Equitable water allocation: A case between South Africa and Namibia on the Lower Orange River

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Abstract

This case study deals with the negotiations between South Africa and Namibia about the equitable water allocation on the Lower Orange River basin. The Lower Orange River has unique characteristics in terms of socio-political developments, mainly on the historic water use, and border dispute. Until in 1990, Namibia was under the South African Administration and the Lower Orange River was managed by South Africa. At that time there was no negotiation as such but rather interim planning on water allocation. After 1990 Namibia engaged in negotiations with South Africa about its disputed common border, and equitable share of water from the Orange River. Namibia is not in possession of any water storage infrastructure along its common border with South Africa. The paper discusses the historical development and current disputes between the Watercourse States over the water sharing agreement on the Lower Orange River. The main question addressed by this paper is: how the Watercourse States deal with the equitable share of water allocation on the Lower Orange River? To provide answers to this question, the case study presents information about the natural characteristics of the basin, the historical development as well as the framework of negotiation at the Permanent Water Commission. Finally the case study presents a synopsis analysis based on the minutes of the Permanent Water Commission meeting which took place during the period 1994 – 2007, as well as on the interviews held with the officials from the two Watercourse States. It is concluded that negotiations continued because South Africa and Namibia share the common political history. Namibia claims “historic entitlement” (50 Mm^3/a) from the Orange River while under the South African Administration as its equitable share to be provided at free of charge. South Africa claims that the equitable share of Namibia is limited on the Lower Orange River. Besides Namibia should pay the operation and maintenance costs incurred on the existing scheme, as well as the full cost on the temporally additional water allocation (60 Mm^3/a). In order to formalise the existing draft water sharing agreement it is recommended that the Parties negotiate by equity principles set forth in the SADC Protocol instead of making hard claims, justify share of costs and benefits on joint projects. Finally, the PWC should consider exposure trainings on international and environmental water law in order for the Parties to be at equal footing.

Key words: equity, interests, negotiation, Orange River, SADC Protocol on Shared Watercourses

1 Introduction

The Orange River basin is situated in the southern part of the African continent (see Fig. 1). The basin is shared between Lesotho, South Africa, Botswana and Namibia. South Africa and Namibia share the Lower Orange River in a contiguous way for approximately 600 kilometers, and discharges in the Atlantic Ocean. The Lower Orange River is relatively small compared to the Upper and Middle part of the Orange River basin in terms of total runoff.

The basin has seen a change from colonial rule and eventually a democratic rule of the Watercourse States. Namibia was under the rule of South Africa Administration until in 1990. At that time Namibia was not required to contribute to the operation and maintenance costs of the infrastructure on the Lower Orange River (LOR). Given the historical development, Namibia does not have its own water storage (dam) along the common border to secure water. The water which is used along the common border is from Vanderkloof/Gariep Dam, the South African storage dams. Such water has to be brought at operation and maintenance, and eventually capital cost of the infrastructure. Because of this, Namibia engaged into negotiations with South Africa to clarify its historical entitlement of water from the Orange River Project which was build as a national project while Namibia was under the South African Administration, equitable share of water on the Orange River Watercourse, additional water allocation and the payment costs thereon.

It is interesting to note that South Africa and Namibia share the common political history. The current use or access to the Lower Orange River Watercourse came as a result of political development of the two Watercourse States. Moreover, the political changes have a bearing on the development of water use in the entire basin. Hence the use of water in the Orange River basin is fast approaching the closure status. The two Watercourse States initiated a Permanent Water Commission (PWC) on 14 September 1992 to advice the two head of States on issues of common interest with regard to the use and management of Lower Orange River (LOR) Watercourse. The case study presents information about the natural characteristics of the basin and historical development, mainly about the border and water allocation on the LOR. It examines the negotiation process between South Africa and Namibia on the Lower Orange River during the period 1994 – 2007. To achieve this, the paper addresses the positions and underlying interests of the Parties on the current disputes of water sharing; mainly water quantity and payment cost for water allocation. The paper also addresses the status of the pollution and border dispute on the LOR.

2 Descriptive of the Orange River Basin

2.1 Physical geography and geology of the Orange Basin

The Orange River basin is located in the southern part of the African continent (see Fig. 1). It originates in the Lesotho Highlands Mountain and flows west for approximately 2 200 km and ends into the Atlantic Ocean between South Africa and Namibia (LORMS 2005). It has main tributaries, namely Senqu in Lesotho, Vaal in South Africa, Fish in Namibia, and Molopo in Botswana, the latter has not yielded runoff for many decades (Ibid). The basin covers an area of approximately one million square kilometres (Ibid). From 20º E longitude westwards the river forms approximately 600 km long international common border between Namibia and South Africa. This common border area is characterised by an arid climate.

