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Seeking legal complementarity in a water-stressed region: Are South Africa's modern international river agreements compatible with its obligations under the UN Watercourses Convention?

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Abstract

It is over 20 years since South Africa was one of the inaugural signatories to the United Nations Convention on the Non-Navigational Uses of International Watercourses ('UNWC'). With the UNWC entering into force in 2014 and given the escalating water scarcity and freshwater pollution challenges facing Southern Africa, it is thus timely to evaluate how complementary it is with subsequent legal regimes governing South Africa's transboundary watercourses. This paper examines the development of South Africa's international river agreements since ratifying the UNWC. Their compatibility in relation to South Africa's UNWC obligations is thus analysed regarding a regional legal framework and agreements governing three of the country's main transboundary river basins: Orange-Senqu; Incomati-Maputo; and Limpopo.

Keywords: watercourses convention; international river; basin agreement; treaty; South Africa

1. Introduction

It is just over 20 years since South Africa became one of the inaugural signatories to the United Nations Convention on the Non-Navigational Uses of International Watercourses ('UNWC') in 1997, and then ratified the Convention in 1998. Since then, South Africa has entered into or enacted various regional, basin-specific and domestic water laws related to governing its international rivers. On a regional level, South Africa is a party to the 2000 Revised Protocol on Shared Watercourses in the Southern African Development Community ('SADC Revised Protocol') which entered into force in 2003. South Africa also subsequently entered into agreements with neighbouring riparian states regarding governance and management of some of the nation's main international river basins, including: Orange-Senqu; Incomati-Maputo; and Limpopo River systems.

With all of these treaties entering into force around the time of, or after, South Africa signed and ratified the UNWC, it begs the question of whether or not the country developed and entered into those legal regimes with their compatibility to the UNWC in mind. On 19 May 2014, Vietnam took the monumental step of ratifying the UNWC. In doing so it became the 35th party to the UNWC and triggered entry into force on 17 August 2014. Therefore, South Africa is now legally bound by all of its provisions. As a result, it is thus timely to evaluate how compatible or contradictory the UNWC is with these 'modern' regional and basin-specific legal regimes that have subsequently developed to govern the country's international watercourses. This paper will firstly outline the UNWC and its key substantive and procedural obligations. Subsequently, South Africa's development of international legal regimes governing its transboundary watercourses after their signing the UNWC will be examined. Their compatibility in relation to South Africa's obligation under the UNWC is analysed, specifically regarding three of the nation's major transboundary basins: Orange-Senqu, Limpopo, and Incomati-Maputo Rivers. In conclusion, the overall complementarity of the UNWC with existing and future legal regimes for the governance of South Africa's international watercourses will be discussed in relation to seeking to address key threats to the nation's shared rivers.

2. From 1997 until now: Global developments in transboundary water law and cooperation

Firstly, it is crucial to note that South Africa certainly was a pioneer in terms of the UNWC given that it immediately signed, then, in-turn, ratified the Convention. This is even more evident due to the length of time it took to finally achieve the quorum of 35 state parties required for the UNWC to enter into force; at which point it was almost 20 years from ratifying to finally becoming a binding treaty on South Africa. Keeping this specific period between 1997 and 2014 in mind is helpful for framing the overall premise for this paper. Upon adopting the UNWC in 1997, South Africa then entered into its 'modern' regional, international and national water law regimes to govern its domestic and transboundary water resources. In this regard, the term 'modern' is used to indicate all international river basin treaties subsequent to the adoption of the UNWC in 1997 based on it being widely heralded as the "the most comprehensive and important codification of international watercourse law" (Bearden, 2010, p. 805). Hence, in the knowledge that South Africa clearly was a pioneer in adopting and ratifying the UNWC, did it therefore ensure those subsequent modern river agreements governing its international rivers were compatible with UNWC provisions? If not, has it now rendered itself in breach of any its legal obligations under the UNWC? To begin to unpack these questions regarding whether the UNWC is contradictory or compatible with South Africa's subsequent international and regional watercourse agreements, we must begin by outlining the aim of the Convention and its major substantive and procedural obligations.

Two other major developments in field the international water law occurring in recent years are worth noting in the context of the UNWC entering into force. The 1992 United Nations Economic Commission for Europe's Convention on the Protection and Use of

Transboundary Watercourses and International Lakes ('UNECE Water Convention') accepted a 2003 amendment at the Meeting of the Parties in November 2012 that then came into force in March 2016 which allows for its accession by non-ECE States. In force since 1996, the primary objective of the UNECE Water Convention, as set out in its title and preamble, is the protection and use of transboundary watercourses and international lakes within the UNECE region of member states. In terms of their respective texts, the UNECE Water Convention has generally more detailed requirements than the UNWC. Yet, certain provisions in the latter supplement the former, e.g., those on planned measures and the factors relevant to equitable and reasonable use. In the operational part of the UNECE Water Convention, 'transboundary watercourses' and 'international lakes' are conflated into the term 'transboundary waters', which is defined as being, 'any surface or ground waters which mark, cross or are located on boundaries between two or more States'. Groundwater that is either connected, or unconnected, to surface water therefore falls within the scope of the UNECE Water Convention. Two additional protocols have been negotiated under the Convention, one related to Water and Health, and the other concerning Civil Liability and Compensation for Damage Caused by the Transboundary Effects of Industrial Accidents on Transboundary Waters.

The UNECE Water Convention has now been amended to become global, operationalised at the same scale as the UNWC. Thus, any state can join the UNECE Water Convention, including South Africa and its neighbouring riparian countries. Another appealing aspect is that the Convention offers a fully developed institutional structure to support implementation, and a wealth of knowledge and experience that would be useful for countries beyond the UNECE region. Taken as a package, the two 'Global Water Conventions' are mutually reinforcing in terms of substantive and procedural legal as well as institutional support (Rieu-Clarke & Kinna, 2014). Wherever possible, countries considering accession to one or both of the Global Water Conventions should look at the two instruments side-by-side (Rieu-Clarke & Kinna, 2014). Such an analysis of both the UNWC and UNECE as regards South Africa's transboundary river agreements is beyond the scope of this paper whereby the focus is on the UNWC which South Africa is a party to. However, future research may wish to consider the supplementary application of the UNECE Water Convention to ascertain if any additional benefits could be gained for South Africa by acceding to this instrument.

