crop harvest, water supply shortages, reduced hydropower production, and even deaths of humans and livestock. The effects of severe floods and droughts are likely to worsen as the population living in the river basin increases resulting in corresponding rise in vulnerability.

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<sup>156</sup> Euroconsult Mott MacDonald. 2007. *Rapid Assessment - Final Report: Integrated Water Resources Management Strategy for the Zambezi River Basin*. SADC-WD/Zambezi River Authority. p. 30

<sup>157</sup> Ibid

### 2.2.8 Aquatic Ecosystems

The importance of aquatic ecosystems in the Zambezi river basin derives from their ecological/biodiversity, socio-economic value, and physical and/or hydrological significance.<sup>158</sup>

The most important aquatic ecosystems are wetlands as these provide a variety of goods and services of local, national and international importance and also play a crucial role in maintaining water quality and regulating river flows. For local people, wetlands provide a variety of benefits that include drinking water, water for livestock, land for flood recession agriculture, pasture for dry season grazing, fish and game meat, and plant materials for food, medicines and construction. Nationally and internationally, wetlands support fisheries, irrigated agriculture, livestock production, wildlife, tourism and biodiversity conservation. Major wetlands and Ramsar sites (i.e. wetlands of international importance) in the Zambezi river basin include the Chobe/Linyati Swamp in Namibia and Botswana; Barotse and Luangwa Floodplains, Luena and Kafue Flats, Nyamboma, Lukanga, Busanga and Nyengo Swamps in Zambia; Shire Marshes in Malawi and Mozambique; and the Zambezi Delta (Marrromeu Complex) in Mozambique.<sup>159</sup>

Wetlands also absorb and attenuate flows from upstream catchment areas, releasing this ‘trapped’ water slowly over a period of several months and therefore helping to sustain flows during the dry season months.<sup>160</sup> However, wetlands are also among the most environmentally sensitive areas in the river basin that are increasingly being degraded mainly due to practices and conduct of unsustainable industrial, economic and agricultural activities. To enable maintenance of a healthy and conducive river basin environment in the flora and fauna flourish, the river basin environment or aquatic ecosystems must be recognized as water users in their own right and sufficient water resources allocated at the river basin level to enable their continuing existence.

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<sup>158</sup>Euroconsult Mott MacDonald. 2007. *Rapid Assessment - Final Report: Integrated Water Resources Management Strategy for the Zambezi River Basin*. SADC-WD/Zambezi River Authority. p. 58

<sup>159</sup>The Secretariat of the Convention on Wetlands. 2012. *The List of Wetlands of International Importance - 15 October 2012*. Gland, Switzerland. At <http://www.ramsar.org/statelist.doc>. Accessed on 06 November 2012

<sup>160</sup>Ibid

## 2.2.9 Climate

Temperatures across the basin vary mainly according to elevation and season, and are typically high most of the year ranging from 13°C to above 31°C in the lowest parts of the basin.<sup>161</sup> Evapotranspiration also varies greatly across the river basin and is determined by location, temperature, relative humidity, wind speed and sunshine.<sup>162</sup> Annual evapotranspiration values vary from 1 000 millimetres to almost 2 000 millimetres, with an average of 1 600 millimetres which is almost double the average annual rainfall.<sup>163</sup> As a large portion of the Zambezi river basin is semi-arid and is characterized by high temperatures, substantial amounts of water resources in the basin are lost through evaporation and transpiration. As a result, less than 10 percent of the mean annual rainfall in the basin contributes to the flow of the Zambezi river into the Indian Ocean as more than 90 percent of the mean annual rainfall evaporates and returns to the earth's atmosphere.<sup>164</sup>

The occurrence, distribution and availability of water resources in the Zambezi river basin are heavily dependent on the uncontrollable factors of rainfall, evaporation rates and associated hydrological processes. Based on projected increases in temperature coupled with decreased humidity associated with reduced rainfall, the Zambezi river basin is expected over the next century to experience a significant increase in the rate of potential evapotranspiration.<sup>165</sup>

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<sup>161</sup>Euroconsult Mott MacDonald. 2007. *Rapid Assessment - Final Report: Integrated Water Resources Management Strategy for the Zambezi River Basin*. SADC-WD/Zambezi River Authority. p. 8

<sup>162</sup> Ibid, p. 30

<sup>163</sup> Ibid

<sup>164</sup> Euroconsult Mott MacDonald. 2007. *Integrated Water Resources Management and Implementation Plan for the Zambezi River Basin - Summary*. SADC-WD/Zambezi River Authority. p. 2

<sup>165</sup>Beilfuss, Richard. 2012. *A Risky Climate for Southern African Hydro – Assessing Hydrological Risks and Consequences for the Zambezi River Basin Dams*. International Rivers. Berkeley CA, USA. p. 25. Assessed at <http://www.internationalrivers.org> on 30 April 2013

### 2.2.10 Effects of Climate Change

The Intergovernmental Panel on Climate Change (IPCC) has categorized the Zambezi as a river basin exhibiting the ‘worst’ potential effects of climate change among 11 major African basins, due to the resonating effect of increase in temperature and decrease in rainfall.<sup>166</sup> Over the next century, multiple studies cited by the IPCC estimate that rainfall across the Zambezi river basin will decrease by 10-15 percent due to a reduction in the number of rainy days and the average intensity of rainfall.<sup>167</sup> As a result of climate change, the river basin is also getting increasingly hotter and drier, with multiple studies cited by the IPCC estimating that river basin runoff will be reduced by 26-40 percent by 2050 and that all 8 riparian states in the basin shall experience significant reduction in stream flows.<sup>168</sup>

The ever-increasing temperatures due to climate change across the entire river basin are resulting in rising evaporation and transpiration rates, which are further straining availability of the finite water resources. Climate change is also increasing occurrences of extreme events of droughts and floods in the river basin. Besides the direct effect of reducing the available water resources in the river basin, climate change also negatively impacts crop and livestock production and sustenance wildlife. Specifically, rising temperatures due to climate change; causes higher evaporation from main water bodies, changes runoff patterns of the ecosystems of wetlands; reduces the productivity of main agricultural crops; and affects fish production in major lakes and reservoirs.<sup>169</sup>

Adapting to the effects of climate change requires basin-wide cooperative strategies to meet four primary objectives of: strengthening flood management and support structures at the basin-level;

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<sup>166</sup> Ibid, p. 3

<sup>167</sup> Ibid

<sup>168</sup> Ibid

<sup>169</sup> World Bank. 2010. *The Zambezi River Basin: A Multi-Sector Investment Opportunities Analysis, Volume 3: State of the Basin*. The World Bank Water Resources Management Africa Region. Washington DC, USA. p. 31



improving basin-wide and national drought-coping mechanisms; reassessing the adequacy of rivers-regulation and considering the enhancement of infrastructure; and making use of the changed regional and global development opportunities presented by climate change - in particular, by using the whole basin as a carbon sink.<sup>170</sup>

It is now scientifically proven that the high degree of seasonal and spatial variability of the water resources across riparian states in the Zambezi river basin compounded with the negative effects of climate change are alarmingly decreasing the amount of available water resources in the river basin. This rapid diminishing of the water resources is increasingly making river basin-wide cooperation among riparian states in the sustainable development of the delicate Zambezi river basin system and the equitable utilisation of its water resources a critical issue.

### **2.3 Major Socio-Economic Activities in the River Basin**

A key factor in deriving rights for the sustainable and equitable utilization of the common water resources in a river basin is knowing the existing and envisaged socio-economic activities dependent on the water resources and the demands for these resources among riparian states. Therefore, this section of the case study describes the existing and potential uses of the water resources in the Zambezi river basin and establish usage patterns and demand among the riparian states.

#### **2.3.1 Industrial and Domestic Water Uses**

Industrial and domestic activities are most apparent users of the water resources of the Zambezi river basin. The various National Development Plans for riparian states project significant economic growth with Zambia, Tanzania, Mozambique and Malawi in particular aiming to reach middle-income status by 2025-2030. Part of these economic growths is expected to derive from

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<sup>170</sup> Ibid

industrial development with corresponding rise in industrial water use.<sup>171</sup> Further, due to rapid urbanization, rising population and living standards of the people dwelling in the river basin, there is matching rise in the domestic consumption of the river basin water resources. Compounding the rising demand for industrial and domestic water uses is the negative effect of source pollution arising from the widespread practice of discharging industrial waste water and untreated domestic sewage into rivers; thus contributing to or accelerating the degradation of the quality and quantity of available water resources in the basin. Considering all the development plans of the riparian states and ever rising industrial and domestic water uses, the finite water resources in the Zambezi river basin are in the near future unlikely to meet the sum of all the water demands of the riparian states; unless a credible mechanism is devised for the sustainable and equitable utilization of the river basin water resources.

### **2.3.2 Agricultural Uses**

Agriculture activities in the Zambezi river basin are largely rainfall-fed or natural-flood dependent with an estimated 5 200 000 hectares being cultivated annually in this way.<sup>172</sup> As a whole the river basin receives a mean annual rainfall of about 950 millimetres with considerable variability from year to year and as such rainfall reliability for agricultural and livestock production is an over-riding issue.<sup>173</sup> Irrigation is thus essential in most areas, both for growing perennial crops (e.g. sugarcane, bananas, citrus), and in the drier areas to guarantee crop yields for seasonal crops (e.g. maize, rice, cotton).<sup>174</sup> An additional 7 million hectares of arable land in the river basin is suitable for irrigation farming.<sup>175</sup> Currently, more than 171 621 hectares of this additional land is already under commercial irrigation and there are plans for further large scale irrigation project

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<sup>171</sup> Euroconsult Mott MacDonald. 2007. *Rapid Assessment - Final Report: Integrated Water Resources Management Strategy for the Zambezi River Basin*. SADC-WD/Zambezi River Authority. p.48

<sup>172</sup> Euroconsult Mott MacDonald. 2007. *Rapid Assessment - Final Report: Integrated Water Resources Management Strategy for the Zambezi River Basin*. SADC-WD/Zambezi River Authority. p.38

<sup>173</sup> Ibid, p.7

<sup>174</sup> Ibid, p.30

<sup>175</sup> Ibid, p.70

necessary to secure the food-supply situation; with an estimated 467 385 hectares to be under irrigation by 2025, thus raising the total irrigated area in the basin to 639 001 hectares.<sup>176</sup>

Table 4 describes major irrigation activities and development plans together with flagship irrigation projects for implementation by 2025.<sup>177</sup> Malawi and Zambia have the most ambitious agricultural irrigation plans to develop 35 percent and 25 percent of the 467 385 hectares respectively. Full development of this combined additional 467 385 hectares of land will demand abstraction of 4 635 million cubic metres of water per annum from the river basin; consisting of 4 031 million cubic metres for direct irrigation and 604 million cubic metres per annum in incremental reservoir evaporation.<sup>178</sup> Additionally, assuming a 2 percent annual growth in cattle population up to 2025 will require in excess of 167 million cubic metres of the river basin water per year, to sustain livestock rearing.<sup>179</sup>

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<sup>176</sup> Ibid, 49-50

<sup>177</sup> Ibid, p. 51

<sup>178</sup> Ibid, p. 52

<sup>179</sup> Ibid

Riparian State	Major Irrigation Activities & Plans	New Irrigation Projects by 2025	
		Flagship Project	Area (hectares)
Angola	Re-establishing estate farms for growing tree crops, particularly coffee and sugar in the Cuando/Chobe river sub-basin	Re-establishment of coffee sugar farms in the Cuando/Chobe river sub-basin	20 000
Botswana	The Ministry of Agriculture plans to withdraw 714 million cubic metres of the river basin water per year for irrigation, fishery & poultry farming. In particular, irrigated horticulture is being targeted to substitute the high-cost of agricultural products imports.	Diversion of 714 million cubic metres of water for irrigation, fish and poultry farming.	40 000
Malawi	Additional to the current irrigated area of 46 000 hectares, the Strategic Plan of the Ministry of Irrigation & Water Development is to bring a further 120 000 hectares under effective irrigation schemes. Further plans include developing within the next 20 years an irrigation system comprising canals along the banks of the Shire river valley to convey water under gravity from the vicinity of the hydro-electric power generating facilities to farms in drier parts.	Development of 74 000 hectares by 2012, continuing at the pace of 50% until 90% of cultivable land in its part of the river basin is under irrigation.	163 400
Mozambique	The First National Water Resources Project aims to develop new irrigated areas of 2 000 hectares per year in the northern/central parts and rehabilitating 50 000 hectares of damaged irrigation systems. Particularly, firm plans are to re-establish commercial and corporate farms in the Sena and Zambezi river delta, and on land adjacent to the central Lake Malawi shore	Development of 2 000 hectares per annum up to 2012, accelerating development until 50% of arable land in the river basin is under irrigation, and rehabilitating 50 000 hectares of damaged irrigation networks.	49 000
Namibia	A major irrigation development scheme is the Caprivi Sugar Plantation in extent of 15 000 hectares	Development of the Caprivi Sugar Plantation	15 000
Tanzania	Prospects are for irrigation development on the Tanzanian sector of the Shire river sub-basin, although plans may be hampered by flash-flooding arising from short precipitous rivers flowing into lake Malawi and poor communications and infrastructure	Limited irrigation development and expansion in the river basin	
Zambia	Vision 2030 estimates that only 9% of potential irrigable land is under irrigation. Thus, Vision 2030 envisages increasing production using irrigation to guarantee food for strategic reserves, reduction in food imports, export of high value cash crops and increasing agro-based industrial outputs/employment	Targeting through irrigation the development of 70% of national cultivable land in the river basin	117 600
Zimbabwe	Large irrigation schemes within the river basin are to be developed within the next 10 years and these include the Dande Project	Expansion of the irrigation area in the river basin at a rate of 3% per annum	45 360
<b>Total Area</b>			<b>467 385</b>

Table 4. Major Irrigation Activities and Planned for Projects in the River Basin

### **2.3.3 Hydropower Production**

Hydropower production is a vital economic activity in the Zambezi river basin and almost all the electricity used in the river basin is generated from water resources. Natural areas in the river basin well-matched for hydropower production are located in Malawi, Mozambique, Zambia and Zimbabwe whilst the 5 riparian states have none. However, suitability of these sites for hydropower production is as a result of the high water run-off and flows that originate from the many tributaries in other upper areas of the entire basin and the 1 450 metre fall of the main stem Zambezi river from its source to the Indian Ocean. Since the Zambezi river and its tributaries exhibit extremely variable water flows due to variable rainfall, hydropower reservoirs and ponds are usually constructed to enable smooth water flows for electricity generation both during the rainy season (November to April) and dry season (May to October), as well as compensate for inter-annual variability. Major reservoirs in the river basin constructed primarily for hydropower generation are the Kariba dam (spanning the border between Zambia and Zimbabwe) and Cahora Bassa dam (entirely within Mozambique) both on the main stem Zambezi river, Itezhi-Tezhi and Kafue Gorge Upper dams on the Kafue river in Zambia, and the Kamuzu Barrage in Malawi that partially regulate Lake Malawi water levels for downstream Shire river hydropower production at Nkula Falls, Tedzani, and Kapichira Stage I hydropower dams.