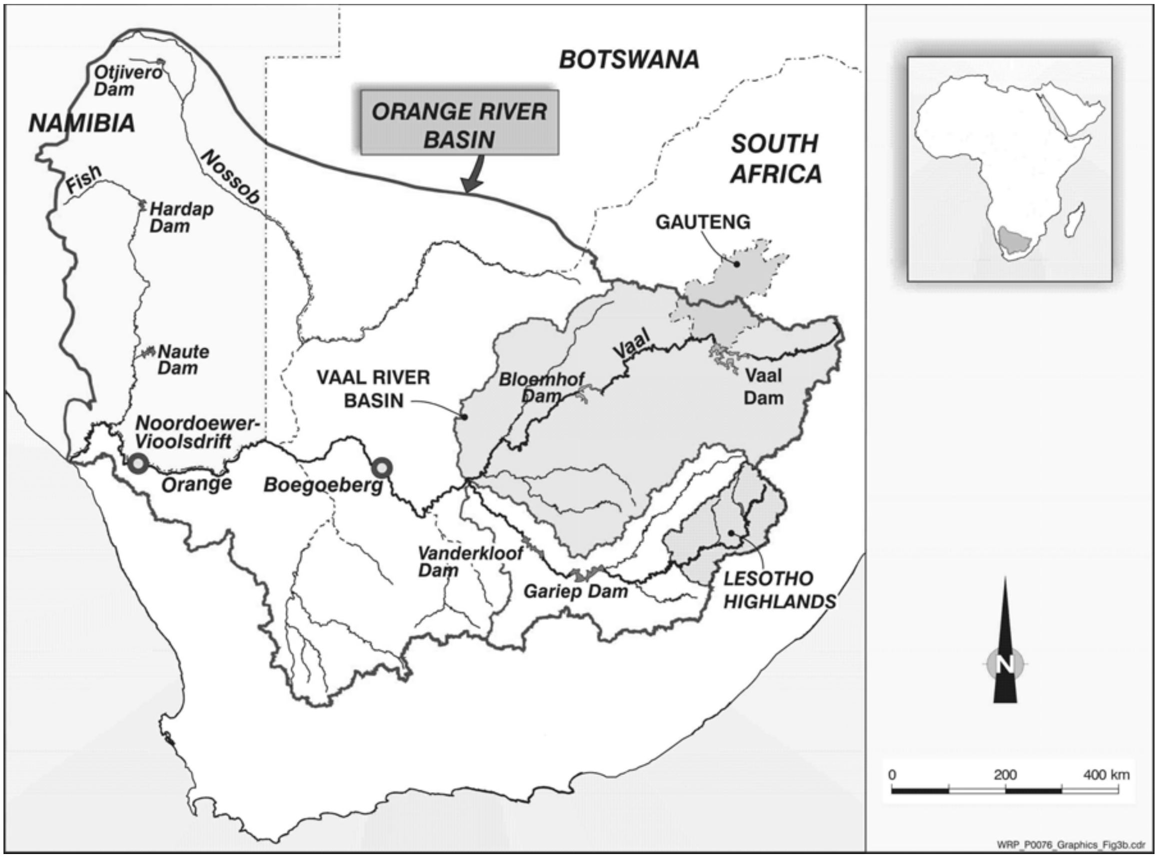

Fig. 1. The Orange River Basin and its riparian States

(Source: LORMS 2005)

2.2 Hydrology

The Orange River basin is distinctively characterised by high rate of evaporation (LORMS 2005). The mean annual precipitation varies between 2 000 mm/a in the Lesotho Highlands and less than 50 mm/a at the Atlantic ocean in the west (Heyns 2004). Table 1 below illustrates the natural run-off contributions on the Orange River Basin per Watercourse State. Although 1000 Mm³/a is allocated for the Environmental Flow Requirements (EFR) it is not absolute that this amount is entirely for EFR due to high rate of evaporation. As in Table 2, some 3000 Mm³/a is lost to evaporation. LORMS (2005) suggest that the available runoff can only be used if further dams are built. With an additional dam at Vioolsdrift/Noordoewer, the system can better be managed and the assurance of supply downstream can be improved (Ibid).