Another development related to the global institutional framework for transboundary water cooperation occurred in September 2015, when the UN General Assembly adopted Resolution 70/1 entitled "Transforming our world: the 2030 Agenda for Sustainable Development". This 2030 Agenda, the culmination of negotiations that began at the UN Conference on Sustainable Development in 2012 (also referred to as 'Rio+20 Conference') included specific Sustainable Development Goals (SDGs) which are now the primary goals for the UN and its related agencies, while providing global accountability benchmarks for non-government organisations and businesses working in pursuit of sustainable development. SDG 6 specifically pertains to sustainable management of water and sanitation for all and within that, under target SDG 6.5, it deals with integrated water resources management (IWRM) and the requirement to cooperate over transboundary waters where applicable. SDG 6 and target 6.5 makes it clear that without meaningful cooperation over shared international

waters and minimizing the impacts of poor transboundary water management, SDG 6 on water and sanitation cannot be achieved. As a result, you now have the UN system and its agencies, including institutional frameworks mandated under the UNWC and UNECE Water Convention, assessing and integrating measures for transboundary water cooperation as a critical component and guiding principle for all matters relating to water and sanitation. Moreover, transboundary water cooperation is now broadly-recognized at the global level via the SDGs as "critical in meeting all five of the key areas which the SDGs intend to stimulate over the next 15 years (people, planet, prosperity, peace and partnership)" (Sindico, 2016, p. 5). It is in this context of recent global developments regarding transboundary water law and cooperation that this paper seeks to consider the complementarity of legal and institutional frameworks for current and future transboundary water management and cooperation within three of South Africa's international river basins.

3. UNWC

The UNWC was "the culmination of over 50 years' work" (Rieu-Clarke, 2007, p. 13) making it "the most comprehensive and important codification of international watercourse law" (Bearden, 2010, p. 805). It contains many principles which are widely recognized as customary international law (CIL) which refers to international obligations arising from general state practice accepted as custom (McCaffrey, 2001b). CIL is considered binding on all states independently of treaty law. As such the UNWC has long been commonly viewed as the most authoritative source of law on transboundary watercourses (Litke & Rieu-Clarke, 2015); this is now further bolstered by its entry into force as an enforceable treaty. In this context, it is critical to note that the UNWC was always developed with the clear intention of functioning as a framework treaty in order "to support other watercourse treaties by acting as a template and filling the gaps where coverage was lacking" (Litke & Rieu-Clarke, 2015). Hence, the UNWC supports existing basin and regional arrangements; it does not automatically supplant them. Put simply, it is a template for structuring contextual treaties as basin states see fit, and as it is principle-driven it provides the basic rules to do so.

3.1 Aims, core principles and procedures

As a global framework convention, the UNWC aims to "supplement, facilitate, and sustain transboundary water cooperation at all levels" (Loures, Rieu-Clarke, Vercambe & Witmer, 2015, p. 10). Its purpose is encapsulated in the Preamble as "to ensure the utilisation, development, conservation, management and protection of international watercourses and the promotion of the optimal and sustainable utilisation thereof for present and future generations . . . taking into account the special situation and needs of developing countries". International watercourses are defined in Article 2 as encompassing both surface water and groundwater which recognises subterranean watercourses as an essential part of, and influence on, terrestrial watercourses in riparian ecosystems (McCaffrey, 2001a, p. 251).

Key terms within the UNWC are then defined under Article 2: Article 2(a) defines "watercourse" as a river system including both surface waters, which incorporates a river's mainstream and its tributaries, as well as groundwater, flowing into a common terminus; "international watercourse" in Art 2(b) is one which falls within or touches the boundary of two or more states; "watercourse state" under Article 2(c) is a "State Party to the present Convention in whose territory part of an international watercourse is situated or a Party that is a regional economic integration organization, in the territory of one or more of whose member states part of an international watercourse is situated"; and a "regional economic integration organization" means any regional inter-governmental institution which for the purposes of economic integration and development (Article 2(d)). Article 3 concerning state's existing and future rights and duties from "Watercourse Agreements" is critical to this paper's discussion in so far as it pertains to the UNWC's relationship with existing and future agreements and as such is examined in further detail below.

The core of UNWC, Part II, sets out general principles and is introduced by what is regarded as the most significant provision in the whole text: Equitable and Reasonable Utilisation (ERU) and Participation. In determining what is 'equitable and reasonable' states must take into account all relevant social and economic considerations and their actions must also be consistent with adequately protecting the watercourse from environmental degradation (Articles 5–6). The concept of equitable participation is also introduced which recognises that states must actively engage and cooperate with each other in order to achieve a regime that realises reasonable and equitable use for all concerned, especially developing nations. The most disputed inclusion of all the principles in the UNWC was the obligation for states "to take all appropriate measures" (Article 7) to utilise an international watercourse so as not to cause significant harm to another riparian state. Moreover, the UNWC imposes on states an obligation to cooperate in good faith (Article 8). It further 'operationalises' this duty by stipulating that riparians must regularly exchange available data relevant to the shared management of an international watercourse wherever reasonably possible (Article 9).

Procedurally, UNWC sets out various legally binding processes, including an obligation of prior notification that must be followed when initiating any new planned measures in one state that may have significant detrimental impacts on other riparian states sharing the watercourse (Part III). It then outlines a set of environmental protection and pollution prevention provisions (Part IV), laying down the unqualified obligation for states to "protect and preserve the ecosystems of international watercourses" (Article 20). It subsequently outlines duties whereby states must immediately notify other states of harmful conditions and emergency situations that could potentially impact them (Part V). It lastly deals with private remedies and dispute resolution procedures (Part VI). Article 32 on non-discrimination allows for foreign citizens to pursue judicial or administrative procedures in the allegedly offending state for transboundary harm. In-turn, Article 33 sets out step-by-step dispute resolution procedures, including establishment of a compulsory independent fact-finding commission if negotiations have failed to be settled peacefully within six months. It is against this collection of UNWC principles and processes that this paper will later provide an analysis of their compatibility with South Africa's subsequent modern river agreements.

3.2 Compatibility with rights and duties from existing/future watercourse agreements

A crucial element of the UNWC is how it deals with existing and future watercourse agreements. First and foremost, Art 3(1) explicitly states that unless otherwise agreed by UNWC parties "*nothing* in the present Convention *shall affect the rights or obligations of a watercourse state arising from agreements in force* [emphasis added]". Thus, unless UNWC parties explicitly consent to it, their legal rights and duties within existing agreements are in no way affected by ratifying the Convention. In essence, Art 3(1) "preserves the contractual freedom of watercourse states" (Rieu-Clarke, Moynihan, & Magsig, 2012, p. 89) regarding existing watercourse treaties as well as to enter into future agreements. It goes on to advise that parties "*may, where necessary, consider* harmonizing such agreements with the basic principles [emphasis added]" (Art 3(2)) of the UNWC. Hence, riparian States with an existing agreement(s) in place can consider adjusting their treaty provisions to align with the UNWC, but are in no way obliged to.