The present combined installed hydropower production capacity in the Zambezi river basin is nearly 5 000 MW of which 42% is generated in Mozambique, 36% in Zambia, 15% in Zimbabwe and 7% in Malawi, as broken down in table 5. Also shown in table 5 are additional major sites identified for hydropower construction of combined generating capacity in excess 14 000 MW consisting; 58% in Mozambique, 29% jointly by Zambia and Zimbabwe on the common Zambezi

river, and 13% in Malawi. Of the additional 14 000 MW capacity, 6 634 MW is proposed for development before 2025.<sup>180</sup>

Although hydropower generation itself is considered a non-consumptive water resources user, evaporation from impounded water bodies for feeding into the generation process to produce electricity is regarded as consumptive water resources user. In the Zambezi river basin annual evaporation from existing hydropower reservoirs is estimated at 17 million cubic metres and is by far the largest water resources user in the basin; with the Kariba and Cahora Bassa dams accounting for more than 85% of all evaporation from reservoirs.<sup>181</sup> Evaporation from these two massive reservoirs currently results in an 11% reduction in mean annual flows in the Zambezi river basin.<sup>182</sup> Further, the construction of large reservoirs for hydropower production are profoundly modifying the hydrology and biodiversity of the entire river basin, thus negatively impacting the provisioning of ecological goods and services.

As hydropower generation is fundamentally dependent on adequate water flows, reduction in water resources in the river basin as a result of rising unregulated consumptive uses, excessive evaporation and the impact of climate change, the projected hydropower development in the Zambezi river basin will be impaired unless a sustainable water utilization mechanism with benefits-sharing incentives is instituted to guarantee existence of optimal water flows for purpose.

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<sup>180</sup>Beilfuss, Richard. 2012. *A Risky Climate for Southern African Hydro – Assessing Hydrological Risks and Consequences for the Zambezi River Basin Dams*. International Rivers. Berkeley CA, USA. p. 21. Assessed at <http://www.internationalrivers.org> on 30 April 2013

<sup>181</sup>Shela, Osborne N. 2000. *Management of Shared River Basins: The Case of the Zambezi River*. Water Policy 2 (2000). p. 70

<sup>181</sup>Euroconsult Mott MacDonald. 2007. *Rapid Assessment - Final Report: Integrated Water Resources Management Strategy for the Zambezi River Basin*. SADC-WD/Zambezi River Authority. p. 42

<sup>182</sup>Beilfuss, Richard. 2012. *A Risky Climate for Southern African Hydro – Assessing Hydrological Risks and Consequences for the Zambezi River Basin Dams*. International Rivers. Berkeley CA, USA. p. 22. Assessed at <http://www.internationalrivers.org> on 30 April 2013

Riparian State	River	Hydropower Site(s)	Type of Site	Present annual evaporation (%)	Generation Capacity (MW)	
					Existing	Projected
Malawi	Shire	Nkula A	Pondage	0.01	24	
		Nkula B	Pondage		100	
		Tedzani I&II	Pondage	0.01	40	
		Tedzani III	Pondage		50	
		Kapichira 1	Pondage	0.03	64	
		Kapichira 2	Pondage		64	
		Kholombizo	Pondage			240
	Songwe	Wovwe	Pondage		4.5	
	Lower Lufu	South Luhuru	Run-of-river			100
Mozambique	Zambezi	Cahora Bassa	Reservoir	34.1	2 075	3 275
		Chemba	Reservoir			1 040
		Mpanda Uncua	Pondage	0.9		1 780
		Lupata	Reservoir	3.7		654
		Boroma	Reservoir	0.3		444
		Ancuanze Sinjal I	Pondage			330
		Ancuanze Sinjal II	Pondage			600
Zambia	Mulungushi	Mulungushi	Reservoir	0.3	20	
	Lunsemfwa	Lunsemfwa	Reservoir	0.4	18	
	Lusiwasi	Lusiwasi	Pondage	0.03	12	
	Zambezi	Victoria Falls	Run-of-river		108	
		Kariba North	Reservoir	52.5	720	
	Kafue	Kafue Gorge	Pondage	8.7	900	1 740
		Itezhi tezhi	Reservoir	3.9		120
Zambia and Zimbabwe	Zambezi	Batoka Gorge	Pondage			1 600
		Devils Gorge	Pondage	0.3		1 240
		Mupata	Pondage	12.1		1 200
Zimbabwe	Zambezi	Kariba South	Reservoir	52.5	750	
<b>Total</b>					<b>4 949.50</b>	<b>14 156.8</b>

Table 5. Zambezi River Basin Major Existing and Projected Hydropower Plants (Composed from Beilfuss.2012<sup>183</sup>, Euroconsult Mott MacDonald.2007<sup>184</sup>, SAPP Case Study.2009<sup>185</sup> and World Bank.2010<sup>186</sup>)

<sup>183</sup>Ibid, p. 18

### 2.3.4 Water Resources Ecosystems based Tourism

Due the presence of favorable ecosystems as a result of water resources, the Zambezi river basin is home to a biological diversity and densest concentration of a variety of flora and fauna that are promoting distinctive eco-tourism activities. The river basin features several of Africa's finest National Parks with the Middle Zambezi Valley being a UNESCO Biosphere Reserve.<sup>187</sup> Among renowned national parks, game reserves, and safari areas are the Kameha Park in Angola, Chobe National Park and Kasane Forest Reserves in Botswana, Caprivi Game Reserve in Namibia, and Luangwa and Kafue National Parks in Zambia.<sup>188</sup> Currently, eight floodplains in the river basin are designated as Wetlands of International Importance and protected under the Ramsar Convention and these are: Barotse Plains, Busanga Plains, Kafue Flats and Lower Zambezi National Park in Zambia; Mana Pools World Heritage Site in Zimbabwe; Elephant Marsh in Malawi; and Zambezi Delta in Mozambique.

These eco-tourism resorts and areas in the river basin not only attract international visitors who earn respective riparian states the much needed foreign currency thus boosting basin-wide socio-economic advancement, but also are important natural heritage treasures for the present and future generations. However, continuing existence the aesthetics of these eco-tourism landmark sites and areas highly depends on the availability of sufficient quantity and quality of water resources. Therefore uncoordinated massive water resources developments and excessive abstractions from

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<sup>184</sup> Euroconsult Mott MacDonald. 2007. *Rapid Assessment - Final Report: Integrated Water Resources Management Strategy for the Zambezi River Basin*. SADC-WD/Zambezi River Authority. p. 53

<sup>185</sup> South African Power Pool (SAPP) Transmission and Trading Case Study. 2009. *The Potential of Regional Power Pool Sector Integration*. Economic Consulting Associates. London, UK. p. 10

<sup>186</sup> World Bank. 2010. *The Zambezi River Basin: A Multi-Sector Investment Opportunities Analysis, Volume 3: State of the Basin*. The World Bank Water Resources Management Africa Region. Washington DC, USA. p. 72

<sup>187</sup> Beilfuss, Richard. 2012. *A Risky Climate for Southern African Hydro – Assessing Hydrological Risks and Consequences for the Zambezi River Basin Dams*. International Rivers. Berkeley CA, USA. p. 8. Assessed at <http://www.internationalrivers.org> on 30 April 2013

<sup>188</sup> Beekman, Hans E., Saayman, Irene. and Hughes, Simon. 2003. *Vulnerability of Water Resources to Environmental Change in Southern Africa: A Report for the Pan African START Secretariat and UNEP*. Council for Scientific and Industrial Research. Stellenbosch, South Africa. p. 23



rivers in the basin disturb flow regimes, water chemistry, sediment levels and water temperature which in turn negatively the fauna and flora.

### **2.3.5 Fish Production**

Fisheries in the Zambezi river basin is widespread and a vital socio-economic activity that is sustaining many livelihoods. A total of 122 fish species inhabit the Zambezi river basin river basin and at least 200 000 tonnes per annum of fish is harvested of which 70 000 tonnes is from Lake Malawi and 50 000 tonnes from the Zambian territory in the river basin.<sup>189</sup> Among almost all the communities in the river basin, fish is the most affordable and easily accessible source of animal protein and also constitutes the fastest growing agricultural commodity with the merchandise being traded across national boundaries and exported internationally.

Although fisheries are normally non-consumptive users of water, they do require particular quantities and seasonal timings of flows in rivers and associated habitat wetlands, lakes, and estuaries such that there must be a tradeoff between other uses and the provision of sufficient quality and quantity of water resources for fish production.<sup>190</sup> Therefore, deliberately provisioning and supply of adequate freshwater and flows essentially at river basin level, is vital for stimulating, sustaining and nourishing fisheries in rivers, lakes, wetlands and linked habitats.

### **2.3.6 Water Transport**

Mainly as a result of poor road infrastructure and the difficult terrain in most parts of the Zambezi river basin, where there are water bodies and along navigable stretches rivers and wetlands, medium ships, boats and canoes is extensively used for travel and trade. For example, water

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<sup>189</sup>Shela, Osborne N. 2000. *Management of Shared River Basins: The Case of the Zambezi River*. Water Policy 2 (2000). p. 69

<sup>190</sup> Dugan, Patrick (Coordinating Lead Editor). *Inland Fisheries and Aquaculture*. In Water for Food, Water for Life: A Comprehensive Assessment of Water management in Agriculture. International Water management Institute. Earthscan. London, UK. p. 460

transport services on Lake Malawi typically handle more than 150 000 tonnes of cargo and 300 000 passengers per annum.<sup>191</sup> However, water transport is reliant on the existence of minimum water levels and navigable passageways to facilitate the movement, berthing and landing of water travel vessels. Thus, development plans and strategies among the Zambezi river basin riparian states are targeting improved waterways expansion and their seamless connectivity to road and railway networks for ease of movement, travel and trade. These plans and strategies include water flow levels regulation, modernizing berthing infrastructure, controlling evasive aquatic weeds and carrying out dredging works along waterways.

### **2.3.7 Water Resources Transfer Schemes**

Several riparian states in the Zambezi river basin and even those beyond the basin have identified potential projects to transfer water resources from the basin or into the basin to meet demands for various purposes in water deficit areas. A water transfer scheme may be intra- or inter- basin such that in the broader sense a river basin water transfer scheme is regarded as a water management tool for facilitating integrated water resources management and generally involves transferring water resources from an area of relative water abundance to an area with scarcity or higher water demand. Current planned for intra-basin water transfer schemes include; the plan by Zimbabwe to withdraw 2 cubic metres per second of water from the Zambezi river at Deka to its city of Bulawayo for industrial and domestic use<sup>192</sup>, and the Botswana National Master Water Plan recommendation to abstract 495 million cubic metres of water per annum from the Chobe/Zambezi rivers by 2022 mainly agricultural irrigation purposes and domestic use in the interior of this extremely water-stressed state<sup>193</sup>.

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<sup>191</sup> Shela, Osborne N. 2000. *Management of Shared River Basins: The Case of the Zambezi River*. Water Policy 2 (2000). p.70

<sup>192</sup> Heyns, Piet. 2002. 2002. *The interbasin transfer of water between SADC countries: A developmental challenge for the future*. In Turton, Anthony and Henwood, Roland (Eds). *Hydropolitics in the Developing World: A Southern African Perspective*. African Water Issues Research Unit (AWIRU), Pretoria, South Africa. p. 163

<sup>193</sup> Republic of Botswana. 2010. *Department of Water Affairs Feasibility Design Study on the Utilisation of the Water Resources of the Chobe/Zambezi River*. Ministry of Energy and Water Resources, WRC. Gaborone, Botswana. p.i

More sophisticated inter-basin transfer schemes include the proposed Joint SADC Into-the Zambezi river basin transfer of the water from the Congo river in the DRC to the Zambezi river headwaters, and the transfer of water from the Lualaba river which is a tributary in the upper reaches of the Congo river to the Zambezi river to replenish possible water exports out of the Zambezi river basin.<sup>194</sup> Another inter-basin transfer is the grand water diversion scheme by South Africa, a non-Zambezi river basin riparian state, known as the Zambezi Aqueduct Project in which it intends to withdraw about 95 cubic metres per second of water from the Zambezi river basin at Kazungula Rapids transferring the water through the territories of Namibia and Botswana to the water scarce Gauteng Province for domestic and industrial uses.<sup>195</sup>

Since a river basin system comprises interrelated components of the same hydrologic cycle, an action of water transfer, abstraction and diversion at any point in the river basin affects and concerns all the riparian states in the basin. Therefore in the interest of equity and the sustainable utilization of the water resources, implementation of any water transfer scheme beseeches river basin-wide participation and consensus of the riparian states ideally through an appropriate river basin regime premised on international water law, SADC regional water law and environmental law.

### **2.3.8 Availability of Data on the Water Resources of the Zambezi River Basin**

Data collection and water resources monitoring in the Zambezi river basin has been going on for a long time, starting in 1896 with the recording of Lake Malawi water levels, followed in 1905 with the gauging of the Kafue river flows near Kafue town and flows of the Zambezi river at Victoria

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<sup>194</sup> Ibid

<sup>195</sup> Heyns, Piet. 2002. 2002. *The interbasin transfer of water between SADC countries: A developmental challenge for the future*. In Turton, Anthony and Henwood, Roland (Eds). *Hydropolitics in the Developing World: A Southern African Perspective*. African Water Issues Research Unit (AWIRU), Pretoria, South Africa. p. 163

Falls in 1907.<sup>196</sup> However, earnest basin-wide hydro-meteorological data gathering and monitoring began in the 1950s, with continuous records per station being kept since then except in Mozambique and Angola where monitoring and recording activities at designated hydrometric stations were disrupted during the civil war periods. In subsequent years, the SADC using the ZACPLAN established a much higher integrity hydro-meteorological monitoring network and record keeping database covering the entire Zambezi river basin.