Table 1 Natural run-off contributions on the Orange River Basin

Country	Surface area in the basin (10^6 m²)	Mean annual runoff (10^6 m³ a^{-1})
Botswana	120 000	0
Lesotho	30 000	4 000
Namibia	250 000	530
South Africa	600 000	6 830
Total	**1 000 000**	**11 360**

(Source: LORMS 2005)

Table 2 Current water allocation on the Orange River Basin

	Quantity of water (Mm^3/a)
Mean annual runoff	11 360
System losses (evaporation/transmission losses)	-3 000
Balance	8 360
Users	
Botswana	0
Lesotho	20
Namibia	110
South Africa	5 370
EFR	1 000
Remaining balance	**1 860**

(Source: LORMS 2005)

3 Historical development

3.1 The border agreement

Namibia – then known as Suid West Africa became a German Protectorate in 1884 (Conley and van Niekerk 2000). At that time, South Africa was under the British colony. In 1890, the colonial masters of Britain (ruled South Africa) and Germany (ruled Namibia) signed a Berlin treaty which recognises the northern bank as the border between the two countries for an unknown reason. In 1910, South Africa was relinquished from the British colonies (Ibid). In 1919, after Germany's defeat in the First World War, the League of Nations entrusted South Africa with a mandate to take over the administration of Namibia (Ibid). By then, South Africa had full sovereignty right over the Lower Orange River. In 1961, South Africa declared itself a Republic of South Africa independent of Britain (Ibid). Namibia gained its independence in 1990 through a democratic elected government. In 1994, the South African Apartheid government was replaced by the current democratic government. Since then negotiations on demarcating of boundary started in 1991 under the previous South African Apartheid government and continued with the democratic government of South Africa in 1994. Shortly before the sworn in for the New Cabinet of South Africa in 1994, the two surveyors general reached the agreement that the border is in the middle of the river. Progress with regard to border demarcation has gone to the point where the two surveyor generals had maps drawn up and signed in 1994. The surveyors submitted the agreed text to the two governments, which incidentally has not been formally ratified by the Parties until at present.

3.2 Water allocation

Until 1990 the water allocation was based on the Water Act 54 of 1956 of South Africa when Namibia was under the South African Administration. The Water Act 54 of 1956 did not consider water allocation in terms of equity but on the ownership of land which was dominated by the white minority in South Africa and Namibia, respectively. Before the independence of Namibia in 1990, there were no negotiations between the two countries on water allocation. Water was used by all riparian land owners/users along the river. Nevertheless, there were interim agreements merely on water planning. At independence, it was agreed that Namibia would receive 50 Mm^3/a from existing infrastructure of South Africa to meet its demand at downstream. Because of unreliable data in the use of the water along the LOR, the responsible team used a figure of 10 years backlog which incidentally was the highest water demand, i.e. 50 Mm^3/a in

1982, as well as the hydrological condition of the LOR formed the determination of a 50 Mm³/a. Presently, Namibia regards this water allocation as its "historical allocation", whereas South Africa calls it "agreed allocation". This water allocation has been free of charge. At that time South Africa's demand of the Orange River was 1999.1 Mm³/a (LORMS, 2005). Its water demand on the Upper, Middle and Lower Orange System, including the Vaal, was estimated to be 5412 Mm³/a in 2005 and 5869 Mm³/a in 2025 (Ibid). The water demand in Namibia on the use of Lower Orange River was estimated to be 75.5 Mm³/a in 2005 and 274 Mm³/a in 2025.

After some years, Namibia expanded on the water allocation of 50 Mm³/a especially at Aussenkehr irrigation schemes which is dominated by table grapes. Namibia asked more water from the South African infrastructure for its economic development along the Lower Orange River, i.e. the 60 Mm³/a on top of the 50 Mm³/a for the envisaged Haib Copper Mine (see Appendix 1; 7th Meeting PWC).

4 Framework of negotiation

Negotiation takes place at Commission level – PWC, whereas the Technical Team Committee deals with the scientific task, mainly the joint studies of the LOR. Other issues of concerns are raised at Orange-Senqu River Commission (ORASECOM), which is the umbrella body in the basin. The Parties have the same chairperson at Technical Team and PWC levels. Besides, some members of Technical Team Committee do appear in negotiation as either co-opted members. Under the current rule, the legality of decisions made at the meeting is as follows[1]: a quorum is obtained when two commissioners from each country are present at the meeting. Nonetheless, decisions taken at such meeting will not be binding to either party without consultation of the other commissioners. Whilst acting members do not have power to enforce decisions taken at meetings, and decisions are reached by consensus. Ultimately, negotiation between South Africa and Namibia is guided by the SADC Protocol on Shared Watercourses.

Below is a schematisation on how negotiation under the PWC is conducted.