As a framework Convention, UNWC state parties can enter into subsequent watercourse agreements that apply and adjust the Convention's provisions to the specific geographic/basin context or part thereof (Art 3(3)). Consequently, those provisions of the UNWC will only apply to the shared waters and uses as defined in that particular treaty (Art 3(4)). Finally, where State parties to the UNWC see it as necessary they shall seek to negotiate in good faith to conclude watercourse agreement(s) (Art 3(5)) and where not all basin states are party to a watercourse treaty, nothing in that treaty affects the rights or obligations under the UNWC to those absent states (Art 3(6)). Directly related to this is Article 4 which stipulates that every watercourse state is entitled to become a party to as well as participate in negotiations and consultations of an agreement which applies to the entire watercourse or is affected by its uses.

That a state's existing or future rights and duties are not impacted by them becoming a party to the UNWC is a pivotal factor regarding compatibility between the Convention and any intersecting river treaties. In effect, states can be parties to both the UNWC and other watercourse agreements without impacting the legal rights and duties of state parties to the other and vice versa. The only caveat being that this is true in so far as there is no direct legal conflict between any provisions. In such a scenario, the UNWC *suggests* these can be altered to be harmonized with its basic principles, but does not make this obligatory (Art 3(2)). Hence, there is no duty on South Africa to align any of its overlapping past or future international watercourse agreements with the UNWC. Rather, any contradiction between these provisions must be interpreted in accordance with Articles 3 and 4 of the UNWC, as well as the treaty rules applicable on all states globally under the Vienna Convention on the Law of Treaties ('Vienna Convention').

3.3 Vienna Convention

While the UNWC has explicit provisions regarding the existing and future rights and duties of states who become parties to the Convention (as well as those basin states who are not parties) one must also take into account the general application of the Vienna

Convention. Adopted on 23 May 1969 and entering into force on 27 January 1980, the Vienna Convention is the global legal framework governing the interpretation and application of international treaties and legal instruments. Article 30 specifically deals with the 'Application of successive treaties relating to the same subject-matter'.

Under Article 30(1), all of the provisions in Article 30 of the Vienna Convention are subject to Article 103 of the Charter of the United Nations ('UN Charter'). Article 103 stipulates that "In the event of a conflict between the obligations of the Members of the United Nations under the present Charter and their obligations under any other international agreement, *their obligations under the present Charter shall prevail* [emphasis added]". Hence, the UN Charter takes ultimate precedence over all other treaty obligations in the event of any conflict between its provisions and the rights and duties of states under a particular treaty.

Article 30(2) dictates that "When a treaty specifies that it is subject to, or that it is not to be considered as incompatible with, an earlier or later treaty, the provisions of that other treaty prevail". Thus, any treaty can specify that it will be automatically subsidiary to another treaty where there is a conflict, as detailed in Article 3(1) of the UNWC. Furthermore, "When all the parties to the earlier treaty are parties also to the later treaty but the earlier treaty is not terminated or suspended in operation under article 59, *the earlier treaty applies only to the extent that its provisions are compatible with those of the later treaty* [emphasis added]" (Article 30(3)). This is significant as it makes clear that the UNWC would apply only in so far as it was not incompatible with subsequent watercourse agreements.

Article 30(4) of the UN Charter then states that "When the parties to the later treaty do not include all the parties to the earlier one: (a) As between States parties to both treaties the same rule applies as in paragraph 3; (b) As between a State party to both treaties and a State party to only one of the treaties, *the treaty to which both States are parties governs their mutual rights and obligations*." Hence, any watercourse treaty that states which are not party to the UNWC share with South Africa will take precedence and dictate their mutual rights and obligations. Finally, Article 30(5) stipulates that Article 30(4) will not prejudice "any question of responsibility which may arise for a State from the conclusion or application of a treaty the provisions of which are incompatible with its obligations towards another State under another treaty". On this basis, South Africa cannot avoid its legal responsibilities under the UNWC, even where its provisions may be considered incompatible with its obligations to another riparian under a different watercourse agreement. All of the above provisions provide further guidance in analysing and interpreting the compatibility between the UNWC and South Africa's modern treaties governing the Orange-Senqu, Incomati-Maputo, and Limpopo Rivers.

4. South Africa's modern river agreements since ratifying the UNWC

Approximately forty percent of the world's 263 international watercourses are currently the source of an international treaty or agreement (Rieu-Clarke et al., 2012, p. 4). These are generally regional or bilateral in nature and are largely developed, signed and

ratified by those countries whose borders are adjacent to, or encompass, the international watercourse in question. South Africa is no different and has developed many international legal agreements to govern its transboundary watercourses. In this regard, Kistin et al. (2009, p. 17) found that:

> Within the last-two-and-a-half decades, South Africa has concluded 23 water management agreements with neighbouring states. Fourteen of these agreements were concluded in a context of regional unrest prior to South Africa's transition to democracy in 1994 and were motivated in part by the demand for water and the desire for security in the basin states. The experience in the region reminds us that cooperative agreements can emerge amidst (and potentially because of) wider conflict, and highlights the importance of taking the historical context into account when studying the existence and influence of water regimes.

South Africa's democratic constitutional reforms of 1994 have also played a vital role in shaping water laws. Earle points out that "the decade of the 1980's – the last years of the apartheid regime – saw a remarkable increase in the number of agreements reached, compared with the preceding decades" (Earle, 2005, p. 5). According to Ashton et al. (2006, p. 61):

> The dramatic rise in the number of agreements that South Africa entered into during the period 1990–1999 suggest that these may be linked to the end of the Apartheid regime in 1994 and the emergence of South Africa as an independent nation. Examination of these agreements [. . .] shows that there was a sharp rise in the number of agreements signed shortly before 1994, with a slightly larger number of bilateral agreements.

Moreover, Earle notes that "it emerges that most of [South Africa's international river] agreements have been entered into since 1994 (29 out of the 59 are signed after 1990). A large part of this is explained by the fact that in the post-apartheid era, South Africa actively set about normalising its relationship with other states" (Earle, 2005, pp. 4-5) in order to further its national security objectives within the region. As a result, legal developments leading up to, and just after, South Africa's constitutional reforms, including domestic legislation such as the enactment of the National Water Act in 1998, have collectively played a vital role in the management, environmental protection and cooperation over the nation's shared rivers.

5. Contextualising South Africa's international water law obligations in an increasingly water-stressed region

With stress on the water resources in South Africa now mounting to critical levels due to increasing demand and decreasing rainfall leading to chronic drought in parts of the country, reliance on transboundary watercourses is at an unprecedented level (Essa, 2015; Kings, Wild, Moatshe, & De Wet, 2015; WWF-SA, 2017). Freshwater pollution of South Africa's international watercourses due to widespread land-based contamination sources is also having far-reaching impacts, whereby the very public issue of acid-mine

drainage pollution is also having severe local, as well as transboundary, impacts (Chilundo, Kelderman, & O'Keeffe, 2008; Kinna, 2016; McCarthy, 2011; Olalde, 2017). In time, the range of threats to water security within the SADC region will only exacerbate the challenges posed to South Africa's international rivers. Thus, it reasonably follows that:

> Analyzing the emergence and design of existing agreements is a first step towards understanding the process and effects of implementation. However, merely recognizing which provisions are in place for information sharing, water allocation and joint organizations and how they change over time is only part of the story (Kistin et al., 2009, p. 17).