To date almost all the river basin riparian states have completed comprehensive water resources assessments and these include: Zambia that in 1995 conducted a national water resources assessment based mainly on measured stream flow data as an integral component of the National Water Resources Master Plan; Botswana that in in early 2006 conducted a similar assessment under the National Water Master Plan Review; and Zimbabwe that in October 2006 conducted a comprehensive surface water resources assessment over its entire territory that derived rainfall-runoff relations for un-gauged catchments in most parts of the country.<sup>197</sup> As a result, the quality of available data on water resources among riparian states in the Zambezi river basin is per global standards, considered fair to good for purpose.<sup>198</sup>

Due to availability of quality assessments and data, an initiative of the SADC known as the Rapid Assessment of the Zambezi river basin water resources mainly used preexisting river basin water resources assessments and data sources.<sup>199</sup> The objective of the Rapid Assessment was to produce an updated overview of current water resources availability in the Zambezi river basin, as well as

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<sup>196</sup>Shela, Osborne N. 2000. *Management of shared river basins the case of the Zambezi River*. Water Policy 2 (2000). p. 67

<sup>197</sup> Ibid

<sup>198</sup> Ibid

<sup>199</sup> Euroconsult Mott MacDonald. 2007. *Rapid Assessment - Final Report: Integrated Water Resources Management Strategy for the Zambezi River Basin*. SADC-WD/Zambezi River Authority. p. 26

an assessment of current and future demands on these resources so as to provide a sound basis for development of strategies for effective management of water resources of the basin.<sup>200</sup>

Decisively, the Rapid Assessment Study established that the available surface water resources in Zambezi river basin generated through precipitation and after discounting the natural evapotranspiration losses is 103 224 million cubic metres.<sup>201</sup> Presently, 19.49 percent or 20 126 million cubic metres of the available surface water resources is used for various socio-economic activities with the major consumer being hydropower storage facilities evaporation at 16.46 percent and agricultural irrigation at a modest 1.43 per cent.<sup>202</sup> Further, the Study predicted that by 2025 as a result of increase in population, rapid urbanization, industrialization and implementation of the many development plans among riparian states particularly for hydropower production and agricultural irrigation, the consumption of the Zambezi river basin water resources will double to 42.96 percent or 42 291 million cubic metres.<sup>203</sup>

Further worsening the predicted rise in water resources consumption are the high degree of seasonal and spatial variability in rainfall and the inescapable effect of climate change which is increasing natural evapotranspiration. These factors are making the sustainable development of the Zambezi river basin and utilization of the water resources of concern to all the riparian states in the river basin. Of importance, is that presently known characteristics of the Zambezi river basin and available data on its water resources can inform decision making in negotiating a sound river basin agreement for equitable and reasonable utilization of the water resources to meet demands of the various socio-economic activities and environmental needs in river basin.

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<sup>200</sup>Euroconsult Mott MacDonald. 2007. *Rapid Assessment - Final Report: Integrated Water Resources Management Strategy for the Zambezi River Basin*. SADC-WD/Zambezi River Authority. p. 2

<sup>201</sup> Ibid, p.26

<sup>202</sup> Ibid, p. 24

<sup>203</sup> Ibid, p. 57

## **CHAPTER 3: DEVELOPMENT OF THE EQUITABLE AND REASONABLE UTILISATION PRINCIPLE**

### **3.1 A River Basin as the Natural Unit for Water Resources Utilisation**

Mainly as a consequence of the interlinked components of the hydrological cycle, the water resources occurring in a river basin is considered unitary and therefore a common resource for all the co-riparians. As a result, river basins are increasingly being adopted worldwide as the natural unit for the utilization of the water resources among riparian states. In the SADC region, to ensure compliance to the concept of a river basin as the unit for utilizing the shared water resources, Article 3(1) of the SADC Watercourses Protocol provides that ‘State parties recognize the principle of the unity and coherence of each shared watercourse and in accordance with this principle, undertake to harmonise the water uses in the shared watercourses and to ensure that all necessary interventions are consistent with the sustainable development of all watercourse states.’

However, devising a mechanism for the equitable utilization of the water resources among sovereign states with competing water resources uses and divergent interests is a complex and problematic especially that the occurrence and distribution of the water resources are not uniform among the riparian states. Practical means for deriving equitable rights is for riparian states to cooperate and enter into a river basin agreement premised on the principles of international water law to create a river basin regime. A river basin regime exists when riparian states perform duties and obligations and abide by the procedures prescribed in the agreement, so as to reduce conflict and promote cooperation among themselves in the development and utilisation of the shared river basin water resources. Therefore, Chapter 3 examines the development of the equitable utilisation principle in international customary water law, contemporary international water law and SADC regional water law to identify relevant provisions for application in entering into an optimal river

basin agreement and the creation of a river basin regime for equitable and reasonable utilization of the water resources of an international river basin.

### **3.2. Evolution of the Equitable Utilisation Rule**

At the beginning of the 20<sup>th</sup> Century, as result of increasing awareness among the international community about the limited sum of freshwater resources and attendant sustainable competing uses due increasing population and rapid industrialisation, pressing need arose to find rules for the equitable utilization of the finite water resources. During this era, resolving disputes among riparian states relied on specific treaties law and the general principles of international law. However, the use of treaty law and the general principles of international law were insufficient to deal the rising number of international disputes of increasing sophistication. For these reasons, an overwhelming need arose among international lawyers to develop water resources utilization rules of universal application.

#### **3.2.1 Emergence of the Helsinki Rules**

In the early 1950's, international lawyers concerned with the utilization of water resources in international drainage basins were faced with the crucial question; 'what is the law on the equitable utilization of the water resources in international rivers and drainage basins? At that time there was no consensus on this critical International Relations matter as four competing theories had their advocates, namely:<sup>204</sup>

- a. The theory of absolute territorial sovereignty that advocated for no restraint on a riparian states' utilization of the of water resources flowing within that part of an international drainage basin located in its territory.

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<sup>204</sup> Bourne, Charles B. 1996. *The International Law Association's Contribution to International Water Resources Law*. Natural Resources Journal, 36(3). p. 156

- b. The theory of prior appropriation that advocated that existing utilization of the water resources of an international drainage basin by a riparian state should not be adversely affected by the subsequent utilization of shared water resources by the co-riparians.
- c. The theory of absolute territorial integrity which regarded an international drainage basin as the common property of all the co-riparian and as such advocated that no individual riparian state is allowed to deprive the others their utilization rights and benefits to the water resources of the shared drainage basin.
- d. The theory of limited territorial sovereignty that advocated that each riparian state is at liberty to utilize the water resources flowing in that part of an international drainage basin in its territory as long as such utilization does not prejudice the rights and benefits of the other riparians to the water resources in the drainage basin.

Mainly as consequences of these competing theories and absence of universal customary law on the utilization of water resources of international rivers and drainage basins, an international non-governmental of the name International Law Association (ILA) was prompted on the study of the legal aspects relating the utilization of water resources of international rivers and drainage basins. Thus in 1954, the ILA established a dedicated Rivers Committee to consider the uses of international rivers with the specific aim of clarifying and re-stating the then existing rudimentary water law on the rights of riparian states in utilization the water resources of international rivers and drainage basin. In 1956 the Rivers Committee issued the ‘Dubrovnik Statement’ which dealt with principles upon which to base legal rules concerning the uses of international rivers. In 1958 the Rivers Committee issued the follow-up ‘New York Resolution’ on the principle of reasonable and equitable sharing of the water resources of an international drainage basin. At the Rivers Committee meeting held in Tokyo in 1966, the ‘New York Resolution’ was further discussed and elaborated upon. Finally in 1966, the unrelenting work of the ILA culminated in the issuance of the landmark ‘Helsinki Rules on the Uses of Waters of International Rivers’ (Helsinki



Rules)<sup>205</sup> For the first time in the history of legal attempts to develop water resources allocation rights, the Helsinki Rules under Article IV declared that; ‘Each river basin state is entitled, within its territory, to a reasonable and equitable share in the beneficial uses of the waters of an international drainage basin.’

On the four competing theories on water resources rights, the declaration of the Helsinki Rules unreservedly rejected the theory of absolute territorial sovereignty also known Harmon Doctrine. However, the declaration struck middle ground between the restrictive theory of prior appropriation and the free-for-all theory of absolute territorial sovereignty by reinforcing the theory of limited territorial sovereignty. The equitable and reasonable share rule guarantees fairness in the allocation of water resources rights among riparian states as all the co-riparians states regardless of their stake-holding in the river drainage have some degree of inherent basic right to a share of water resources in it.

Since the ILA is an NGO composed of individual lawyers who serve on its Committees not as representatives of Governments but in their private capacities, the Helsinki Rules were neither signed nor ratified by states, and as such continue to have no binding effect on states. Nonetheless, the authoritative guidance of the declarations issued by the ILA emanates from the expertise and respectability of its legal fraternity. As a result, the equitable and reasonable share declaration of the Helsinki Rules became widely regarded an appropriate norm for allocating water resources rights and was used as a basis for entering into multilateral water agreements or followed by states as state practice thus evolving into customary international water law.

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<sup>205</sup> International Law Association. 1967. *Helsinki Rules on the Uses of the Waters of International Rivers - Adopted by the International Law Association at the fifty-second conference, held at Helsinki in August 1966*. International Law Association. London, UK

### 3.2.2 Development of the UN Watercourses Convention

Due to the absence legal rules of universal applicability on the utilization of water resources of international river basins, on 8 December 1970 the United Nations (UN) General Assembly adopted Resolution 2669 (XXV) on the ‘Progressive Development and Codification of the Rules of International Law Relating to International Watercourses’.<sup>206</sup> The Resolution noted the legal challenges arising from sharing of the water resources of international watercourses and the fact that such utilization was still based on the rules of customary water law. Resolution 2669 therefore tasked the International Law Commission (ILC) to ‘take up the study of the law on the non-navigational uses of international waters with a view to its progressive development and codification.’ Unlike the ILA which is only an international NGO, the ILC is a UN body and comprises legal experts nominated by member states and elected by the UN General Assembly and as such its declarations and resolutions are inherently international law.

Pursuant to Resolution 2669, early in 1971 the ILC started to work on a discourse concerning ‘the equitable and reasonable of the water resources of international watercourses’. The task proved to be very complex and took 23 years, 5 rapporteurs and 15 reports before preliminary drafts on the subject were agreed upon. In 1994 the ILC finally submitted a Draft Convention to the UN General Assembly for further consideration by UN Working Group. After amendment, on 21 May 1977 the UN General Assembly passed Resolution 51/229 that adopted the ‘Convention on the Law of the Non-Navigational Uses of International Watercourses (UN Watercourses Convention)’.<sup>207</sup> Thereupon, the adopted UN Watercourses Convention was opened for signature to member states and the process remained 20 May 2000 when it closed with only 16 states having signed it. Although the process of signature is closed, member states are eligible at any

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<sup>206</sup> Salman, Salman M. A. 2007. *The United Nations Watercourses Convention Ten Years Later: Why Has its Entry into Force Proven Difficult?* International Water Resources Association. Water International, 32(1). p.2

<sup>207</sup> United Nations. 2005. *Convention on the Law of the Non-Navigational Uses of International Watercourses Adopted by the General Assembly of the United Nations on 21 May 1997*. General Assembly 51/229, annex, Official Records of the General Assembly, Fifty-first Session, Supplement No. 49 (A/51/49)

time to become party to the Convention through use of constitutional processes in their countries to approve or acceded to it.

Of significance is that as drafting of the UN Watercourses Convention relied mainly the work ILC and therefore Helsinki Rules, the Convention embraced ‘the equitable and reasonable share in the beneficial uses of the waters of an international drainage basin’ declaration, restating it as its cornerstone principle in Part II Article 5(1) as; ‘Watercourse states shall in their respective territories utilize an international watercourse in an equitable and reasonable’. Although to date the UN Watercourses Convention still needs the necessary number of international instruments of ratification, approval, acceptance or accession to bring it into force, its principle of equitable and reasonable utilization of the water resources of international river basins is a norm of considerable global influence which is routinely used in concluding international water treaties/protocols and has been endorsed by prominent universal entities including the International Court of Justice (ICJ), the World Water Council and the World Commission on Dams; thus the principle is essentially contemporary international water law.

### **3.2.3. Preeminence of the Equitable Utilisation Principle as International Water law**

Barely 4 months after the adoption of the UN Watercourses Convention, the equitable and reasonable utilization principle gained preeminence as international water law when the ICJ referred to the UN Watercourses Convention and applied the principle in passing judgment on the Gabčíkovo-Nagymaros Project Case (ICJ Reports 1997, Paragraph 85).<sup>208</sup> In summary, the Gabčíkovo-Nagymaros Project Case had arisen out of a Danube River water treaty signed in 1987 between Hungary and Czechoslovakia (in 1993 the Slovak Republic become the successor state) concerning the construction of a ‘system of locks’ on the international watercourse for the production of hydroelectricity, improved navigation and protection from flooding and to be

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<sup>208</sup>International Court of Justice (ICJ). 1997. *Gabčíkovo-Nagymaros Project (Hungary/Slovakia), Judgement, ICJ Reports 1997, General List No. 92, Judgement of 25 September 1997. p.7*

operated jointly by the two state parties. Due to growing domestic ecological concern and criticism the Hungarian government suspended works on its part of the project and in 1992 terminated the treaty. Following termination of the treaty Czechoslovakia as an alternative to the original project initiated the ‘unilateral’ diversion of that part of the Danube River on its territory, known as Variant C which resulted in a major reduction in the flow the Danube River water in downstream in Hungary.

A dispute arose and the ICJ was asked to decide on the basis of the treaty and rules and principles of general international law, as well as other treaties as the Court would find applicable, whether Czechoslovakia was among other matters, entitled to proceed with Variant C.<sup>209</sup> On the basis of the UN Watercourses Convention and its principle of equitable and reasonable utilisation, the ICJ found that Czechoslovakia had acted unlawfully in depriving Hungary of its rightful ‘equitable and reasonable share’ of the natural resources of water of the Danube River by putting Variant C into operation.<sup>210</sup> Further, by endorsing the principle of equitable and reasonable utilization the ICJ confirmed the perfect equality of riparian states in the uses of the whole watercourse, and the exclusion of any preferential privilege of one riparian state in relation to the others.<sup>211</sup> Significantly, the judicial decision of the ICJ on the Gabčíkovo-Nagymaros Project Case affirmed the supremacy of the equitable and reasonable utilization principle in international water law.