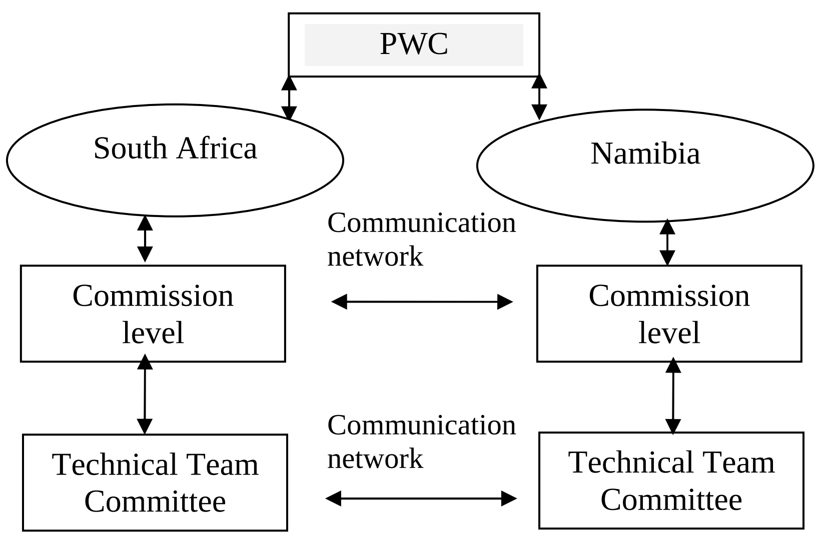

Fig. 2 Schematic on negotiation environment at PWC level
(Source: Shilomboleni 2007)

[1] Minutes of the PWC meeting held on 14 September 2005, Windhoek, Namibia

The negotiation took about 15 years and is still under discussion due to disagreements between Parties. The only agreement in practice is the Joint Irrigation Authority (JIA) at Vioolsdrift/Noordoewer. The JIA is allocated 20 Mm^3/a of which South Africa is entitled to 11 Mm^3/a, whereas, Namibia is entitled to 9 Mm^3/a. Farmers on both side of the border that are linked to JIA are charged levies by JIA to contribute to the operation and maintenance costs of the infrastructure.

5 Key disputes: positions of the countries

5.1 Water allocation

As stated by Crow and Singh (2000) the geographic and economic positions of the Parties do influence negotiations and decisions in Shared Watercourses. Fisher *et al.* (1992) posit that subjective reasoning during negotiations becomes an obstacle to learn the opponent's preference structures. Given the varying position of the Parties, it has been a challenge to achieve consensus to agree on water allocation quantity and payment costs.

The position of South Africa on water allocation of 50 Mm^3/a and 60 Mm^3/a is based on the principles of ownership, and property rights of its water infrastructure, as well as on the strategic importance of the use of water. South Africa is pursuing its position with the principle of absolute territorial sovereignty. Given this, the existing situation makes it hard for Namibia as a downstream Watercourse State to access the water as the water is already in use in upstream Watercourse States another country. Except by building its own infrastructure or buy in the South African infrastructure.

The position of Namibia on water allocation of 50 Mm^3/a is based on "historical allocation" sometimes refers to "customary rights", which Namibia had had before its independence while under the South African administration and as a riparian State. The position of Namibia is further anchored in the principle of absolute integrity of state territory. Putting this principle into practice has challenge in many Watercourse States as to how to accept limits on their absolute rights (Wolf 1999). Namibia does not see its current water allocation with South Africa as equitable and fair due to temporally allocation and dispute about the payment cost. This is evident in most negotiations as from the 10^{th} PWC meeting, where Namibia often opposes the water allocation principle claiming its natural share as a basin State.

The differences between the two countries on water allocation issue can be summed up as follows: South Africa claims that Namibia's equitable share is on the existing scheme but not on the total natural flow of the Orange River. Namibia counter-claims that its equitable share is on the total Orange River Watercourse. South Africa further claims that Namibia be entitled to a temporally water allocation. Namibia asserts that this should be additional share of water allocation on the scheme instead of temporally water allocation. Namibia feels that the draft agreement should shift from water allocation to water sharing agreement instead. This is because the use of water upstream affects the availability of water downstream, and Namibia is excluded from the talks between South Africa and Lesotho. The fact that the river is shared in a contiguous way it safeguard Namibia's historical water allocation but not the temporally quantity of allocation. Negotiation between the two Parties is characterised by claims and counter-claims which is equate to a negotiation dance in this paper.