In seeking to preserve and sustain the region's ever dwindling and degraded water supplies, South Africa and its other co-riparians must immediately start to face the enormity of the freshwater challenges facing their shared watercourses and freshwater resources more broadly in the region. By implementing complementary, rather than contradictory, legal agreements as well as other regulatory and technical measures that seek to protect the water quantity and quality of these international rivers for their future sustainability, South Africa can seek to fulfil their treaty obligations and at the same time hopefully maintain these diminishing freshwater resources upon which their populations so heavily rely. Hence, it is extremely important that South African decision-makers remain very clear in their understanding of the nation's obligations under the UNWC and existing watercourse agreements. As Ashton et al. (2006, p. 2) point out:

> If these agreements are the primary tools to promote cooperation between basin states over shared water resources, any oversights or omissions can hinder the ability of South Africa and the region to uphold the objectives of the UN Convention. If the Government of South Africa is unaware of its commitments and their ramifications because these agreements are not readily available, it might neglect to carry out any duties that are stipulated under those agreements.

Understanding the compatibility of international watercourse treaties governing South Africa's shared rivers is thus paramount to trying to ensure the quality and quantity of the nation's, and the region's, limited shared water resources are conserved and managed as efficiently as possible. Following the comparative analysis below, potential future consequences from gaps or incompatibilities that may occur via the application of these laws are subsequently evaluated in relation to some of the pressing water issues noted above which are threatening South Africa and its neighbouring riparian countries.

6. Analysing compatibility between the UNWC and South Africa's modern river agreements

The pivotal regional agreement that has been developed since South Africa ratified the UNWC is the SADC's Revised Protocol on Shared Watercourses, adopted on 7 August 2000 and entering into force on 22 September 2003. It replaced the SADC Protocol on Shared Watercourse Systems in the Southern African Development Community (SADC) Region ('SADC Protocol') adopted on 23 August 1995 and which entered into force on

29 September 1998, whereby this was intended to bring it into line with accepted and current principles of CIL. A number of critical basin-specific multilateral agreements have also been entered into by South Africa with neighbouring riparian states. Given the limited scope of this paper, three of the most prominent agreements are dealt with:

- The "Agreement for the Establishment of the Orange-Senqu Commission" ('ORASECOM Agreement') adopted on 3 November 2000 in Windhoek, Namibia, between the Governments of Botswana, Lesotho, Namibia and South Africa, which established the Orange-Senqu River Commission ('ORASECOM');
- The "Agreement for the Establishment of the Limpopo Watercourse Commission" ('LIMCOM Agreement') signed by the Ministers responsible for Water Affairs of Botswana, Mozambique, South Africa and Zimbabwe on 27 November 2003, which established the Limpopo River Commission ('LIMCOM');
- The "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" ('Interim Incomaputo Agreement') adopted on 29 August 2002, thereby establishing the Tripartite Permanent Technical Committee ('TPTC') for the Incomati and Maputo Rivers (South Africa, 2002).

This leads to the crux of this research investigation in asking: Are each of the legal regimes outlined above – regional and basin-specific – compatible and/or contradictory with South Africa's obligations under the UNWC now that it is in force and binding?

6.1. SADC Revised Protocol

On a regional scale, South Africa is a party to the SADC Revised Protocol. The SADC Revised Protocol is the most pivotal agreement entered into since South Africa ratified the UNWC purely based on the fact that it applies regionally to its riparian neighbours. The SADC Revised Protocol been ratified by all the SADC member states, aside still from Zimbabwe. Thus, all of South Africa's river co-riparians, excluding Zimbabwe, must follow all of its obligations.

The SADC Revised Protocol is a regional agreement with the overall objective "to foster closer cooperation for judicious, sustainable and co-ordinated management, protection and utilisation of shared watercourses and advance the SADC agenda of regional integration and poverty alleviation" (Art. 2, 2000). Article 1(1) provides various definitions: a "shared watercourse" means "a watercourse passing through or forming the border between two or more Watercourse States"; "Pollution of a shared watercourse" is defined as "any detrimental alteration in the composition or quality of the waters of a shared watercourse which results directly or indirectly from human conduct"; and "significant harm" to a watercourse is interpreted as "non-trivial harm capable of being established by objective evidence without necessarily rising to the level of being substantial". Article 2(b) also lists measures to prevent, reduce and control pollution that mirror the UNWC in many respects.

The general principles codified within the SADC Revised Protocol are contained in Article 3. These include: that control over how a State utilises a shared watercourse shall be without prejudice to their rights under the principle of national sovereignty (Art. 3(2)); promoting the principle of sustainable development (Art. 3(4)); the duty to co-operate with other riparian States to exchange information and data relevant to the use and protection of a shared watercourse (Art. 3(6)); and, ERU (Art. 3(7)(a)-(b))). As for Part IV and V of the UNWC, Article 4 of the SADC Revised Protocol concerns specific provisions governing: management of shared watercourses (Art. 4(3)); prior notification and consent procedures for planned measures (Art. 4(1)); and protection and preservation of the aquatic environment. Article 5 concerns the "Institutional Framework for Implementation" which basically sets out the different agencies and departments within the SADC Secretariat to be involved in its further development and practical application. Article 6 provides generally for forming watercourse agreements, including the right for watercourse States to "participate in the negotiation of and to become a party to any watercourse agreement that applies to the entire shared watercourse, as well as to participate in any relevant consultations" (Art. 6(6)).

Finally, in terms of the main procedural and substantive obligations under the SADC Revised Protocol, Article 7 codifies the dispute resolution procedures which are very basic. Article 7(1) obliges all parties to "strive to resolve all disputes regarding the implementation, interpretation or application of the provisions of this Protocol amicably". Those disputes between states which cannot be resolved regarding the interpretation or application of any of the Revised Protocol's provisions, must then be referred to the SADC Tribunal (Art. 7(2)). Additionally, "If a dispute arises between SADC on the one hand and a State Party on the other, a request shall be made for an advisory opinion in accordance with Article 16(4) of the [SADC] Treaty" (Art. 7(3)). Final major provisions concern: entry into force (Art. 10); accession (Art. 11); amendment (Art. 12); withdrawal (Art. 13); and termination of the agreement (Art. 14).

In Southern Africa, the SADC Revised Protocol entered into force in 2003 thus replacing the original Protocol (of the same name) which entered into force in 1996. It was specifically revised in order to bring certain provisions in-line with the UNWC (adopted in 1997 soon after the original Protocol came into force) and therefore both mirror each other verbatim in many parts of the text (Malzbender & Earle, 2007, p. 36; Salman, 2001, p. 1006). This has important ramifications for compatibility and integration between the UNWC and the Revised Protocol in their implementation. Crucially, of those States that are party to the Revised Protocol, South Africa and Namibia have also ratified the UNWC.