### **3.2.4 Emergence of the SADC Watercourses Protocol**

The history of the SADC regional water law on the utilisation of water resources of shared river basins dates back to 1993 whilst implementing one of the projects of the basin-wide Action Plan for the Environmentally Sound Management of the Common Zambezi River System

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<sup>209</sup> Ibid, pp. 11-12

<sup>210</sup> Ibid, p. 56

<sup>211</sup> Salman, Salman. M. A. 2007. *The United Nations Watercourses Convention Ten Years Later: Why Has its Entry into Force Proven Difficult?*. International Water Resources Association. Water International, 32(1). p. 12

(ZACPLAN).<sup>212</sup> The ZACPLAN had been formally adopted in 1987 through an international agreement by then five politically independent and allied Zambezi river basin riparian states, namely, Botswana, Mozambique, Tanzania, Zambia and Zimbabwe and comprised 19 projects known as the ZACPROs with ZACPRO 2 involving the compiling of up-to-date national and international laws on the utilization and the protection of Zambezi river basin water resources and the environment.<sup>213</sup> Whilst implementing ZACPRO 2 and which action plan also involved negotiating a Convention to establish the Zambezi River Basin Commission (ZAMCOM) for promoting the sustainable and equitable utilization of water resources of the river basin, the SADC felt that, instead of developing a single instrument for managing only the Zambezi river basin water resources, it should rather first develop a region legal framework on which all river basin instruments in the SADC region were to be based..<sup>214</sup> As a result of this decision, a process was initiated to formulate SADC regional water law and which resulted in the adoption in 1995 of the ‘Protocol on Shared Watercourse Systems in the Southern Development Community’ (SADC Protocol on Shared Watercourse Systems) by the at that time 10 SADC member states, namely; Botswana, Lesotho, Malawi, Mozambique, Namibia, South Africa, Swaziland, Tanzania, Zambia and Zimbabwe.<sup>215</sup>

Drafting of the SADC Protocol on Shared Watercourse Systems was chiefly influenced by the Helsinki Rules and recognized consensus of the international community on a number of concepts and principles on the common and environmentally sound development of water resources of international river basins. Of notice is recognition in the Preamble of the SADC Watercourses

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<sup>212</sup> Ramoeli, Phera. *The SADC Protocol on Shared Watercourses: History and Current Status*. 2002. In Turton, Anthony and Henwood, Roland (Eds). *Hydropolitics in the Developing World: A Southern Africa Perspective*. Africa Water Issues Research Unit (AWIRU). Pretoria, South Africa. p. 106

<sup>213</sup> ZACPLAN. 1987. *The Agreement on the Action Plan for the Environmentally Sound Management of the Common Zambezi River System Signed on 28 May 1987*. At [http://www.fao.org/docrep/w7414b/w7414b0j.htm#annex i](http://www.fao.org/docrep/w7414b/w7414b0j.htm#annex_i). Accessed on 30 September 2013

<sup>214</sup> Ramoeli, Phera. *The SADC Protocol on Shared Watercourses: History and Current Status*. 2002. In Turton, Anthony and Henwood, Roland (Eds). *Hydropolitics in the Developing World: A Southern Africa Perspective*. Africa Water Issues Research Unit (AWIRU). Pretoria, South Africa. p. 106

<sup>215</sup> Southern African Development Community. 1995. *Protocol on Shared Watercourse Systems in the Southern African Development Community (SADC) Region*. SADC. Gaborone, Botswana

Protocol of the development and codification of international water law initiated by the Helsinki Rules and the subsequent adoption of the UN Watercourses Protocol building on the Helsinki Rules. Thus, Article 2 of the SADC Protocol on Shared Watercourse Systems provides that ‘Member states undertake to respect and apply the existing rules of general or customary international relating to the utilization and management of the resources of shared watercourse systems and, in particular, to respect and abide by the principles of community interests in the equitable utilization of those systems and related resources.’

Following advances in international water law, a need arose to revise the SADC Protocol on Shared Watercourse Systems. Two main factors that prompted the revision were: first, some SADC member states had reservations on the contents of the Protocol and as such the Heads of State and Government Summit approved that these concerns be addressed; and secondly, the adoption of the UN Watercourses Convention in 1977 and the subsequent global influence of its equitable and reasonable utilization principle. During the revision process, SADC member states fully used the opportunity to align the SADC Protocol on Shared Watercourse Systems with contemporary international water law as espoused by the UN Watercourses Convention.. The re-aligned version appropriately renamed the ‘Revised Protocol on Shared Watercourses’ (SADC Watercourses Protocol) was in 2000 re-adopted with the recast objective of ‘advancing the equitable and reasonable utilization of shared water resources and facilitating the establishment of river basin water agreements and associated institutions to develop and manage international watercourses and in the region.’<sup>216</sup>

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<sup>216</sup> Southern African Development Community. 2000. *Revised Protocol on Shared Watercourses in the Southern Development Community (SADC)*. SADC. Gaborone, Botswana. p. 2

### **3.3 Equitable and Reasonable Utilisation as the Dominant Principle**

Examination of the development of the equitable utilisation rule has shown that the dominant principle in the Helsinki Rules as international customary water law, UN Watercourses Convention as international water law and SADC Watercourses Protocol as SADC regional water law is the principle of equitable and reasonable utilisation. Further, it has been shown that the primary aim of this dominant principle is creating rights or entitlements among riparian states to use the water resources of an international drainage or river basin. Being the dominant principle, it may be assumed to a greater extent that all the other principles in international customary water law, international water law and SADC regional water law are meant to support the process of applying or implementing the principle of equitable and reasonable utilisation. Being a dominant principle, all mechanisms or instruments for the equitable and reasonable utilisation of water resources of international river basins should formally proclaim this principle. In the absence of such formal proclamation, international customary water law entitles each riparian state within the confines of its territory to a reasonable and equitable share in the beneficial uses of the water resources of an international drainage basin.

Although all the principles and provisions in the UN Watercourses Convention and the SADC Watercourses Protocol relate to the equitable and reasonable utilisation principle, for purposes of this case study and to narrow the scope for focused analysis, only those provisions in the UN Watercourses Convention and SADC Watercourses Protocol of direct relevance in the application of the principle of the equitable and reasonable utilisation in entering into or concluding an optimal river basin agreement are selected for analysis in the following passages.

### 3.4 Provisions on Entitlement or the Creating of Basic Rights among Riparian States

The provisions relating to the dominant principle of equitable and reasonable utilisation of the Helsinki Rules, UN Watercourses Convention and SADC Watercourses Protocol are given in table 6. A central theme in these provisions is that of entitlement or the creating of a basic right for each riparian state to use the water resources of an international river basin. However, whilst bestowing the basic right on each riparian state to use the water resources of an international river basin, these provisions at the same time impose a duty that such use should be equitable and reasonable in relation to the uses of the other riparian states in the river basin sharing the same water resources. This means that the right upon each riparian state to utilize the water resources situated within its territory in an equitable and reasonable manner has a correlated obligation of ensuring that like rights are enjoyed by all the riparian states sharing the river basin.

<b>Helsinki Rules</b>	<b>UN Watercourses Convention</b>	<b>SADC Watercourses Protocol</b>
<p><i>Article IV:</i> Each basin state is entitled, within its territory, to a reasonable and equitable share in the beneficial uses of the waters of an international drainage basin.</p>	<p><i>Article 5(1):</i> Watercourse states shall in their respective territories utilize an international watercourse in an equitable and reasonable manner. In particular, an international watercourse shall be used and developed by watercourse states with a view to attaining optimal and sustainable utilization thereof and benefits therefrom, taking into account the interests of the watercourse states concerned, consistent with adequate protection of the watercourse</p>	<p><i>Article 3(7) (a):</i> Watercourse states shall in their respective territories utilize a shared watercourse in an equitable and reasonable manner. In particular, a shared watercourse shall be used and developed by watercourse states with a view to attaining optimal and sustainable utilization thereof and benefits therefrom, taking into account the interests of the watercourse states concerned, consistent with adequate protection of the watercourse for the benefit of current and future generations.</p>

*Table 6. Provisions for Creating Basic Rights among Riparian States*

Of significance is that the these alike provisions do not define equitable and reasonable utilisation by referring to a particular riparian state' interests, advantages or socio-economic activities in the river basin, but only takes into consideration the use by an individual riparian state in relation to



the other riparian states' uses of the common river basin water resources. In doing so, these provisions invalidate the prevalent claims among riparian states for direct allocation of higher or privileged rights based on their perceived advantages in the river basin due to the size of their territory forming part of the river basin area or amount of precipitation they contribute to the water resources in the basin.

Essentially, equitable and reasonable utilisation is concerned with fairness in the use of the shared water resources by all the riparian states in the river basin, regardless of their ability or capacity to develop or utilise or access the shared water resources. Apparently, the aim is to distribute the water resources of an international river basin in such a way as to satisfy in the best manner possible the competing water resources utilization interests of the co-riparians, and to attain maximum beneficial and minimum detrimental effects for all the stakeholders in the river basin, including the environment and future generations.

### **3.4.1 Significance of Referring to both Utilisation and Benefits in the Provisions**

The reference to both the terms 'utilization' and 'benefits' in these use-oriented provisions suggests that a right can either be in form of access to a specific quantity of the water resources or as a share in the benefits arising from use of the watercourse resources. Obviously, it is relatively easier to allocate quantitative rights, as these are tangible as opposed to the sharing of benefits as these are harder to quantify and are often latent. Though it's still debatable and not clear as to what constitutes these benefits, it has been argued that benefits from cooperation over a shared river basin may be divided into four different categories: 'environmental', 'economic', 'political', and catalytic.'<sup>217</sup> The assumption that follows then is that a well-managed shared watercourse will provide enhanced values in terms of Security, Economic Development, and the Environment;

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<sup>217</sup> Phillips, David et al. 2006. *Global Development Studies No. 4: Trans-boundary Water Co-operation as a Tool for Conflict Prevention and Broader Benefit Sharing*. Regeringskansliet, Ministry of Foreign Affairs Sweden. p. 29

each which can become catalytic in its own right.<sup>218</sup> From experiences in the international river basins of the SADC region, apparent benefits accruing to the riparian states include the sustainable utilization of the water resources, conservation of the river basin eco-systems, basin-wide socio-economic advancement and regional integration.

### **3.4.2 Consequence of the Principle on State Sovereignty**

In international law, sovereign states possess inherent autonomous jurisdiction over the utilization of the natural resources occurring within their territorial boundaries and political domains. However, when the issue is the equitable utilization of the water resources of an international river basin the principle of equitable and reasonable utilization limits the freedom of exercising state sovereignty as no individual riparian state is permitted to unilaterally exercise independent sovereignty in its use of the water resources without taking into consideration the effects of such use on the rights of co-riparians. The limitation on territorial sovereignty practically means that there is shared sovereignty among the riparian states. The restriction on the freedom to exercise state sovereignty also validates the general legal principle of ‘sic utere tuo alienum non laedas’ i.e. in this context the duty upon each riparian state to utilize the water resources of an international river basin in such a manner as not to disadvantage the rights of the co-riparians.

### **3.4.3 Transboundary Cooperation in the Exercise of Sovereignty**

To attain optimal equitable and reasonable utilisation of the water resources and protection of the international watercourse among riparian states, Article 8(1) of the UN Watercourses Convention provides that ‘Watercourse states shall cooperate on the basis of sovereign equality, territorial integrity, mutual benefit and good faith in order to attain optimal utilization and adequate protection of an international watercourse.’ Cooperation based on sovereign equality and territorial integrity means that there is transboundary cooperation in the exercise sovereignty

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<sup>218</sup> Ibid, p. 31

among the co-riparians. In practice cooperation on the basis of sovereign equality, territorial integrity, mutual benefit and good faith in the sustainable development of the international river basin and equitable utilization of its water resources is accepting that absolute gains or group-interests of the co-riparians are more important and above the relative gains or self-interests of individual riparian states.

### **3.5 Provisions for Determining Equitable Rights and the Associated Guiding Factors**

Shared sovereignty does not mean equality of rights among riparian states or the equal sharing of the water resources in the river basin, but rather that a right due to each riparian is relative to those of co-riparians, and as such must be determined. Determining a right due to each riparian state is the actual application of the principle of equitable and reasonable utilisation and which process involves considering all the relevant factors and circumstances relating to the water resources in the river basin to arrive at a decision on the right due to a riparian state.

Given in table 7, are the provisions of the Helsinki Rules, UN Watercourses Convention and SADC Watercourses Protocol and associated lists of factors for consideration in addition to other relevant factors and circumstances in arriving at a decision in determining equitable rights due to the riparian states for the equitable and reasonable utilisation of the water resources of an international drainage or river basin. Whereas the Helsinki Rules has 11 guiding factors, these are condensed into 7 factors in the UN Watercourses Convention and SADC Watercourses Protocol. Functionally, these guiding factors can be grouped into two loose categories, namely: the scientific category comprising geographic, hydrologic, climatic, ecologic, environment and eco-conservation factors; and the socio-economic category comprising present and predicted population in the river basin, current and future human activities dependent on the water resources, and present and projected uses of the river basin water resources. An issue central in

the process is that of fairness with the outcome of achieving equity in the rights due among co-riparians of often disparate interests, needs and uses on the shared water resources.

The non-exhaustive nature of the guiding factors to include any other relevant factors and circumstances is for accommodating all those unusual circumstances and interests among the riparian states and characteristics particular to a river basin. Since the process involves taking into consideration an unlimited array of factors and circumstances, decision making to arrive at equitable rights is complex with a no 'one fits all formula.'

<b>Helsinki Rules</b>	<b>UN Watercourses Convention</b>	<b>SADC Watercourses Protocol</b>
<p><i>Article V:</i> I. What is a reasonable and equitable share within the meaning of article IV to be determined in the light of all the relevant factors in each particular case. II. Relevant factors which are to be considered include, but are not limited to:</p>	<p><i>Article 6:</i> 1. Utilisation of an international watercourse in an equitable and reasonable manner within the meaning of Article 5 requires taking into account all relevant factors and circumstances, including:</p>	<p><i>Article 3(8):</i> a. Utilisation of a shared watercourse in an equitable and reasonable manner within the meaning of Article 3 (7)(a) and (b) requires taking into account all relevant factors and circumstances including:</p>
(a) The geography of the basin, including in particular the extent of the drainage area in the territory of each basin state;	(a) Geographic, hydrographic, hydrological, climatic, ecological and other factors of natural character;	(i) Geographical, hydrographical, hydrological, climatic, ecological and other factors of a natural character;
(b) The hydrology of the basin, including in particular the extent of the drainage area in the territory of each basin state;	(b) The social and economic needs of the watercourse states concerned;	(iii) The social, economic and environmental needs of the watercourse states concerned;
(c) The climate affecting the basin;	(c) The population dependent on the watercourse in each watercourse state;	(iv) The population dependent on the shared watercourse in each watercourse state;
(d) The past utilization of the waters of the basin, including in particular existing utilization;	(d) The effects of the use or uses of the watercourses in one watercourse state on the other watercourse states.	(v) The effects of the use or uses of a shared watercourse in one watercourse state on the other watercourse states;
(e) The economic and social needs of each basin state;	(e) Existing and potential uses of the watercourse.	(vi) Existing and potential uses of the watercourse;
(f) The population dependent on the waters of the basin in each basin state;	(f) Conservation, protection, development and economy of the use of water resources of the watercourse and costs of measures taken to that effect.	(vii) Conservation, protection, development and economy of use of water resources of the shared watercourse and costs of measures taken to that effect; and
(g) The comparative costs of alternative means of satisfying the economic and social needs of each basin state;	(g) The availability of alternatives, of comparable value, to a particular planned or existing use.	(viii) The availability of alternatives, comparable value, to a particular planned or existing use.
(h) The availability of other resources;		
(i) The avoidance of unnecessary waste in the utilization of waters of the basin;		
(j) The practicability of compensation to one or more of the co-basin states as a means of adjusting conflicts among uses; and		
(k) The degree to which the needs of a basin state may be satisfied, without causing substantial injury to a co-basin state.		