The interpretation of SADC Protocol is another contrasting issue of concern between the Parties. Interestingly, the two Parties hold different views and interpret the SADC Protocol on Article 3 principle 7 (b) of participation differently. The view of Parties is illustrated here with the case of the second phase of Lesotho Highlands Water Project (LHWP) between South Africa and Lesotho. Namibia wants to engage in the discussion of the LHWP to discuss issues specifically on reduced flows (base flows) and environmental quality concerns at the downstream due to the implementation of the LHWP as well as the inter-basin transfer respectively. However, South Africa sees its discussion with Lesotho as bilateral, thus refuses the participation of Namibia, except information sharing on ad hoc basis. Currently, Lesotho and South Africa, without the involvement of Namibia, are negotiating to divert up to 70 m³/s from the Lesotho Highlands Project to South Africa for phase two[2]. However, Article 3 principle 5 of the SADC Protocol on Shared Watercourses is clear on the importance of cooperation in international agreement. On this note, Namibia feels there is no trust and transparency in its negotiation with South Africa. A meeting on how to steer cooperation took place on 12 May 2006 between the Ministers of Water Affairs of the two countries to discuss amicable solutions in order to formalise the existing draft agreement on water sharing[3].

5.2 Pollution

International rivers usually suffer from environmental concerns such as water pollution and deficit of EFR due to poor management and inability of enforcement mechanisms (Dieperink 1998). Initially, Parties did not deliberate much on water quality aspect. Kranz *et al.* (2005) highlight the problems of the Orange Basin as; water scarcity, flooding and pollution. Negotiations focused wholly on the volumetric water allocation until in 1998. As negotiations advanced Namibia expressed its concern to South Africa about the alarming pollution on the Lower Orange River. Although Article 7 of the UN Convention (UN 1997) talks about the principle of no significant harm, the cognisance of this article is minimal on the Orange River[4]. The pollution is mainly from upstream, specifically; irrigation return flow (phosphorus and nutrients)[5]. Interviews with the Namibian Orange water users clearly showed that water quality is a major concern. The above concerns could be the same for the South African farmers. Furthermore, one of the Namibian co-opted members to the PWC told that salt concentration has led to the degradation of some irrigation plots at Aussenkehr. Afterwards, the Parties reached consensus to incorporate the quality aspect in the draft agreement (see Appendix 1; 11th Meeting of the PWC).

The differences between the two countries on this issue can be summed up as follows: At present, South Africa does not want to accept the responsibility that it has impacted on the river system. The interview with one of the South African commissioner at PWC sees the issue of pollution as an ORASECOM concern. Recently, traces of Cholera were detected in Lower Vaal River – a tributary to the Orange River[6]. Namibia is discontented and blames South Africa who is situated upstream of the basin, and thus believed to be cause of much more pollution than the more distant Lesotho. Namibia therefore, wishes to discuss the issue of pollution at ORASECOM level with all Watercourse States.

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[2] Internal Memo Namibia, comments on 14th Draft Agreement between the two countries on the utilisation of the water resources along the Lower Orange River.

[3] The meeting concludes with the proposals that the PWC must implement the urgent options of the LORMS report, and finalise the draft agreement with guiding principles on water use of the LOR (Internal Memo; Namibia and Media release: The Namibian Newspaper 15 May 2006).

[4] http://www.thewaterpage.com/UN_Convention_97.html, Article 7

[5] Internal Memo Namibia, comments on 14th Draft Agreement between the two countries on the utilisation of the water resources along the Lower Orange River

[6] Source: Media Release and Department of Water Affairs and Forestry; Northern Cape Province, South Africa, 03 April 2007.

5.3 Payment

South Africa is firm that Namibia should contribute to the full cost of the water from its infrastructure. At the moment Namibia is using about 50-70 Mm³/a of water from the Lower Orange River[7]. Presently, this water is allocated for free to Namibia. The interviews with one of the South African co-opted member stressed that South Africa plainly informs Namibia that it will start to charge for full cost on additional temporally water allocation of 60 Mm³/a from the existing infrastructure. This is because South Africa is operating on cost recovery principle.

The Namibian position is that the farmers on the northern bank have paid tax during the Orange River Development Project (ORDP) before independence. Furthermore the Orange River Development Project was regarded as a national development project both for the then South Africa and Namibia. Namibia is unease and hesitating to formalise the agreement in recognition of payment that include full cost on the additional temporally water allocation of 60 Mm³/a derived from the existing infrastructure[8]. Namibia further maintains that the agreement should formalise its historic entitlement and cost of additional water. Namibia therefore unease to agree on the payment cost as there is no formal agreement on the 50 Mm³/a, yet.