There are some key substantive and procedural similarities and differences between the Revised Protocol and the UNWC that may assist or limit synergies and linkages and overall coordination between them (Malzbender & Earle, 2007, pp. 41–45). Both substantively and procedurally, the Revised Protocol repeats many of the provisions of the UNWC verbatim. Such Nevertheless, there are some important distinctions in scope and/or specificity (Malzbender & Earle, 2007, pp. 36–51; Salman, 2001, pp. 1006–1022). Firstly, the

SADC Revised Protocol obliges member States to strictly apply the Revised Protocol to future agreements without scope for adjustment, whereas the UNWC states that watercourse agreements may 'adjust' the provisions to suit the context where necessary (Malzbender & Earle, 2007, pp. 42–44; Salman, 2001, pp. 1013–1015). Hence, it is more stringent in this regard than the UNWC. Secondly, the SADC Revised Protocol stipulates in its dispute resolution procedures that conflicts arising between member States must be submitted to the SADC Tribunal for a binding and final verdict. This in contrast, but not necessarily conflict, to the applicable UNWC procedures allowing for arbitration and, if required, submission to the International Court of Justice (ICJ) 'unless States have agreed otherwise' (as could be interpreted by State parties to the Revised Protocol) (Malzbender & Earle, 2007, pp. 42–44; Salman, 2001, pp. 1013–1015). Nevertheless, as the UNWC clearly allows States to agree otherwise, these dispute resolution procedures may, in practice, not lead to any issues over conflicting jurisdiction with the SADC Revised Protocol.

However, the most potentially controversial divergence between both instruments is one of legal interpretation in so far as the SADC Revised Protocol possibly prioritises the rule of no significant harm over the rule of equitable and reasonable utilisation. It is generally said to constitute the inverse relationship under the UNWC (Malzbender & Earle, 2007, pp. 38–40; Salman, 2001, pp. 1007–1010). However, this is by no means a widely recognised contradiction between the two instruments, and in any case, the relationship between the rules of no significant harm and equitable and reasonable utilisation within each separate agreement is a source of on-going academic debate; one that some believe is a moot point. On this point, Salman, as well as Malzebender and Earle, argue this issue of legal interpretation may not constitute a contradiction between the instruments depending on how one reads the *travaux preparatiores* - background materials and earlier drafts during treaty development and negotiations - for each agreement and considers that the SADC Revised Protocol was indeed specifically revised with the intention of mirroring the UNWC (Malzbender & Earle, 2007, pp. 38–40; Salman, 2001, pp. 1007–1010). All of these nuances however will seemingly remain a moot point until a matter is presented for dispute resolution by state parties to both agreements that tests and discerns a legally binding outcome for these potential interpretative discrepancies.

While the above distinctions would need to be examined in greater detail and potentially resolved prior to seeking to develop certain synergies and inter-linkages, along with the related institutional arrangements, there is substantial scope for substantive and procedural coordination. Fundamental elements exist which would be mutually complementary from the outset in coordinating and implementing both agreements. Firstly, both the SADC Revised Protocol and the UNWC allow for the formation of specific basin agreements and their associated institutions for the purposes of improving governance and effective transboundary water management (Malzbender & Earle, 2007, pp. 43–44; Salman, 2001, pp. 1012–1015, 1018). Secondly, both the SADC Revised Protocol and UNWC encourage harmonisation of existing/new basin agreements with their respective principles and substantive rules which could aid regional coordination with non-SADC member States, providing greater legal clarity and improving regionally integrated water management (Malzbender & Earle, 2007, pp. 49–51; Salman, 2001, pp. 1021–1022).

Lastly, as stated above, the SADC Revised Protocol and the UNWC set out separate dispute resolution provisions that together can be seen as mutually supportive in a regional context. In this regard, given the UNWC's entry into force, the SADC Revised Protocol would be used for SADC member States and the UNWC provisions could potentially be used for disputes between SADC and non-SADC nations, depending if either State was a party to the UNWC (Malzbender & Earle, 2007, pp. 49–50). On this basis, the issue of whether the UNWC provisions take precedence could have ramifications for those that have already ratified it, namely South Africa and Namibia. Indeed, there might be some procedural and/or jurisdictional discrepancy for South Africa if it was involved in a dispute over one of its transboundary river with any riparian neighbor other than Namibia, given that any finding under the SADC Revised Protocol from the SADC Tribunal is considered binding and final. However, this will most likely not be known until a dispute is raised and subsequently clarified by a particular matter being referred to the SADC Tribunal and/or the ICJ.

6.2. ORASECOM Agreement

The Orange-Senqu River and its tributaries flow east to west, from Lesotho through South Africa and Botswana and in the end along South Africa's border with Namibia. South Africa's industrial heartland of Gauteng where the nation's capital Johannesburg is located and which is crucial for the country's socio-economic development relies heavily on water supplied by the Orange-Senqu (Turton, Meissner, Mampane, & Seremo, 2004, p. 88). As a result, industrial water contamination, especially from acid mine drainage (AMD) due to so many active and abandoned mines within the upper parts of the basin, has a major impact on the basin (McCarthy, 2011). To govern the river and its tributaries, the Orange-Senqu River Commission or ORASECOM was established under the ORASECOM Agreement in 2000 between all the basin states.

In its Preamble, the Agreement acknowledges the SADC Revised Protocol and the UNWC, whereby the general obligations of parties & provisions are overall aligned between both agreements. ORASECOM's institutional structure and decision-making processes are established under both Articles 2 and 3. Articles 4, 5 and 6 respectively set out ORASECOM's objectives, functions and powers. In this regard, ORASECOM's mandate is to provide technical advice through recommendations to the Parties and one of its main aims is to develop a Basin Wide Plan which builds a common understanding of the water resources issues in the basin, and which proposes recommendations to address these issues (Art. 5). However, it is national governments who must then individually ensure the integrated water resource management (IWRM) basin plans developed via ORASECOM are thereafter implemented (Article 6).

Major obligations for all riparian states are set out in detail under Article 7, most of which exemplify widely-accepted substantive and procedural baselines for CIL regarding transboundary watercourses. Significantly, Article 7 is very explicit under certain provisions that its terms must be read consistently with the SADC Revised Protocol, such as "equitable and reasonable" (Art. 7(2)) and "significant harm" (Art. 7(3)). Extremely basic dispute

settlement procedures are included in Article 8 whereby states must enter into consultations and/or negotiations to settle disagreements amicably (Art. 8(1). If no resolution can be reached, the parties can, unless otherwise agreed, submit the matter to the SADC Tribunal for a finding Arts 8(2); one which they must consequently accept as final and binding (Art. 8(3). A final point is that the Agreement dictates that all costs incurred by LIMCOM are shared equally between the parties unless otherwise agreed (Art. 10).