*Table 7. Provisions for Determining Equitable Rights and the Associated Guiding Factors*

### 3.5.1 Importance of Impartiality in Decision Making for Determining Equitable Rights

Due to the large number of factors, circumstances and interests for consideration in the decision making process of determining equitable rights, the Helsinki Rules, UN Watercourses Convention and SADC Watercourses Protocol as given in table 7, all provide that ‘the weight to be given to each factor is to be determined by its importance in comparison with that of other relevant factors, and that in determining what is reasonable and equitable utilization all relevant factors are to be considered together and conclusion reached on the basis of the whole.

<b>Helsinki Rules</b>	<b>UN Watercourses Convention</b>	<b>SADC Watercourses Protocol</b>
<p><i>Article V:</i>            III. The weight to be given to each factor is to be determined by its importance in comparison with that of other relevant factors. In determining what is reasonable and equitable share, all relevant factors are to be considered together and conclusion reached on the basis of the whole.</p>	<p><i>Article 6:</i>            3. The weight to be given to each factor is to be determined by its importance in comparison with that of other relevant factors. In determining what is a reasonable and equitable use, all relevant factors are to be considered together and a conclusion reached on the basis of the whole.</p>	<p><i>Article 3(8):</i>            b. The weight to be given to each factor is to be determined by its importance in comparison with that of other relevant factors. In determining what is an equitable and reasonable use, all relevant factors are to be considered together and a conclusion reached on the basis of the whole.</p>

Table 8. Provisions for Ensuring Impartiality in the Decision Making for Determining Rights

### 3.6 Provisions for Entering into River Basin Agreements to Create River Basin Regimes

The process of determining in an equitable manner the right due to each riparian state requires complementation by other procedural rules, chief among them, the duty for river basin riparian states to cooperate. Primary instruments for cooperation in the equitable and reasonable utilisation of the water resources among riparian states involve entering into river basin agreements to create river basin regimes. Provisions of both the UN Watercourses Convention and SADC Watercourses Protocol for entering into river basin agreements are given in table 9. Both these provisions are flexible and give the riparian states sufficient scope and latitude to

consider the unique characteristics of the river basin and the various uses of its water resources in negotiating and concluding river basin specific agreements.

Essentially, a river basin regime exists when the co-riparians observe the rights, principles, provisions and procedures agreed upon and as enshrined in the river basin agreement. From an international relations perspective, the advantage of enshrining the agreed upon rights, principles, provisions and procedures into a river basin agreement is that it facilitates universal interpretation the contents, monitoring of compliance to the contents, and enforcement of the duties and obligations, particularly with regard to the fundamental rule of both international customary law and international law of ‘pacta sunt servanda’, which demands of states to abide by the provisions of an agreement that freely enter into and with violations accordingly dealt with under the rules of state responsibility.

<b>UN Watercourses Convention</b>	<b>SADC Watercourses Protocol</b>
<p><i>Article 3(3):</i> Watercourse states may enter into one or more agreements, hereinafter referred to as ‘watercourse agreements’, which apply and adjust the provisions of the present Convention to the characteristics and uses of a particular international watercourse or part thereof.</p>	<p><i>Article 6(3):</i> Watercourse states may enter into agreements, which may apply the provisions of this Protocol to the characteristics and uses of a particular shared watercourse or part thereof.</p>

*Table 9. Provisions for Entering into River Basin Agreements to Create River Basin Regimes*

### **3.7. Provisions on the Defining of the Water Resources in River Basin Agreements**

Table 10 gives the two provisions of the UN Watercourses Convention and SADC Watercourses Protocol most relevant in the defining of the water resources under consideration in a river basin specific agreement. Article 2(1) the UN the UN Watercourses Convention and Article 1 of the SADC Watercourses Protocol gives meanings of the terms ‘watercourse’ and ‘water resources’ for purposes of clarifying their connotation in relation to the objectives of the Convention and

Protocol. Being a legal document for interpretation and recourse to in case of an arising disputes among riparian states, a river basin agreement should in the context of its objectives, explicitly explain in graphical, geographical and hydrological terms meanings of the terms ‘river basin’ or ‘drainage basin’ or ‘watercourse’ etc. as well as that of ‘water resources’ under its consideration.

Most fundamental are that Article 3(4) of the UN the UN Watercourses Convention and Article 6(4) of the SADC Watercourses Protocol both require that a river basin agreement defines the water resources to which it applies. In practice, defining the water resources in an agreement means pinpointing the water resources and specifying those points, parts or stretches of the watercourse system on which the agreement is to apply.

<b>UN Watercourses Convention</b>	<b>SADC Watercourses Protocol</b>
<p><i>Article 2(a):</i> For the purpose of the present Convention ‘Watercourse’ means a system of surface and ground waters consisting constituting by virtue of their physical relationship a unitary whole flowing normally into a common terminus.</p> <p><i>Article 3(4):</i> Where a watercourse agreement is concluded between two or more watercourse states, it shall define the waters to which it applies. Such an agreement may be entered into with respect to an entire international watercourse or any part thereof or a particular project, programme or use except insofar as the agreement adversely affects, to a significant extent, the use by one or more other watercourse states of the waters of the watercourse, without express consent.</p>	<p><i>Article 1:</i> For the purpose of this Protocol Convention ‘Watercourse’ means a system of surface and ground waters consisting constituting by virtue of their physical relationship a unitary whole flowing normally into a common terminus such as the sea, lake or aquifer.</p> <p><i>Article 6(4):</i> Where a watercourse agreement is concluded between two or more watercourse states, it shall define the waters to which it applies. Such an agreement may be entered into with respect an entire shared watercourse or nay part thereof or a particular project, programme or use except insofar as the agreement adversely affects, to a significant extent, the use by one or more other watercourse states of the waters of the watercourse, without express consent.</p>

*Table 10. Provisions on the Defining of the Water Resources in a River Basin Agreement*



### **3.7.1 Realistic Method for Defining the Water Resources**

Where the characteristics of the river basin are known and there is reliable data on the water resources of the river basin, as is the case for the Zambezi river basin, defining the water resources in a river basin agreement should involve the diligent process of identifying and specifying the following river basin geographic and hydrologic aspects:

- a. Rivers and tributaries contributing to the water resources under consideration.
- b. Size(s) of the sub-basin(s) of each riparian comprising part of the river basin.
- c. Estimates of precipitations contributed to the river basin by each riparian state.
- d. Details on flow regimes in the rivers, tributaries and sub-basins under consideration.
- e. Points, stretches and parts in the river basin system with sufficient flow regimes from which to extract or draw the water resources from the river basin.

Defining the water resources using the above geographic and hydrologic river basin data and information that is verifiable makes the process of determining rights transparent and renders credibility to the resulting river basin agreement and river basin regime. Further it ensures that all the riparian regardless of the size of territory in the river basin or contribution of precipitation to the river basin are entitled to a basic in the use of the shared water resources. Most importantly, defining the water resources using such a method that involves quantifiable data and information ensures that any utilisation and abstractions of the water resources from the river basin, regardless of the uses or geographic destination of such water resources are as per allocated rights, sustainable and conform to the provisions on equitable and reasonable utilisation of the UN Watercourses Convention and SADC Watercourses Protocol.

### **3.7.2 Justification for Defining the Water Resources**

Despite the water resources of an international river basin being considered unitary and therefore common property for all the co-riparians, occurrence and distribution of the water resources within the river basin and among riparian states is naturally uneven. Additionally, as a river basin comprises interrelated components of the same hydrologic cycle, any action of abstraction, diversion and transfer of the water resources at any point in the river basin system affects and concerns all the riparian states in the river basin. Furthermore, the resources of water in the river basin are naturally highly mobile in space and even time. For these reasons, it is important that aspects on the unitary and common property nature of the water resources in the river basin, the uneven occurrence and distribution of the water resources among riparian states, the interconnectedness of the hydrologic cycle in of the river basin and mobility of the water resources in space and time are accounted for in the processes of determining rights and the exercising those rights by riparian states.

### **3.8 Provisions on the Establishing of Joint River Basin Institutions**

To facilitate river basin-wide cooperation in monitoring and enforcing compliance in the performance of duties and obligations agreed upon in a river basin agreement, the UN Watercourses Convention encourages riparian states to establish appropriate joint river basin institutions while the SADC Watercourses Protocol requires riparian states establish these joint river basin institutions, as given in table 11. However, the UN Watercourses Convention and the SADC Watercourses Protocol are both flexible leaving it to respective riparian states to determine the specific procedural rules and functions of the of the joint river basin institutions in the light of local experiences and nature circumstances in the river basin.

UN Watercourses Convention	SADC Watercourses Protocol
<p><i>Article 8:</i> 2. In determining the manner of cooperation, watercourse states may consider the establishment of joint mechanisms or commissions, as deemed necessary by them, to facilitate cooperation on relevant measures and procedures in the light of the experience gained through cooperation in existing joint mechanisms and commissions in various regions.</p>	<p><i>Article 5(3):</i> <i>a.</i> Watercourse states shall undertake to establish appropriate institutions such as watercourse commissions, water authorities or boards as may be determined. <i>b.</i> The responsibilities of such institutions shall be determined by the nature of their objectives which must be in conformity with the principles set out in this Protocol.</p>

*Table 11. Provisions on the Establishing of Joint River Basin Institutions*

### **3.9 UN Watercourses Convention and SADC Watercourses Protocol as Frameworks**

The advisory nature and approach in the provisions of the UN Watercourses Convention and SADC Watercourses Protocol demonstrates and confirms that they are framework treaty law. This is so as they both establishes the process and factors for consideration in the application of the substantive principle of equitable and reasonable utilisation, outlines the objectives and generally prescribes procedures and mechanisms for cooperation among state parties without imposing mandatory obligations as these are left to the state parties to negotiate and agree among themselves. Thus, in applying the provisions on equitable and reasonable utilisation of the frameworks whilst entering into river basin agreements, riparian states have the freedom and sufficient scope to additionally consider other interest among themselves and exceptional characteristics in the river basins to determine appropriate and correlative rights to the shared water resources. Unlike a framework treaty, a river basin agreement imposes binding duties and obligations on the riparian states party to it and which must be performed in good faith, and violations whose violations are specially dealt with under the rules of state responsibility.

### **3.10 Conspicuous Influences of the Equitable Utilisation Principle in the SADC**

#### **3.10.1 Current Status of the Principle in the SADC Region**

Although to date South Africa and Namibia are the only SADC member states that have ratified the UN Watercourses Convention and thus directly endorse the principle of equitable and reasonable utilization as law of international water law, the other SADC member states for not opposing the adoption of the UN Watercourses Convention at the 1977 UN General Assembly, indirectly expressed consent to this fundamental principle. However, the unanimous ratification of the SADC Watercourses Protocol which is a replica of the UN Watercourses Protocol by all SADC member states, effectively means that they endorse the principle of equitable and reasonable utilization as international water law and are all bound by it.

#### **3.10.2 Ubiquitous Usage of the Principle in the SADC Region**

The importance and influence of the principle of equitable and reasonable utilization in the SADC region as international water law, is most accurately ascertained by the overarching influence of the SADC Watercourses Protocol and the ubiquitous usage of the principle as the basis for negotiating river basin agreements and creation of associated river basin regimes. As a consequence, 9 river basin agreements premised on the principle of equitable and reasonable utilization been entered into creating a corresponding number of river basin regimes, described in table 12.<sup>219</sup> A renowned and perhaps most studied of these river basin agreements of the SADC region, is the ZAMCOM agreement that created the Zambezi river basin regime.

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<sup>219</sup>Southern African Development Community. *SADC River Basin Organisations*. 2011. SADC-WD. At <http://www.icp-confluence-sadc.org/>. Accessed on 05 September 2011

<b>Riparian States</b>	<b>River Basin Agreement and Water Regime</b>	<b>Water Regime Objective(s)</b>
South Africa, Mozambique, Swaziland	Inco-Maputo Tripartite Technical Committee	Managing the water flows of the Inkomati and Maputo rivers, specifically during drought and flood periods, and protecting and developing these water resources
Cameroon, Central African Republic, DRC, Congo Republic	International Commission of Congo-Oubangi-Sangha (CICOS)	Improving communication amongst riparian states and promoting integrated water resources management
Namibia and Angola	Kunene Permanent Joint Technical Commission (PJTC)	Facilitating best joint allocation and utilization on equitable basis the shared water resources, with a view to achieving optimum benefits for riparian states within limits of the available quantity of water resources
Burundi, DRC, Tanzania, Zambia	Lake Tanganyika Authority (LTA)	Promoting regional cooperation for socio-economic development and sustainable management of the natural resources of the Lake Tanganyika basin
Botswana, South Africa Zimbabwe, Mozambique	Limpopo Water Course Commission (LIMCOM)	Fostering joint sustainable management of the diverse water resources and protected areas of the river basin catchment
Botswana, Lesotho, Namibia, South Africa	Orange-Senqu Commission (ORASECOM)	Serving as technical advisor to the riparian states on the development, utilization and conservation of the water resources of the river basin system
Angola, Botswana, Namibia	Permanent Okavango River Basin Water Commission (OKACOM)	Managing the water resources of the fragile Okavango river system through approaches based on equitable allocation, sustainable utilisation, sound environmental practices and the sharing of benefits
Mozambique, Tanzania	Ruvuma Joint Water Commission (Ruvuma JWC)	Strengthening river basin management institutions to support the joint integrated water resources management and development for contributing to economic prosperity, good neighbourliness and peaceful cooperation
Angola, Botswana, Malawi, Mozambique, Namibia, Tanzania, Zambia, Zimbabwe	Zambezi Watercourse Commission (ZAMCOM)	Promoting the equitable and reasonable utilization of the Zambezi watercourse resources as well as their efficient and sustainable development

*Table 12. River Basin Agreements and Regimes in the SADC Region*

### 3.10.3 Domesticating of the Equitable Utilisation Principle among SADC Member States

International cooperation in the development of shared water resources, requires that national policies take into consideration the right of each state sharing the resources to equitably utilize such resources as a means for promoting cooperation and as such a concerted and sustained effort is required to strengthen international water law as a means of placing cooperation among states on a firmer basis.<sup>220</sup> However, domesticating the principle of equitable and reasonable utilization of international water in individual nation states depends on degrees of compatibility among international water law, SADC regional water law and national water laws, with enforcement at the national level wholly reliant on receptive national legislation.