The differences between the two countries on the payment issue can be summed up as follows: For Namibia, the principle to pay is not just. However Namibia indicated its willingness to pay for full cost only on the 40 Mm³/a of the additional temporally allocation of the sum of the 60 Mm³/a and on future water allocation, but not on the existing 50 Mm³/a, as well as on the 20 Mm³/a which form part of the 60 Mm³/a. Namibia feels that 50 Mm³/a should remain free of charge as it has been in the past. Namibia is also not happy to pay according to the South African water tariff. The South African charge will be different from the Namibian water tariff to be set up in future on the Lower Orange River when the basin management committee is established. This means that the Namibian users will be charged twice; first by South Africa for releasing water, second by its own basin committee for abstracting water. How to harmonise an agreed tariff on international shared river is another issue that need to be agreed by Parties, mutually.

5.4 Border

The South African Parliament enacted the recognition of the independence of Namibia Act, 34 of 1990 (Conley and van Niekerk 2000). The Namibia Constitution of 1990 in Article 1(4) states that its southern boundary shall extend into the middle of the Orange River, which South Africa accepted by recognising the independence of Namibia. Neither the Namibia Constitution nor the South African legislative measure contains any provision with regard to future water utilisation or sharing of the Lower Orange River (Ibid). Logically, negotiating Parties accept that the border is in the middle of the river. There is consensus between the negotiating Parties that the border dispute is not an impediment in terms of water management and for the on-going negotiation over water allocation. Subsequently the two Parties have agreed that the border issue is the mandate of Foreign Affairs Ministries but not the PWC and needs to be resolved with urgency. Savenije *et al.* (2000) stress the importance of the technical cooperation on the management of shared river basins even when the political situation is at headlock.

At political level, the Berlin Treaty of 1890 has resulted in different interpretation of minerals law on the Lower Orange River. Presently, diamond laws differ in Namibia and South Africa because

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[7] LORMS 2005

[8] The temporally water allocation of 60 Mm³/a is not guaranteed. It is also not clear to Namibia how the water tariff will be worked out. Namibia is of the opinion that charges be applicable during the critical months when water is in demand instead of a flat rate throughout all the seasons. With the lack of monitoring system on the LOR it will be difficult to check the re-lease downstream.

of historical reasons. The Namibian law on minerals is based on German law, whilst the South African is based on British law. The interviews with the Namibian commissioners, co-opted members, as well as the Namibian Orange water users reveals that the South African that holds the diamond license owners on the Lower Orange River still belief that the northern bank is the border between the two countries. Besides the South African farmers that use to have water rights on the northern bank of the river still insist they got the right and the right of access across the river. In addition, there are other people that have grazing rights – traditional grazing rights, and previously disadvantage people on the northern bank.

The differences between the two countries on the border issue can be summarised as follow: The border dispute is rather a political issue but not an impediment for the negotiating Parties[9]. South Africa is in favour of the Berlin treaty of 1890, which resulted in the extension of South African border to the northern bank. This means that the border is on the high water level, i.e. on the Namibian side. Conversely, Namibia claims that its southern border is in the middle of the Orange River.

6 Key disputes: underlying interests of the countries

6.1 Interest on water allocation

Most basic problem in negotiation lies not in conflicting positions, but in the conflict between each side's needs, desires, concerns, and fears (Fisher *et al.* 1992). The existing draft agreement on water sharing between Parties is silent on how much water is available. South Africa (South Africa 2004) and Namibia (Namibia 2004) have similar Water Legislation for water allocation. One distinct commonality that exists in the two water policies is the priority of use for international shared river obligations.

Deducing from the interviews the Parties have similar interest on the use of Orange River Watercourse. From an environmental point of view Parties are interested in environmental health of the river and estuary, tourism, water resource, and irrigation. The main reason for the interest of the Parties is rooted in economic dependencies. Because of the conflict of interest of Parties on water allocation, Parties take opposing views on the rule of equitable and reasonable utilisation of LOR Watercourse.

The differences between the two countries can be summed up as follows: South Africa looks at the Orange River as a strategic importance rather than considering it as the available quantity of water. South Africa looks for high value uses rather than irrigation as Namibia does downstream. To construe, South Africa benefits a lot from inter-basin transfer schemes, for example Gauteng Province is the economic heartland of South Africa. Namibia is concern about its future water demand as the current agreement does not address the future. For instance, Namibia cannot put up permanent crops on temporally water allocation due to uncertainty on the sustainability of water supply from the South African infrastructure. Hypothetically, 60 Mm^3/a might not be available when South Africa develop further upstream. The diversion of water upstream limits its occurrence downstream[10]. Plainly, the water allocation in the basin is in conflict with Parties'

[9] Indisputably, the border dispute somehow put trust and political cooperation at test between the two sovereign Sates.