Under its own terms, the ORASECOM Agreement must be read in conjunction with other pre-existing laws. To this end, it is compatible with existing agreements unless a specific project were to develop in such a way as to conflict with its aims, objectives or specific provisions. Importantly, all the parties to the ORASECOM Agreement have also ratified the Revised Protocol. Given the ORASECOM Agreement references the UNWC and the SADC Revised Protocol it is no surprise then that there is a general compatibility between these significant legal components. The UNWC is however more detailed in some of these cornerstone provisions such as transboundary harm and notice for planned measures so this could potentially support the interpretation and further development around aspects of the ORASECOM Agreement in the future. For example, whilst the ORASECOM Agreement is itself not specific on assigning states volumetric allocations, it does conceive that these will be developed and subsequent agreements will be entered into by the States (Arts. 1(2), 1(4)). Implementation, however, remains the ambit of national governments, not ORASECOM (Arts. 4–6)).

This raises another key point around ORASECOM's basin governance. As the commission moves toward the discussion of scenarios and the formulation of a basin wide plan, its role as a negotiation forum for parties – leading to the basin-wide plan and 'implementable' recommendations - will increase (Heyns, Patrick, & Turton, 2008). In addition the potential oversight role of the organisation with respect to the implementation of the Basin Wide Plan and the bilateral arrangements may change. This may require improved clarity as to intention of the parties with respect to the various functions of ORASECOM in the future. It is clear from Article 5(2) stating parties can utilise "all measures" to deliver recommendations that the parties intended to give ORASECOM far-reaching powers to undertake studies and to make recommendations (Southern African Development Community, 2009). However, parties did also intend to maintain sovereignty by limiting ORASECOM's mandate to an advisory role (SADC, 2009, p. iv). Clarity on this aspect "becomes particularly important when involving stakeholders in the formulation of recommendations" (SADC, 2009, p. iv) by ORASECOM. Regarding dispute resolution, ORASECOM follows the SADC Revised Protocol, so the same issues arise as between it and the UNWC regarding determining which process must be followed, specifically submission to the SADC for adjudication and whether the SADC Tribunal is final and binding.

6.3 LIMCOM Agreement

The Limpopo River and its tributaries flow both from South Africa straight into Mozambique (as for the Olifants River) but also from Botswana via Zimbabwe at certain points

into Mozambique where the confluences merge and it enters the Indian Ocean. Competing water demands for irrigation, mining and domestic supply have a critical intersection of conflicting uses whereby urgent and highly public issues of water scarcity and water contamination have arisen (Chilundo et al., 2008; Kings et al., 2015). It is within this basin context that the riparian states of the Limpopo River signed the LIMCOM Agreement in 2003. It is significant that LIMCOM only entered into force relatively recently in 2011 when all basin states eventually ratified it. Prior to this, in 1986 South Africa, Botswana, Zimbabwe and Mozambique signed the Agreement for the Establishment of the Limpopo Basin Permanent Technical Committee (LBPTC) which ceased operation upon the ratification of the LIMCOM Agreement.

Recognising both the SADC Revised Protocol and bearing in mind UNWC, the Agreement's Preamble sets out some basic objectives before Article 1 lists key definitions, many of which mirror the Revised Protocol. Article 2 is the main 'operationalising' provision of the Agreement in so far as it mandates the establishment of LIMCOM. Among its objectives outlined in Article 3, LIMCOM must advise the member states by providing recommendations on the uses of the Limpopo, its tributaries and its waters for purposes and measures of protection, preservation and management of the river. Structurally, the LIMCOM Council is the highest body of the Commission (Arts. 4–6). As an inter-governmental technical advisory institution, LIMCOM's primary function, as per Article 7, is to advise the state parties and provide recommendations regarding the measures for the protection, preservation and management of the Limpopo River and its tributaries. In this sense, LIMCOM performs similar advisory and coordination functions to ORASECOM (almost mirroring the ORASECOM Agreement in its institutional provisions) and is similarly limited in mandate so it cannot implement basin plans (Article 8). Basic dispute settlement procedures are included at the end whereby states must "expeditiously" enter into negotiations whenever a disagreement arises (Art. 9(1). If after six months of negotiations no resolution has been reached, the parties can, unless otherwise agreed, submit the matter to the SADC Tribunal for a finding which they must consequently accept as final and binding (Arts 9(2) & 9(3)(1)).

The UNWC goes further in terms of setting out key processes and principles which in-turn supports assisting interpretation and implementation of the LIMCOM Agreement. The Agreement itself incorporates basic elements of the Revised Protocol and therefore focuses mainly on establishing an institutional body for governing the river and its tributaries. Thus, there is a general finding of compatibility despite a few minor differences in terminology—such as utilising the "prevention principle" (Article 2) in place of the CIL "precautionary principle" - or omissions. In this regards, while the Preamble acknowledges applicable existing agreements including the UNWC as well as recognising the "spirit, value and objectives" of the SADC Revised Protocol, it is significant that the LIMCOM Agreement does not contain a specific provision concerning the customary law duty to do no harm. However, Article 3 stipulates that certain general principles of the SADC Revised Protocol apply to the LIMCOM Agreement, including: sustainable development; inter-generational equity; pollution prevention; and the transboundary impact assessment principle (Arts 3(2)(a)-(e)).

As with ORASECOM, LIMCOM has limited powers regarding implementation and does not have the authority to execute any agreed plans as that is the role of the national governments. In particular, LIMCOM has only recently entered into force whereas before the LBPTC had been performing an advisory role in the absence of a more well-developed coordination mechanism. Finally, there are potentially conflicting dispute resolution procedures between the UNWC and the LIMCOM Agreement. As with South Africa's other modern basin agreements outlined above in terms of following the SADC Revised Protocol, the same potential issues arise concerning compatibility with the sequential UNWC processes versus any final and binding verdict of the SADC Tribunal. However, as noted previously, this variance could rather be interpreted and also be applied in a complementary fashion with the UNWC depending on what stage in the dispute resolution process the matter was submitted to the Tribunal for an absolute outcome.

6.4 Interim Incomaputo Agreement

The Incomati and Maputo Rivers flow from the north-east of South Africa adjoining Swaziland out into the Indian Ocean through Mozambique. The basin's main uses being agricultural irrigation, forest plantations and inter-basin transfers in what is a very dry, arid region of Southern Africa, hence water scarcity being such a pressing issue for the riparians here (Essa, 2015; Naidoo, 2017; WWF-SA, 2017). In 2002, Mozambique, South Africa and Swaziland entered into the Interim Incomaputo Agreement; the first basin-wide water-sharing management agreement concluded in the SADC region which established comprehensive flow regimes (Malzbender & Earle, 2007, p. 32; Slinger, Hilders, & Juizo, 2010, p. 1). It was therefore seen as a flagship agreement for its time whereby future basin-wide agreements in the SADC region could be drafted; this is especially the case for the detailed annexes specifying flow regime and agreed data sets for water-sharing and usage allocations (Art. 9, Annex I). It was also a notable example of the evolution of African basin agreements as it had a greater scope, depth and legal sophistication than earlier treaties (Malzbender & Earle, 2007, p. 32).