Thus, the adoption of the SADC Watercourses Protocol and the equitable and reasonable utilization principle as SADC regional water law provided a platform for formulating the SADC Regional Water Policy,<sup>221</sup> SADC Regional Water Strategy,<sup>222</sup> and Southern African Vision for Water, Life and Environment.<sup>223</sup> Although these three regional policy documents are not SADC regional law and therefore non-binding on member states, the documents are providing an important means for domesticating the principle of equitable and reasonable utilization at national levels among SADC member states. For example, the SADC Regional Water Policy just like the other sister policy documents, is a means for domesticating the principle of equitable and reasonable utilization among nation states as it advocates for use of the shared water resources as a means for peace-building and encourages SADC member states to participate and cooperate in the planning, development, management, utilisation and protection of international watercourses in the region.

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<sup>220</sup> United Nations. 1977. *Report of the United Nations Water Conference*. Del Plata. Mar del Plata, Argentina, 14-17 March 1977

<sup>221</sup> Southern African Development Community. 2005. *SADC Regional Water Policy*. SADC. Gaborone, Botswana

<sup>222</sup> Southern African Development Community. 2006. *SADC Regional Water Strategy*. SADC. Gaborone, Botswana

<sup>223</sup> Southern African Development Community. 1999. *Southern African Vision for Water, Life and Environment in the 21<sup>st</sup> Century*. SADC. Gaborone, Botswana

The other way round, existence of river basin regimes in the SADC region are providing effective mechanisms for advancing implementation of the Regional Water Policy, Regional Water Strategy, and Southern African Vision for Water, Life and Environment; the three key policy instruments that articulates Integrated Water Resources Management (IWRM) encompassing the principle of equitable and reasonable utilisation. Integrated Water Resources Management is intimately linked to the principle of equitable and reasonable utilization in that the IWRM concept considers the; hydrological cycle in a river basin in its entirety taking into account basin-wide and across national-borders water resources interests, underground and surface water sources including rainfall, full range of sectoral interests including those of stakeholders without voices such as the environment, and future needs as legitimate claims to the water resources such as future generations.<sup>224</sup>

As a result of adopting the SADC Watercourses Protocol as regional water law and which occurrence led to the formulating of regional policies of SADC Regional Water Policy, SADC Regional Water Strategy and Southern African Vision for Water, there are sustained actions among SADC member states of enacting and updating national laws on water resources utilization. The outcome is that almost all SADC member states have to date adopted regionally harmonised national water resources utilization laws incorporating the principle of equitable and reasonable utilization. Existence of such receptive water resources utilisation legislation national levels is making processes of domesticating the principle of equitable and reasonable utilization among riparian states quicker and easier.

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<sup>224</sup> Nyagwambo, N. L. et al. 2008. *Local Governments and the IWRM in the SADC Region*. LoGo Water -. Institute of Water and Sanitation Development (IWSD). Harare: Zimbabwe. p.2

## **CHAPTER 4: COMPARATIVE ANALYSIS OF PRINCIPLE OF EQUITABLE AND REASONABLE UTILISATION OF THE ZAMCOM AGREEMENT**

### **4.1 The Method Adopted for Analysing the Drafting of the Principle**

Chapter 3 established that the equitable and reasonable utilisation principle is the dominant principle in the Helsinki Rules as international customary water law, UN Watercourses Convention as international water law and SADC Watercourses Protocol as SADC regional water law. The principle of equitable and reasonable utilisation is concerned rights and equity in the use of the water resources of an international river basin by riparian states. Also established was that the UN Watercourses Convention SADC Watercourses Protocol are two framework treaties whose provisions are widely used in the SADC region in the concluding of river basin agreements for creating river basin regimes among riparian states. Provisions identified as most relevant for concluding an optimal river basin agreement comprise those; for creating basic rights, determining equitable rights, entering into river a basin agreement to create a river basin regime, defining the water resources under consideration in the agreement, and establishing a joint river basin institution. Therefore, Chapter 4 shall use these 5 provisions to comparatively analyse the drafting of the principle of equitable and reasonable utilization in the ZAMCOM agreement and highlight convergences and divergences. This approach to the analysis should reveal any drafting lacunas that are causing dissonance among the Zambezi river basin riparian states and on which to evaluate if the ZAMCOM agreement and creation of the Zambezi river basin regime are based on true interpretation of the UN Watercourses Convention and SADC Watercourses Protocol.



## 4.2 Historical Development of the ZAMCOM Agreement

Informed analysis of the drafting of principle of equitable and reasonable utilisation in the ZAMCOM agreement first requires understanding the origin and historical development of the agreement itself. In 1985 the 6 politically independent and concerned riparian states (excluding Namibia represented by the UN and Angola who at that time was not yet independent) requested the United Nations Environmental Programme (UNEP) to assist them formulate river basin-wide action plans for the Environmentally Sound Management of the Common Zambezi River System (ZACPLAN).<sup>225</sup> The overall aim of the ZACPLAN was explore, design and establish mechanisms for the sustainable and environmentally sound management of the Zambezi river watercourse with the implementation process comprising 19 proposed projects technically referred to as the Zambezi river basin Action Projects (ZACPROs).

The ZACPLAN was one of the initial agreements that addressed specifically the environmental aspects of an international freshwater body and this feature differentiated it from other previous agreements in international water bodies in which environmental issues had not been given a major role.<sup>226</sup> In 1987, the ZACPLAN and its ZACPROs as roadmap action plans were adopted by the 8 Zambezi river basin co-riparians. However, due to integrity of the ZACPLAN and its suitability for application as a regional framework, the ZACPLAN was in the same year inherited and adopted by the SADC as a blueprint on which to formulate SADC regional water law the for the cooperative and environmentally sound management of the water resources of international river basins in the whole region.

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<sup>225</sup> Republics of Botswana, Mozambique, Tanzania, Zambia and Zimbabwe. 1987. *Agreement on the action plan for the environmentally sound management of the Common Zambezi River system signed at Harare, 28 May 1987*. At <http://www.fao.org/docrep/W7414B/w7414b0j.htm>. Accessed on 25 February 2012

<sup>226</sup> Nakayama, Mikiyasu. 1998. *Politics Behind Zambezi Action Plan*. Water Policy, 1(1998). p. 1

Since financial and infrastructural capacities in the region were at that time constrained, the SADC adopted a phased approach in implementing the 19 ZACPROs in the ZACPLAN by grouping the projects into two categories, namely: ZACPROs 1 to 8 in Category 1 with highest implementation priority and emphasizing the formulation of policy, legislation, plans, and the monitoring of water resources; and ZACPROs 9 to 19 in Category 2 for later implementation and focusing mainly on water conservation and environmental issues. As earlier explained in Chapter 3, ZACPRO 2 was the basis for the formulation of the SADC Protocol on Shared Watercourses of 1995, and which Protocol was subsequently revised to align it with the UN Watercourses Conventions and re-adopted as the SADC Watercourses Protocol in 2000. The coming into force of the SADC Watercourses Protocol as SADC regional water law and implementation of related ZACPROs led to the formulation of the SADC Regional Water Policy, the SADC Regional Water Strategy and the Southern African Vision for Water; three regional policies that are further aiding the propagation of the principle of equitable and reasonable utilisation among SADC member states.

Similarly, Phase II of ZACPRO 6 (or ZACPRO 6.2) whose initial objective was the developing of an integrated water resources management plan to for the Zambezi river basin was also modified by the SADC into the developing of an integrated water resources management strategy for international river basins in the whole SADC region. Implementing the ZACPRO 6.2 involved among other actions, developing and setting up enabling environments at regional and national levels of member states to facilitate the eventual negotiations and conclusions of river basin agreements in the major international river basins in the SADC region. Thus, ZACPRO 6.2 together with ZACPRO 2 which had earlier had culminated in formulation of the SADC Watercourses Protocol, formed the basis for the drafting of the ZAMCOM agreement and which in 2011 upon ratification as provided by the SADC Treaty created the Zambezi river basin regime.

#### **4.2.1 Historical Development Influence of ZAMCOM Agreement on its Drafting**

Although the ZAMCOM agreement is river basin-specific water law that is subordinate to the SADC Watercourses Protocol as regional water law, the ZAMCOM agreement is ironically the genesis of the SADC Watercourses Protocol and by proxy, which transformed into the present ZAMCOM agreement. The origins and subsequent turn-around in events in the evolution of the ZAMCOM agreement has implications on its drafting manifesting in the close semblance in formats, contents and provisions between the framework treaty SADC Watercourses Protocol and the river basin-specific ZAMCOM agreement.

#### **4.2.2 Identical Origins but Different Jurisdictions**

Justifiably it may be advanced that the SADC Watercourses Protocol and ZAMCOM agreement are in effect the same as they both have same origins and concern the equitable and reasonable utilisation of the water resources of an international river basin. However, these two instruments are different from each other in legal effect and functionally. The difference is mainly because the jurisdiction of the SADC Watercourses Protocol as regional water law is overarching affecting all international river basins in the SADC region and thus not the same as that of ZAMCOM agreement which is river basin-specific instrument with jurisdiction limited to the Zambezi river basin. Thus, to perform these different legal functions, their contents should also be different.

### **4.3 Convergences and Divergences between the ZAMCOM Agreement and Provisions of the UN Watercourses Convention/SADC Watercourses Protocol**

#### **4.3.1 Creation of Basic Rights to Utilise the Water Resources of the Zambezi River Basin**

In the Preamble the ZAMCOM agreement proclaims that the 8 Zambezi watercourse riparian states in recognizing and being desirous to cooperatively conserve, protect and sustainably utilize the water resources of the Zambezi river basin, commit themselves to the sustainable and cooperative development of the Zambezi watercourse and equitable and reasonable utilization of its water resources on the basis of the UN Watercourses Convention and SADC Watercourses Protocol. Thus, Article 12(2) of the ZAMCOM agreement provides that in implementing the agreement member states commit themselves to the principle of equitable and reasonable utilisation as interpreted according to the provisions of Article 3 of the SADC Watercourses Protocol and developed in accordance with the latest scientific concepts and best international practices. Profoundly, Article 14(1) of the ZAMCOM agreement proclaims that ‘member states shall in their respective territories utilise the Zambezi watercourse in an equitable and reasonable manner with a view to attaining optimal utilisation thereof and benefits therefrom consistent with the adequate protection of the Zambezi watercourses.’ Through proclamations in the Preamble, Article 12(2) and Article 14(1), the ZAMCOM agreement creates a basic right for each member states to use of the water resources of the Zambezi river basin. This is in conformity with the provisions of Article 5(1) of the UN Watercourses Convention and Article 3(7)a of the SADC Watercourses Protocol that bestows a basic right on each riparian state to use the water resources of an international river basin, regardless of the size of their territory in the river basin and contribution of precipitation to the water resources in the river basin.

### **4.3.2 Determining Equitable and Reasonable Utilisation Rights for Riparian States**

The process of considering factors and circumstances relevant to determine equitable rights among riparian states is the application of the principle of equitable and reasonable utilisation. In practice, this involves considering a number of guiding factors and circumstances to arrive at a decision on a right due to each riparian states to utilise the water resources of an international river basin. In this regard, Article 13(3) of the ZAMCOM agreement lists guiding factors that are exactly the same one as those listed at Article 6(1) of the UN Watercourses Convention and Article 3(8)(a) of the SADC Watercourses Protocol. To ensure that the decision making process in determining equitable rights is impartial, Article 13(4) the ZAMCOM agreement provides word for word like provisions of Article 6(3) of the UN Watercourses Convention and Article 3(8) (b) of the SADC Watercourses Protocol, that ‘in taking into account all the relevant factors and circumstances to determine an equitable and reasonable utilisation right due to a riparian, the weight to be given to each factor is to be determined by its importance in comparison with that of other relevant factors and that in determining what is an equitable and reasonable use, all relevant factors are to be considered together and a conclusion reached on the basis of the whole.’ The verbatim reproduction of the process, factors and conditions as provided in the UN Watercourses Convention and SADC Watercourses Protocol by the ZAMCOM agreement demonstrates that there is intentional convergence between the two.

However, the ZAMCOM agreement in its primary role of being a river basin agreement and not framework treaty should go beyond the restating of the UN Watercourses Convention and SADC Watercourses Protocol provisions, and apply the provisions. This is to mean those negotiating the ZAMCOM agreement should engage in a decision making process taking into consideration all the relevant factors and circumstances to determine tangible rights for each riparian state party to the agreement and pronounce these in the agreement. Therefore, the omission to practically apply the mentioned equitable and reasonable utilisation provisions of the UN Watercourses Convention

and SADC Watercourses Protocol in the ZAMCOM agreement to determine tangible rights for each riparian states is a divergence from the principle of equitable and reasonable utilisation, and as such a point of contention among the Zambezi river basin riparian states.

#### **4.3.3 Entering into the ZAMCOM Agreement to Create the ZAMCOM**

The primary instrument for cooperation among riparian states in the equitable and reasonable utilisation of the water resources of an international river basin is the entering into a river basin agreement to create a river basin regime. Thus, 7 of the 8 Zambezi river basin riparian states, among other reasons but mainly in recognizing the need to conserve, protect and sustainably utilise the resources of the Zambezi Watercourse and committing to the realization of the principle of equitable and reasonable utilisation of its water resources, on 13 July 2004 signed the Agreement on the Establishment of the Zambezi Watercourse Commission (ZAMCOM agreement), which came into force on 26 June 2011 upon ratification by the requisite number of member states. The ZAMCOM agreement commits to the management and development of the water resources of the Zambezi Watercourse based on the principles of the UN Watercourses Convention and SADC Watercourses Protocol. At Article 12(1)(h) and Article 12(2) member states in implementing the ZAMCOM agreement, commit themselves to the principle of equitable and reasonable utilisation as interpreted according to the provisions of Article 3 of the SADC Watercourses Protocol and developed in accordance with the latest scientific concepts and with the best international practices. The action by the riparian states of the Zambezi river basin riparian states of cooperating at the river basin level basin through the entering into the ZAMCOM agreement premised on the provisions of Article 3(3) of the UN Watercourses Convention and Article 6(3) of SADC Watercourses Protocol, indicates convergence.