[10] The SADC Protocol, like the IWRM calls for Watercourse States to be open and transparent to each others. The negotiations about the sharing of water and management of the LOR between South Africa and Namibia is not in whole as Namibia cannot deliberate with Lesotho who is upstream. Likewise the LHWP between South Africa and Lesotho excludes Namibia from participating and in decision making of water use upstream .

interest. Therefore Namibia feels that it should be additional allocation instead of being temporally allocation to secure its safe supply. Namibia is planning for future developments along the Orange River and wants to be certain about its equitable share of water from the Orange River Watercourse before formalising the draft water sharing agreement.

6.2 Interest on pollution

The quality of water for the Orange River has deteriorated to an unbearable standard (LORMS 2005). Hence the issue of water quality is not debated at the PWC as the ORASECOM do not have the effective guidelines for pollution control in the basin.

Deducing from the interviews with the Orange water users on the Namibian side of the border there is a serious concern with regard to algae, irrigation return flows and mining chemical substances in the riverine. The concern is expected to be the same on the South African sides of the border. There is a repeatedly annual salt concentration in the riverine which varies between 400mg/l and 1500mg/l downstream of Vioolsdrift**.** The interview with one of the Namibian commissioners revealed the incident happened in 2005 that a handful of people on the Namibian side of the border were hospitalised by consuming fishes that were poisoned with organophosphate from upstream irrigations. During the same year, the incident of explosion from the South African uranium enrichment plant was observed. Notably the two National Water Policies recognise that water allocation has to be of acceptable standard to its intended use. On this viewpoint, both Parties are equally interested in a healthy environment. However the lack of effective guidelines at PWC and ORASECOM to deal with the pollution downstream or in the basin at large proves to be cumbersome.

6.3 Interest on payment

The Minutes of the PWC meeting has seen changes from going forward to backward and/or vice-versa as to how to arrive to the mutually agreeable principle to pay for water service delivery. Property rights to water infrastructure in international rivers is centered with a lot of politics. One, it implicitly gives power to the party that owns the water infrastructure and/or to have a great influence in the determination of the volumetric water allocation to other Watercourse States. In sum, financial power enables countries to construct dams, and finally control water allocation.

In the existing draft agreement, it is stated that Namibia may abstract a maximum of 60 Mm^3/a on a temporally basis until 31 December 2012. Generally the Parties reached consensus on the payment of temporally allocation of 60 Mm^3/a as follows: the first 20 Mm^3/a will be charged for operation and maintenance costs until when the joint dam on the LOR will be in place. The remaining 40 Mm^3/a is agreed temporally to be charged for full cost; operation, maintenance and capital redemption costs.

The differences between the two countries can be summed up as follows: South Africa is of the opinion that though Ministers Angula and Asmal agreed for the 50 Mm^3/a as free in 1999 it did not mean that Namibia is excluded from paying the operation and maintenance costs. This caused a huge delay in the progress of negotiations to finalise the water sharing agreement.

Namibia feels that there is a fundamental problem with regard to the payment of water. To hypothesize, if the two Watercourse States construct a joint dam at Vioolsdrift/Noordoewer it will be equitable share of cost instead of equitable share of water. Namibia does not want to buy in the South African infrastructure, except on contributing to operation and maintenance costs on the additional water. Although Namibia and South Africa reached consensus on the payment cost of 40 Mm/a, Namibia still disputes the full cost on existing infrastructure. To contextualise the issue of the water payment; any additional water for Namibia will come at incredibly high cost as the South African Policy on Water tariff operates on cost recovery principle.

6.4 Interest on border

The undecided on the correct position of the border brought indifferences over the mineral rights along the Lower Orange River, also grazing rights on its islands, as well as fishing boats. There is conflicting interest on the border dispute over the minerals. The settlement of border to Namibia means a secure future protection of its mineral deposit on the bank side of its border. Inversely it means a challenge to the South African actors; mainly those that have acquired mining license and grazing rights, and rights of access to the northern bank of the border for the same interest. Subsequently, the South African actors along the Lower Orange River are making it difficult for the government of South Africa to come to an agreement with the government of Namibia on the border dispute.

7 Conclusion and recommendations

By way of conclusion, this case study put forward three questions about what the negotiations is all about, why such negotiations and why conflict persist despite more than a decade of negotiations, and how such negotiations could be augmented to gravitate into a mutual agreement of water sharing.