Many of the general principles of the SADC Revised Protocol apply to this agreement. Indeed, the Preamble stipulates that the parties bear in mind the Revised Protocol, as well as take "into account the modern principles and norms of International Law as reflected" in the UNWC. Definitions are covered in Article 1 - many of which come verbatim from the Revised Protocol – along with defining the geographic boundaries of the "Incomati watercourse" and "Maputo watercourse". Article 2 contains the general objective to promote cooperation and sustainable joint use of the rivers, while Article 3 means that the Agreement must be read in conjunction with general principles listed from the Revised Protocol. Under Article 4, specific responsibilities are assigned to all three riparian countries covering many common main elements of IWRM. Institutionally, Article 5 establishes the TPTC, an inter-governmental body for coordination and development of basin technical plans, data sharing & usage allocation. Other substantive provisions which follow include: obligations

for the parties to take all appropriate measures to jointly protect the environment of the Incomati and Maputo Rivers (Art. 6); and the right to optimal and sustainable utilisation of the Rivers' water resources, taking into account the interests of co-riparians and coordinating management with them via the exchange of information (Art. 7).

The rest of the Agreement generally concerns more procedural obligations. Article 8 details mechanisms which the parties, through resolutions of the TPTC, must adopt in order to maintain water quality and the prevention of pollution. A pivotal feature of the Agreement is Article 9 concerning "Flow Regimes" for both rivers which are attached in both Annex I and the "Piggs Peak Agreement". Other key provisions include: Article 10 which concerns the TPTC and each state developing measures to mitigate the effects of floods and droughts; Article 13 regarding processes for 'planned measures' that may have transboundary impacts; and Article 14 providing for capacity-building activities by the TPTC. Settlement of disputes is covered in Article 15 which dictates that where a matter cannot be resolved within one year of entering into negotiation, parties may submit to an arbitral tribunal for a determination. Article 15 goes further to set out key processes for the establishment of the tribunal and stipulates any subsequent award is final and binding (Art. 15(3)(j)).

The Agreement concludes with Annexes extrapolating on certain key provisions. Most notably, Annex I compiles an extensive data set for determining flow regimes for both Incomati and Maputo Rivers respectively. Flow regimes include: delineating the catchment areas and priority uses therein; average rainfall, maximum water amounts required for each state's catchment area uses and minimum flows for ecosystem sustainability; and provisions for phased reduction in irrigation quantities if the TPTC determines drought conditions. Annex II allows scope for existing and future river projects as identified by each of the riparian states within their own national boundaries. Subsequent Annexes cover: transboundary impacts (Annex III); existing bilateral and trilateral agreements governing both rivers that were taken into account when developing the Agreement (Annex IV); and specific timelines including dates for the establishment of comprehensive water resource development and water use agreements (Annex V).

The UNWC and the Interim Incomaputo Agreement are broadly legally compatible. South Africa's press release on the day of signing even stated that "Based on the framework provided by the Revised SADC Protocol on Shared Watercourses, the Interim Incomaputo Agreement reflects the Principle of Equitable and Reasonable Utilization of Shared Watercourses for economic and social purposes between the three countries, as well as ensuring protection of the environment" (South Africa, 2002). Hence, similar to the ORASECOM and LIMCOM Agreements, it mirrors the SADC Revised Protocol in its basic principles and processes. In parts is supported by the specificity of the Convention, yet it goes further than it in others, as discussed regarding flow allocations. As for ORASECOM and LIMCOM, direct implementation of the Interim Incomaputo Agreement is the mandate and responsibility of the respective national governments within their own national borders; it is not within the scope of the TPTC to execute any studies or recommendations.

One of the key differences, but one that does not necessarily impact on the compatibility of both legal instruments, concerns the specific usage and flow allocations detailed in the Interim Incomaputo Agreement. The UNWC provides basic principles and processes for agreeing uses and flow allocations, including the data-sharing mechanisms that will assist states in calculating and agreeing these allocations. Alternatively, but not contradictory, the Agreement goes much further and in both Article 9 its Annex I which specifies percentages and figures for water allocation and uses along both the Incomati and Maputo Rivers. Nevertheless, rather than being contradictory, the difference here is actually an example of how the UNWC aims to support states in developing specific and contextual basin treaties; also pertinent for ORASECOM and LIMCOM as will be discussed later regarding potential future issues. Thus, regarding flow regimes, they can be consistent and mutually supportive.

Finally, another compatibility issue which may arise is the process for dispute resolution. The Interim Incomaputo Agreement notably differs from the ORASECOM and LIMCOM Agreements in so far as it provides detailed processes for the possible establishment of an arbitral tribunal to settle disputes (Article 15). Yet, the one year deadline for peaceful settlement from the beginning of negotiations is at odds with the UNWC timeframe of six months (Art. 33(3)). Hence, for dispute resolution under the Agreement, the same issues arise as between the UNWC and ORASECOM and LIMCOM Agreements regarding determining which processes must be followed, specifically for adjudication and whether the SADC Tribunal is final and binding.

7. South Africa's watercourse treaty obligations viewed through the lens of regional water security

The comparative legal analysis detailed above leads to drawing some basic conclusions for South Africa and the future of its transboundary water agreements. Firstly, there is urgent need for South Africa as a country, but also Southern Africa as a region, to strengthen its legal and institutional frameworks for transboundary water management given the escalating impacts of chronic drought and regional water scarcity driven fundamentally by climate change (Kings, 2016). The situation is now critical with South Africa and Mozambique this year imposing strict water ration limits in major cities such as Cape Town and Maputo respectively (McVeigh, 2018; Watts, 2018). Certain media's discourse of 'water wars' (the notion that armed conflicts will occur over scarce water resources) is hyperbolic, especially around Cape Town's designation of 'Day Zero' – the date assigned for when local dam reserves fall to 13.5% of capacity and the government will turn off most of the city's water taps (Felix & May, 2018; Watts, 2018). Nevertheless, the water crises in Cape Town and increasingly in other cities across the region does heighten the immediacy of implementing practical legal agreements to ensure meaningful, long-term water cooperation across international borders in Southern Africa.

Moving forward, the development of specific water usage and quantity allocation regimes need to be elaborated for South Africa's transboundary river basins. The complexity of water-sharing is compounded as 98 per cent of South Africa's surface water is already

fully allocated, leaving only two per cent available for future uses (Kings et al., 2015). The UNWC's basic principles of ERU and no significant harm will be useful in assisting their development. Depending on how these are agreed and what flexibility they allow for climate change, they may place any agreements at odds with the Convention so a full knowledge of all the relevant provisions is required. How this is achieved in a water scarce country and region will be incredibly challenging yet pivotal to enabling effective transboundary river cooperation now and for the long-term future.