However, despite the coming into force of the ZAMCOM agreement and creation of the Zambezi river basin regime, there continues to be disagreement among the riparians states. In particular, Zambia a key state in the river basin that has over 71% of its territory within the basin and contributes 42% of the precipitation is reluctant to be party to the ZAMCOM agreement on the basis that its interests in the utilisation of the water resources of the river basin are not well served by the principle of equitable and reasonable utilisation as drafted in the agreement. Similarly, Malawi that has almost all of its territory within the Zambezi river basin and initially signed the ZAMCOM agreement at inception in 2004 is yet to accede to the agreement. The reservations and reluctance and therefore non-cooperation so far shown by Zambia and Malawi are potentially weakening the Zambezi river basin regime and which occurrence is generally interpreted as a divergence.

#### **4.3.4 Defining of the Water Resources under Consideration in the ZAMCOM Agreement**

Article 1 of the ZAMCOM agreement defines the Zambezi watercourse to mean the system of surface and ground waters of the Zambezi constituting by virtue of their physical relationship a unitary whole flowing normally into a common terminus, the Indian Ocean with an indicative topographical map of the Zambezi Watercourse contained at Annex 1. Similarly, Article 2(a) of the UN Watercourses Convention and Article 1 of the SADC Watercourses Protocol both define a ‘watercourse to mean a system of surface and ground waters consisting constituting by virtue of their physical relationship a unitary whole flowing normally into a common terminus or sea or lake or aquifer.’ Except for using the term ‘Zambezi’ and substituting ‘sea, lake or aquifer’ with ‘Indian Ocean’ in the ZAMCOM agreement, these two definitions essentially converge.

However, a fundamental divergence occurs in that whereas Article 3(4) of the UN Watercourses Convention and Article 6(4) of the SADC Watercourses Protocol both require that that a river basin agreement in applying the provisions of equitable and reasonable utilisation identifies and

specifies the water resources upon which to allocate the rights, the ZAMCOM agreement does not. Instead, Article 13(2) of the agreement relegates the duty of developing the rules of application on the equitable and reasonable utilisation a Technical Committee of the ZAMCOM. As pointed out in Chapter 3, precisely stating the rules of application of the equitable and reasonable utilisation or tangible rights, serves the purpose of ensuring that any utilisation and abstractions of the water resources of an international river basin by a riparian state, regardless of the uses or geographic destination of such water resources, conforms to the allocated rights and agreed upon regime flows, is sustainable and equitable, and not contrary to the provisions of equitable and reasonable utilisation as provided in the UN Watercourses Convention and SADC Watercourses Protocol.

#### **4.3.5 Establishing of the Zambezi Watercourse Commission**

Article 3(1) of the ZAMCOM agreement provides for the establishing the Zambezi Watercourse Commission (ZAMCOM) or Commission as the Joint Zambezi river basin institution while Article 4(1) and (2) further provides that the ZAMCOM is an international organisation possessing a legal personality with capacity and power as is necessary for the exercise of its objectives and to enter into contracts, in the territory of a member state. Regarding the objective of the ZAMCOM, Article 5 of the agreement provides that the ZAMCOM is for promoting the equitable and reasonable utilisation of the water resources of the Zambezi watercourse as well as the efficient management and sustainable development thereof, and goes to prescribe the functions for performance by the ZAMCOM. The establishing of the ZAMCOM by the riparian states specifically for the Zambezi river basin and the prescribing of its appropriate responsibilities and functions responsive to the local circumstances converges with provisions of Article 8(2) of the UN Watercourses Convention and Article 5(3) of the SADC Watercourses Protocol.



However, divergences emerge in that among the functions prescribed at Article 5(i) of the ZAMCOM agreement for the ZAMCOM is the promoting of the application and development of the ZAMCOM agreement according to its objectives and principles and at Article 13(2) the developing in the future, the rules of application of the equitable and reasonable utilisation. Since the essence of a river basin agreement like the ZAMCOM is the creating and determining of equitable rights, not doing so is grossly contradicting the UN Watercourses Convention and SADC Watercourses Protocol.

#### **4.4 A Credible River Basin Agreement based on the Provisions of the SADC Watercourses Protocol**

Worth pointing out is the reality that a credible agreement can be created based on the SADC regional water law. Thus, of the 8 river basin agreements creating river basins in the SADC described in table 12 of Chapter 3, the agreement between Mozambique, Swaziland and South Africa (INCOMAPUTO Agreement) is drafted in line with the all relevant provisions of the SADC regional water law and clearly follows the provisions of Article 6(3) and 6(4) of the SADC Watercourses Protocol for enabling equitable and reasonable utilization of the water resources among the riparian states.<sup>227</sup> In true application of the equitable and reasonable utilisation principle as provided in the SADC Watercourses Protocol and taking into consideration local factors, circumstances and interests, the INCOMAPUTO is precise content including the definition of the water resources under consideration in the agreement, the sizes of sub-basin(s) of each riparian state forming part of the river basins; estimates of contribution of precipitation to the river basins by each riparian state; detailed rivers flow regimes; specific of water allocation rules, areas for priority allocations, and specific allocations and uses of the water resources and in times of drought or scarcity.

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<sup>227</sup>Republic of Mozambique, Republic of South Africa and the Kingdom of Swaziland. 2002. *Tripartite Interim Agreement Between The Republic of Mozambique and the Republic of South Africa and the Kingdom of Swaziland for Co-operation on the Protection and Sustainable Utilisation of the Water Resources of the Incomati and Maputo Watercourses*. SADC, Gaborone. Botswana.

Conclusion is made that with genuine commitment and given that presently known characteristics of the Zambezi river basin and available data and information on the water resources can inform decision making in negotiating a sound Zambezi river basin agreement for equitable and reasonable utilization of the water resources to meet current and projected demands of the various socio-economic activities and environmental needs in river basin, as well as those for future generations.

## CHAPTER 5: CONCLUSIONS AND RECOMMENDATIONS

Although the ZAMCOM agreement is river basin specific water law that is subordinate to the SADC Watercourses Protocol as regional water law, the ZAMCOM agreement is ironically the genesis of the SADC Watercourses Protocol and by proxy, which transformed into the present ZAMCOM agreement. The origins and subsequent turn-around in events in the evolution of the ZAMCOM agreement had implications on its drafting manifesting in the close semblance in formats, contents and provisions between the framework treaty SADC Watercourses Protocol and the river basin-specific ZAMCOM agreement.

It is concluded that because of the importance with regard to the integrity initially accorded to the ZAMCOM agreement and its adoption by the SADC as its blue print for developing regional law and policies, the Zambezi river basin riparian states may have felt that further temper with such a seemingly high integrity document was not necessary. The result is that the ZAMCOM agreement is more like a framework treaty than a river basin specific agreement. As such, instead of creating rights and allocating rights among the riparian states, the ZAMCOM agreement focus is on implementing the Strategic Plan for the Zambezi river basin. The agreement defines the Strategic Plan to mean a master development plan comprising a general planning tool and processes for the identification, categorisation and prioritization of projects and programmes for the efficient management and sustainable development of the Zambezi watercourse. The implication may be that determination of equitable rights are done in the process of implementing the Strategic Plan, hence the relegating of the rules for the application of equitable and reasonable utilisation to the Technical Committee of the ZAMCOM and to be addressed in future times. However, such an approach violates the provisions of the UN Watercourses Convention and SADC Watercourses Protocol, as these require that a river basin agreement in creating the rights it also determines equitable allocation of these rights among riparian states.

As identified in the analysis in Chapter 3, the 5 key provisions of the UN Watercourses Convention and SADC Watercourses Protocol for entering into an optimal river basin agreement for equitable and reasonable utilisation of the water resources of an international river basin among its riparian states must do the following: create a basic right for each riparian state to use the shared water resources; using the guiding factors and other relevant circumstances determine an equitable right due to each riparian state; enable cooperation through the negotiating and entering into a river basin agreement to create a river basin regime; enable the defining the water resources under consideration in the agreement; and enable the establishing a joint river basin institution.

From the comparative analysis done in Chapter 4 using the identified provisions on the drafting of the principle of equitable and reasonable utilisation in the ZAMCOM agreement, there are few areas of convergences and more of divergences between the ZAMCOM agreement and provisions. It is the many areas of divergences that are of concern to this case study as these are the lacunas or omissions in the ZAMCOM agreement that are attributed to be the cause of disagreement among the riparian states of the Zambezi river basin. The two most critical of these lacunas or omissions are that concerning the determination of specific equitable rights among riparian states, and the defining the water resources under consideration in the agreement on which to allocate the rights.

Regarding the allocation of specific rights, despite the ZAMCOM agreement proclaiming the principle of equitable and reasonable utilisation as provided by Article 5(1) of the UN Watercourses Convention and Article 3(7)(a) of the SADC Watercourses Protocol and in doing so creating basic rights for all the riparian states, the agreement does not go further to determine these rights equitably as required by Article 6 of the UN Watercourses Convention and Article 3(8)(a) and (b) of the SADC Watercourses Protocol. Instead, this function is relegated to the

Technical Committee of the ZAMCOM and to be performed later in time. On the defining of the water resources under consideration in the agreement as required provided by Article 3(4) of the UN Watercourses Convention and Article 6(4) of the SADC Watercourses Protocol, the ZAMCOM agreement does not do as required. Conclusion is made that it is mainly because of occurrence of these two lacunas or omissions in the ZAMCOM agreement that Zambia and to some extent Malawi, have reservations and are reluctant to becoming parties to the ZAMCOM agreement. It is mainly it is because of these two omissions that the drafting of the principle of equitable and reasonable utilisation in the ZAMCOM agreement and the creation of the Zambezi river basin regime are contrary to the provisions of the UN Watercourses Convention and SADC Watercourses Protocol, and therefore, international water law and SADC regional water law.

Fundamentally, a river basin regime exists when riparian states party to a river basin agreement observe the rights, principles, provisions and procedures agreed upon and enshrined in the agreement. However, the presence of the mentioned omissions in the ZAMCOM agreement give rise to incoherence in interpretation of the agreement with the effect that the ZAMCOM is not able to carry out its functions in the river basin as per set objectives. The outcome is that the Zambezi river basin regime shall remain a weak and marginally functional river basin regime of no real utility in the management and development of the Zambezi river basin water resources, unless or until the omissions in the ZAMCOM agreement are rectified.

Recommendation is made that the ZAMCOM agreement be appropriately amendment, through rectifying the omissions in it and taking into account the unique factors and characteristics in the basin, if to transform the Zambezi river basin into a useful regime able facilitate the equitable and reasonable utilisation of the water resources among all the Zambezi river basin riparian states including the environment and future generations. Only then shall the Zambezi river basin regime ably perform its function of ensuring that the utilisation and abstractions of the water resources in

the Zambezi river basin, regardless of the uses or geographic destination of such water resources are equitable, sustainable, in conformity to the allocated rights and agreed upon regime flows, and not contrary with the principle of equitable and reasonable utilisation as provided by international water law and SADC regional water law.

Although the analysis of drivers and constraints on cooperation over the equitable and reasonable utilisation of the water resources of international river basins are increasingly receiving attention in academic research and international scientific literature, the understanding of the key provisions and factors that determine cooperation over the equitable utilisation of the shared water resources through entering into river basin agreements to create regimes particularly in SADC region, are still very limited, as existing studies including this research effort, are single case studies confined to single international river basins. Therefore, whilst acknowledging significance and crucial role of applying the principle of equitable and reasonable as dictated by international water law and regional law, in the negotiations and conclusions of river basin agreements and the creation of river basin regimes, there probably exists a constellation of related or additional causal factors inspired by international relations in need of researching upon if to fully comprehend the cooperation or lack of it, over the equitable and reasonable utilisation of the water resources of international river basins.

Therefore, recommendation is made that further research studies explore related topics including but not limited to the following Zambezi river basin regime casual factors: a comparative study of regimes creation in the 9 river basins with agreements in the SADC region; influences of riparian states' domestic governance and national water law on the creation of the Zambezi river basin regime; collective interest in water resources utilisation among the Zambezi river basin riparian states and their role on regime creation; water resources related powers distribution among the Zambezi river basin riparian states and influence on regime creation; and global trends and donor

influence on the creation of the Zambezi river basin. The hope is that research mainly on these topics, shall complement the findings of this case study and help to gain a more complete picture of the dynamics at play in the creation of the Zambezi river basin water regime and any gains thereof.

## BIBLIOGRAPHY

Akech, Migai. 2008. *Transboundary Freshwater Governance and the Environment: An Overview*.

International Environmental Law Research Centre. Nairobi, Kenya. At

<http://www.unep.org/environmentalgovernance/LinkClick.aspx?...en...> Accessed on 09

September 2012.

Akweenda, Sackey. 2002. *From Harmon to Helsinki: The evolution of key principles in international water law*. In Turton, Anthony and Henwood, Roland (Eds). *Hydropolitics in the Developing World: A Southern African Perspective*. African Water Issues Research Unit (AWIRU), Pretoria, South Africa.

Baradat, Jorg and Kaplan, Aytul. 1998. *International Water Law: Regulations for Cooperation and the Discussion of the International Water Convention*. In Scheumann, Waltina and Schiffler, Manuel (Eds). *Water in the Middle East: Potential for Conflicts and Prospects for Cooperation*. Heidelberg. Berlin, Germany.

Beck, Lucas and Bernauer, Thomas. 2011. *How will combined changes in water demand and climate affect water availability in the Zambezi river basin?* *Global Environmental Change*, 21 (2000), pp. 1061-1072.

Beck, Lucas and Siegfried, Tobias. 2010. *The Geography of Conflict in International River Basins*, September 3, 2010. At <http://www.columbia.edu/~ts2392/files/BeckSiegfried.pdf>. Accessed on 01 August 2011.

Beekman, Hans E., Saayman, Irene. and Hughes, Simon. 2003. *Vulnerability of Water Resources to Environmental Change in Southern Africa: A Report for the Pan African START Secretariat and UNEP*. Council for Scientific and Industrial Research. Stellenbosch, South Africa.



Beilfuss, Richard. 2012. *A Risky Climate for Southern African Hydro – Assessing Hydrological Risks and Consequences for the Zambezi River Basin Dams*. International Rivers. Berkeley CA, USA. Assessed at <http://www.internationalrivers.org> on 30 April 2013.

Bourne, Charles B. 1996. *The International Law Association's Contribution to International Water Resources Law*. *Natural Resources Journal*, 36(3), pp 155-216.

Brown-Weiss, E. 1966. *The Changing Structure of International Order. Inaugural Lecture; May 23, 1966*. Georgetown University. Washington DC, USA.

Bull, Hedley. 1977. *The Anarchical Society: A Study of Order in World Politics*. Columbia University Press. New York, USA.

Cano, Guillermo J. 1989. The Development of the Law of International Water Resources and the Work of the International Law Commission. *International Water*, 14 (4), pp. 167-171.