Inter-connectedly, the UNWC and SADC Revised Protocol both acknowledge groundwater as being part of the hydrological system of international watercourses, yet they do not include detailed provisions for its management. Nor do the LIMCOM, ORASECOM, and Interim Incomaputo Agreements. Yet, there are over 30 shared aquifers in the SADC region and 70 per cent of its 250 million inhabitants rely for their daily water supply on groundwater (Southern African Development Community, 2014). This is a significant untapped resource that could provide much needed freshwater resources if developed sustainably. To ensure sustainability and for effective transboundary IWRM, aquifer development within Southern Africa must inherently be based on cooperation between neighbouring countries via groundwater treaties that integrate the main elements of existing surface water agreements in order to ensure legal, institutional and hydrological compatibility between surface and groundwater agreements. However, given the legal disconnect between South Africa's reliance on transboundary surface and groundwaters, it reasonably follows that:

> As climatic, demographic and socio-economic changes take place in the SADC region, management strategies and allocations may require adjustment [. . .] Nor are there any allocation agreements regarding transboundary groundwater in the region. Additional research is therefore required to identify and understand the barriers to reaching agreement on equitable shares of these highly utilized river basins as well as the precise extent, characteristics, and degree of water sharing that occurs in the aquifers that South Africa shares with neighbouring countries (Kistin et al., 2009, p. 18).

Considering the move by SADC nations to develop 'implementable', basin-wide management plans for rivers within the region – transboundary or otherwise—the scope and powers of inter-governmental institutions will likely need to be enhanced. As South Africa's "river basins became increasingly over-exploited, international institutional arrangements were necessary to manage them in an increasingly complex interdependent system" (Turton et al., 2004, p. 391). Yet, further degradation of these shared water resources has shown that these arrangements must go further in mandate than merely advisory technical bodies delivering "recommendations" for effective transboundary water management.

Greater legal mandate requires the buy-in of all states to trust the participatory processes, research outcomes, and recommendations of joint-water authorities to implement meaningful IWRM plans. At present, of the four SADC watercourses with institutions that have executive authority to implement plans under legal agreements, none include all of the basin riparian nations (Malzbender & Earle, 2007, p. 29). Moreover, South Africa is both an upstream and downstream riparian state so which stance is taken on the interpretation & application of "equitable & reasonable use" and "no significant harm" principles will likely

depend on the basin, issue, and legal agreement(s) that are concerned rather than a 'one-size fits all' approach which might be unfavourable in certain basins where it is downstream. Ultimately, South Africa might have to cede enforcing some of its regional 'hydro-hegemony' (defined as the riparian with the most socio-economic as well as geo-political power and influence to control regional water management) power in the short-term, in order to gain long-term cooperation regarding the current and future sustainability of as many of its international rivers and connected groundwaters as possible given its reliance for freshwater supplies on these shared cross-border resources (Zeitoun & Mirumachi, 2008; Zeitoun & Warner, 2006).

Finally, factoring in the developments in international environmental customary law and that the UNWC and SADC Revised Protocol both clearly stipulate states must follow this in entering into and fulfilling its international agreements, any bilateral/multilateral legal agreements must incorporate detailed provisions re prevention of transboundary harm. Undoubtedly, the impacts of AMD on the water quality and river environments is approaching or has already reached a threshold whereby there will be long-term and possibly irreversible impacts in South Africa (McCarthy, 2011, pp. 1–7). Consequently, if this trend continues, the weight of scientific evidence clearly suggests that certain heavy metal toxicants from AMD will continue to propagate downstream in Namibia, Botswana, Zimbabwe and Mozambique and lead to similarly harmful levels as are being recorded in South Africa (Chilundo et al., 2008, pp. 655–665; McCarthy, 2011, pp. 5–6). To this end, South Africa must address issues of transboundary pollution now so as existing and future agreements will increasingly tend to be interpreted so as to give a higher legal standard to the obligation to take appropriate and reasonable measures for the prevention of transboundary harm. This is especially pertinent for South Africa, especially in contexts where it is the upstream polluter of its transboundary rivers, in facing issues such as AMD, but addressing them now and well into the future will not be cheap (Olalde, 2017; Vecchiatto, 2015).

8. Conclusion

This paper has sought to provide a basic investigation of the compatibility of the UNWC - which is now in force - with South Africa's modern water laws at multiple scales: regional being the SADC Revised Protocol; and multilateral river basin agreements of the Orange-Senqu, Incomati-Maputo and Limpopo Rivers, as they relate to its major transboundary watercourses. Based on the above analysis, there is a finding of no major legal contradictions between the UNWC with: the SADC Revised Protocol; and the LIMCOM, ORASECOM, or Interim Incomaputo Agreements. Rather, the UNWC features general legal substantive, procedural and institutional compatibility with South Africa's water laws across all of these scales, albeit with some common issues that could potentially cause conflict.

The major difference between the regional and international agreements regards dispute resolution processes, specifically regarding their common deferment to the SADC Tribunal, or an arbitral tribunal for the Interim Incomaputo Agreement, could potentially be at odds with the UNWC's detailed processes. Alternatively these could function in a

complementary fashion. The outcome of application and interpretation of overlaying laws is merely speculation until such a dispute arises to test this point. Additionally, institutional coordination at different scales and across different mandates poses a potential for increasingly complexity and diminishing governance compatibility, especially if another formal layer of institutional architecture is created for the UNWC (Rieu-Clarke & Kinna, 2014). Nevertheless, this is not contradictory and actually provides wide scope for complementarity given the framework nature of UNWC and SADC Revised Protocol in supporting and promoting basin institutions.

With the UNWC now in force, buttressed by the amendment to the UNECE Water Convention opening it to global accession and SDG 6 recognising transboundary water cooperation as crucial to achieving sustainable development targets by 2030, this article intends to re-focus attention on the role of the Global Water Conventions, and more broadly the global institutional framework for international watercourses, in supporting the interpretation and implementation of existing and future transboundary watercourse agreements in different regional water 'hotspots' around the globe: in this instance, Southern Africa. It is hoped this will ignite discussion and potential future research on how best to coordinate and in-turn implement complementary legal instruments that seek to address the complex nexus of legal, environmental and developmental challenges facing South Africa and its neighbouring riparians in relation to their shared transboundary water resources. Significant challenges which can hopefully go some way to being addressed in a cooperative fashion via continually seeking to enter into, and in-turn implement, complementary transboundary water laws. Ultimately, strengthened complementarity between legal instruments is intended to foster more effective multi-scale water governance by aligning any future agreements with existing obligations under the UNWC and South Africa's other international watercourse agreements.

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