Caponera, Dante A. 1992. *Principles of Water Law Administration-National and International*. Brookfield. Rotterdam, Netherlands.

Chenevert, Donald J. 1992. *Application of the Draft Articles on the Non-Navigational Uses of International Watercourses to the Water Disputes Involving the Nile River and the Jordan River*. *Emory International Law Review*, 6 (2). pp. 495-575.

Correia, Francisco Nunes and Silva, Joaquim Evaristo da. 1999. *International Framework for the Management of Transboundary Water Resources*. *Water International*, 24 (2), pp.86-94.

Dellapenna, Joseph W. 1997. *The Nile as a Legal and Political Structure*. In Brans, Edward H. P. et al. (Eds). *The Scarcity of Water: Emerging Legal and Policy Responses*. The Hague, Netherlands.

Dugan, Patrick (Coordinating Lead Editor). *Inland Fisheries and Aquaculture*. In *Water for Food, Water for Life: A Comprehensive Assessment of Water management in Agriculture*. International Water management Institute. Earthscan. London, UK.

Dunne, Tim. 2001. *Liberalism*. In Baylis, John and Smith, Steve (Eds). *The Globalisation of World Politics: An Introduction to International Relations (Second Edition)*. Oxford University Press Inc. New York, USA.

Ebeye, Sunday E. N. 2009. *Regimes as mechanisms for social order in international relation*. *African Journal of Political Science and International Relations*, 3 (4), pp. 117-121.

Eckstein, Gabriel E. 2002. *Development of international water law and the UN Watercourse Convention*. In Turton, Anthony and Henwood, Roland (Eds). *Hydropolitics in the Developing World: A Southern Africa Perspective*. Africa Water Issues Research Unit (AWIRU). Pretoria, South Africa.

Euroconsult Mott MacDonald. 2007. *Integrated Water Resources Management and Implementation Plan for the Zambezi River Basin - Summary*. SADC-WD/Zambezi River Authority.

Euroconsult Mott MacDonald. 2007. *Rapid Assessment - Final Report: Integrated Water Resources Management Strategy for the Zambezi River Basin*. SADC-WD/Zambezi River Authority.

Gleick, Peter. 1993. *Water and Conflict: Fresh Water Resources and International Security*. International Security, 18 (1), pp. 79-112.

Godana, Bonaya adhi. 1985. *Africa's Shared Water Resources: Legal and Institutional Aspects of the Nile, Niger and the Senegal River Systems*. London, UK.

Government of the Republic of Namibia. 2010. *The Constitution of the Republic of Namibia*. Windhoek, Namibia.

Granit, Jakob. 2000. *Management of Shared Water Resources in Southern Africa and Role of External Assistance*. 1<sup>st</sup> WARF/WaterNet Symposium: Sustainable Use Water Resources; Maputo, 1-2 November 2000.

Haftendorn, Helga. 2000. *Water and International Conflict*. Third World Quarterly, 21 (1), pp. 51-68.

Heyns, Piet. 2002. *The interbasin transfer of water between SADC countries: A developmental challenge for the future*. In Turton, Anthony and Henwood, Roland (Eds). *Hydropolitics in the Developing World: A Southern African Perspective*. African Water Issues Research Unit (AWIRU), Pretoria, South Africa.

Heyns, Piet. 2003. *Water - resources management in Southern Africa*. In Nakayama, Mikiyasu (Ed). *International Waters in Southern Africa*. The United Nations University. New York, USA.

Hirsch, Fred. 1976. *The Social Limits to Growth*. Harvard University Press, USA.

International Court of Justice (ICJ). 1997. *Gabcikovo-Nagymaros Project (Hungary/Slovakia), Judgement, ICJ Reports 1997*. General List No. 92, Judgement of 25 September 1997.

International Court of Justice. 2012. At <http://www.icj-cij.org/>. Accessed on 2 March 2012

International Law Association. 1967. *Helsinki Rules on the Uses of the Waters of International Rivers - Adopted by the International Law Association at the fifty-second conference, held at Helsinki in August 1966*. International Law Association. London, UK.

International Law Association. 1967. *Helsinki Rules on the Uses of the Waters of International Rivers - Adopted by the International Law Association at the fifty-second conference, held at Helsinki in August 1966*. International Law Association. London, UK.

Jagerskog, Anders. 2002. *Contributions of regime theory in understanding interstate water co-operation: Lessons learned in the Jordan River basin*. In Turton, Anthony and Henwood, Roland (Eds). *Hydropolitics in the Developing World: A Southern Africa Perspective*. Africa Water Issues Research Unit (AWIRU). Pretoria, South Africa.

Keohane, Robert O. 1984. *After hegemony: Cooperation and discord in the world political economy*. Princeton University Press. New Jersey, USA.

Keohane, Robert O. and Nye, Joseph S. 1977. *Power and Independence*. Little Brown. Boston, USA.

Kibaroglu, Aysegul,. 2002. *Building a Regime for the Waters of the Euphrates-Tigris River Basin*. Kluwer Law International, The Hague, The Netherlands.

Kiss, Alexandre and Shelton, Dinah. 1991. *International Environmental Law*. Transnational Publishers. New York, USA.

Klaphake, Axel. and Scheumann, Waltina. 2006. *Understanding Transboundary Water Cooperation: Evidence from Africa. Working Paper on Management in Environmental Planning 014/2006*. Technical University of Berlin. Berlin, Germany.

Kliot, N., Shmueli, D. and Shamir, U. 2001. *Institutions for Management of Transboundary Water Resources: Their Nature, Characteristics and Shortcomings*. *Water Policy* 3 (2001), pp. 229-255.

Krasner, Stephen D. 1982. *Structural causes and regime consequences: regimes as intervening variables*. *International Organisation*, 36 (2), pp. 185-205.

Krasner, Stephen D. 1983. *Structural causes and regime consequences: regimes as intervening variables*. In Krasner, Stephen D. (Ed). *International Regimes*. Cornell University Press. Ithaca, USA.

Lammers, J. G. 1984. *Pollution of International Watercourses*. . Martinus Nijhoff Publishers. The Hague, The Netherlands.

Lazerwitz, David J. 1999. *The Flow of International Water Law: The International Commission's Law of the Non-Navigational Uses of International Watercourses*. At <http://web.macam.ac.il/~arnon/Int-ME/water/International%20Water%20Law.htm>. Accessed on 09 September 2012.

McCaffrey, Stephen C. 1996. *The Evolution of the Law of International Watercourses*. *Austrian Journal of Public and International Law*, 5 (2), pp 87-111.

McCaffrey, Stephen C. 1996. *The Harmon Doctrine one Hundred Years later: Buried, not Praised*. *Natural Resources Journal*, 36 (3), pp 549-590.

Munjoma, Leonissah. 2004. *Zambezi Watercourse Commission sets transboundary perspective*. The Zambezi - Special Issue, Southern African Research and Documentation Centre (SARDC), 6 (1), pp. 1-8.

Nakayama, Mikiyasu. 1998. *Politics Behind Zambezi Action Plan*. Water Policy, 1(1998), pp. 397-409.

Nyagwambo, N. L., Chonguica, E. Cox, D. and Monggae, F. 2008. *Local Governments and the IWRM in the SADC Region*. LoGo Water: Institute of Water and Sanitation Development (IWSD). Harare, Zimbabwe.

Phillips, David., Daoudy, Marwa., McCaffrey, Stephen., Ojendal, Joakim and Turton, Anthony. 2006. *Global Development Studies No. 4: Trans-boundary Water Co-operation as a Tool for Conflict Prevention and Broader Benefit Sharing*. Regeringskansliet, Ministry of Foreign Affairs. Stockholm, Sweden.

Rahaman, Muhammad Mizanur. 2009. *Principles of International Water Law: Creating Effective Transboundary Water Resources Management*. Int. J. Sustainable Society, 1(3), pp. 207-223.

Ramoeli, Phera. *The SADC Protocol on Shared Watercourses: History and Current Status*. 2002. In Turton, Anthony and Henwood, Roland (Eds). *Hydropolitics in the Developing World: A Southern Africa Perspective*. Africa Water Issues Research Unit (AWIRU). Pretoria, South Africa.

Republic of Botswana. 2010. *Department of Water Affairs Feasibility Design Study on the Utilisation of the Water Resources of the Chobe/Zambezi River*. Ministry of Energy and Water Resources, WRC. Gaborone, Botswana.

Republic of Mozambique, Republic of South Africa and the Kingdom of Swaziland. 2002. *Tripartite Interim Agreement Between The Republic of Mozambique and the Republic of South Africa and the Kingdom of Swaziland for Co-operation on the Protection and Sustainable Utilisation of the Water Resources of the Incomati and Maputo Watercourses*. SADC, Gaborone. Botswana.

Republics of Botswana, Mozambique, Tanzania, Zambia and Zimbabwe. 1987. *Agreement on the action plan for the environmentally sound management of the Common Zambezi River system signed at Harare, 28 May 1987*. At <http://www.fao.org/docrep/W7414B/w7414b0j.htm>. Accessed on 25 February 2012.

Salman, Salman M. A. 2007. *The United Nations Watercourses Convention Ten Years Later: Why Has its Entry into Force Proven Difficult?* International Water Resources Association. *Water International*, 32(1), pp. 1-15.

Schroeder-Wildberg, Esther. 2002. *The 1997 International Watercourses Convention-Background and Negotiations. Working Paper on Management in Environmental Planning 04/2002*. Technical University of Berlin. Berlin, Germany.

Scott, Shirley V. 1994. *International Law as Ideology: Theorising the Relationship between International Law and International Politics*. *European Journal of International Law*, 5 (3), pp. 313-325.

Shela, Osborne N. 2000. *Management of shared river basins the case of the Zambezi River*. Water Policy 2 (2000), pp. 65-81.

South African Power Pool (SAPP) Transmission and Trading Case Study. 2009. *The Potential of Regional Power Pool Sector Integration*. Economic Consulting Associates. London, UK.

Southern African Development Community. 1992. *Treaty of the Southern African Development Community*. SADC. Gaborone, Botswana.

Southern African Development Community. 1995. *Protocol on Shared Watercourse Systems in the Southern African Development Community (SADC) Region*. SADC. Gaborone, Botswana.

Southern African Development Community. 1999. *Southern African Vision for Water, Life and Environment in the 21<sup>st</sup> Century*. SADC. Gaborone, Botswana.

Southern African Development Community. 2000. *Revised Protocol on Shared Watercourses in the Southern Development Community (SADC)*. SADC. Gaborone, Botswana.

Southern African Development Community. 2004. *Agreement on the Establishment of the Zambezi Watercourse Commission*. SADC. Gaborone, Botswana.

Southern African Development Community. 2005. *Regional Water Policy*. SADC. Gaborone, Botswana.

Southern African Development Community. 2006. *Regional Water Strategy*. SADC. Gaborone, Botswana.

Southern African Development Community. 2012. *SADC Water Sector-ICP Collaboration Portal*. At <http://www.icp-confluence-sadc.org/rbo/66>. Accessed on 22 September 2012.



Southern African Development Community. 2012. *SADC Webpage*. At <http://www.sadc.int/english/about-sadc/>. Accessed on 23 September 2012.

Southern African Development Community. 2012. *Southern African Development Community Tribunal*. At <http://www.sadc-tribunal.org>. Accessed on 18 May 2012.

Teclaff, Ludwig A. 1996. *Evolution of the River Basin Concept in National and International Law*. *Natural Resources Journal*, 36 (2), pp. 359-391.

The Secretariat of the Convention on Wetlands. 2012. *The List of Wetlands of International Importance - 15 October 2012*. Gland, Switzerland. At <http://www.ramsar.org/statelist.doc>. Accessed on 06 November 2012

United Nations Development Programme (UNDP). 2006. *Human Development Report 2006*. New York, USA.

United Nations. 1977. *Report of the United Nations Water Conference*. Del Plata. Mar del Plata, Argentina, 14-17 March 1977.

United Nations. 2005. *Convention on the Law of the Non-Navigational Uses of International Watercourses Adopted by the General Assembly of the United Nations on 21 May 1997*. General Assembly 51/229, annex, Official Records of the General Assembly, Fifty-first Session, Supplement No. 49 (A/51/49).

United Nations. 2005. *Convention on the Law of the Non-Navigational Uses of International Watercourses of 1977- Adopted by the General Assembly of the United Nations on 21 May 1997*. United Nations. New York, USA.

United Nations. 2005. *Vienna Convention on the Law of Treaties: Done at Vienna on 23 May 1969, Entered into force on 27 January 1980*. United Nations, Treaty Series, 1155.

Villiger, Mark E. 1997. *Customary International Law and Treaties: A Manual on the Theory and Practice of the Interrelation of Sources*. The Hague, Netherlands.

Vinogradov, Sergei., Wouters, Patricia and Jones, Patricia. 2003. Vinogradov, Sergei., Wouters, Patricia and Jones, Patricia. *Transforming Potential Conflict into Cooperation Potential: The Role of International Water Law*. UNESCO Division of Water Sciences. Paris, France.

Wester, Philippus and Warner, Jeroen. 2002. *River basin management reconsidered*. In Turton, Anthony and Henwood, Roland (Eds). *Hydropolitics in the Developing World: A Southern African Perspective*. African Water Issues Research Unit (AWIRU), Pretoria, South Africa.

World Bank. 2010. *The Zambezi River Basin: A Multi-Sector Investment Opportunities Analysis, Volume 3: State of the Basin*. The World Bank Water Resources Management Africa Region. Washington DC, USA.

World Bank. 2010. *The Zambezi River Basin: A Multi-Sector Investment Opportunities Analysis, Volume 1: Summary Report*. The World Bank Water Resources Management Africa Region. Washington DC, USA.

World Bank. 2010. *The Zambezi River Basin: A Multi-Sector Investment Opportunities Analysis, Volume 3: State of the Basin*. The World Bank Water Resources Management Africa Region. Washington DC, USA.

World Bank. 2010. *The Zambezi River Basin: A Multi-Sector Investment Opportunity Volume 2 Basin Development Scenarios*. The World Bank Water Resources Management Africa Region. Washington DC, USA.

Wouters, Patricia K. 1996. *An Assessment of Recent Developments in International Watercourse Law through the Prism of the Substantive Rules Governing Use Allocation*. *Natural Resources Journal*, 36 (2), p 417-439.

ZACPLAN. 1987. *The Agreement on the Action Plan for the Environmentally Sound Management of the Common Zambezi River System Signed on 28 May 1987*. At [http://www.fao.org/docrep/w7414b/w7414b0j.htm#annex i](http://www.fao.org/docrep/w7414b/w7414b0j.htm#annex_i). Accessed on 30 September 2013.