What is the negotiation all about? Namibia negotiates for its equitable share of water from the Orange River Basin instead of buying in the South African infrastructure on the Lower Orange River Project. Namibia requests that the water payment cost of its historical allocation (50 Mm^3/a) be justified from the payment cost of the additional temporally water allocation (60 Mm^3/a). Namibia negotiates that its historical allocation should be free of charge. South Africa often refuses that the equitable share of Namibia is not on the entire Orange River Basin but limited on the Lower Orange River Project. South Africa claims that the historical allocation of Namibia be subjected to the operation and maintenance costs as the dams are operated on the principle of cost recovery. South Africa further claims that the additional temporally allocation (60 Mm^3/a) be charged at full cost. The trends of colonial-era development have shaped the current negotiations between South Africa and Namibia. In most instances, Parties refer to the history of water allocation when trying to determine the equitable share of Namibia on the Orange River Basin.

Why conflicts still persist between the Parties after more than a decade of negotiations? Deducing from the minutes of the PWC meeting the Parties rarely contain each others proposals. The existing draft of water sharing agreement has seen changes from forward and backward or vice-versa. This is because of the opposing views on the principle of water allocation and payment cost (operation, maintenance and capital redemption). Parties still have opposing ideas on the interpretation of the SADC Protocol on Shared Watercourses. Interestingly, the two Parties hold different views and interpret the SADC Protocol on Article 3 principle 7 (b) of participation differently. On the other hand, the complexity of sovereignty and integrity principles put the principle of equity on Shared Watercourses at an awkward position. van der Zaag (2007) in his Article on asymmetry and equity in water resources management concludes that it is often a challenge to reach agreement over the sharing of scarce resource. Water is scarce on the Lower Orange River. The uncertainty hinges on the conflict of interest on the use of water upstream and downstream. The use of water upstream and middle part of the basin impacts on the availability of water downstream. The fact that the equitable share of Namibia is limited on the lower Orange River Development Project is an impediment to the negotiations between the Parties. Namibia is therefore unease to sign an agreement which does not address its future water needs. The governance of transboundary water resources requires an acknowledgement of the fundamental asymmetrical interdependencies that exist in river basins between upstream and downstream units (van der Zaag 2007). This goes hand in hand with the effective coordination between bilateral negotiations that exist in the basin.

How negotiations could be augmented? This paper suggests that Parties should negotiate on future aspirations instead of making hard claims. For instance, to negotiate by equity principles set forth in the SADC Protocol on Shared Watercourses, adopt a single strategy for environmental planning and management of the entire Orange River Basin, justify share of costs and benefits through joint projects for instance the storage facilities (dams), Parties should commit to mutually accord decisions taken at negotiating table. Negotiations can consider the blue and green water in determination of the need basic entitlement (van der Zaag *et al*. 2002). The harmonisation of decision making among all the Watercourses States may strike the balance in negotiations to achieve equitable and reasonable utilisation of the Orange River Watercourse. For each party to be successful, it is necessary that the pair search beyond the compromise alternatives and make mutually beneficial trade-offs (Carnevale and Isen 1986). Finally, if the PWC consider exposure trainings on international and environmental water law it might ensure that discussions are at equal footing. This way Parties may shift from diverging ideas to converging ideas in order to gravitate into a mutual agreement of water sharing.

References

Carnevale PJD, Isen AM (1986) The influence of Positive Affect and Visual Access on the Discovery of Integrative Solutions in Bilateral Negotiation. *Organisational Behaviour and Human Decision Processes*, 37:1-13.

Conley AH, van Niekerk PH (2000) Sustainable management of international waters: The Orange River Case. *Water Policy*, 2:131-149.

Crow B, Singh N (2000) Impediments and Innovation in International Rivers: The Waters of South Asia. *World Development*, 28 (11):1907-1925.

Fisher R, Ury W, Patton B (1992) *Getting to Yes: Negotiating an agreement without giving in*. Harvard University, UK.

Heyns P (2004) Achievements of Orange–Senqu River Commission in Integrated Transboundary Water Resources Management. *Paper presented at the General assembly of the international network of basin organisations*, The Martinique, 24-28 January, 2004.

Kranz N, Interwies E, Viadurre R (2005) *Transboundary Regimes in the Orange Senqu Basin, Contribution to Deliverable 1.3.1 of the NeWater Project, Berlin, Germany*.

LORMS (2005) *Pre-feasibility study into measures to improve the management of the Lower Orange River and to provide for future developments along the border between Namibia and South Africa*. PWC between the Republics of South Africa and Namibia.

Namibia (2004) *National Water Policy*. Department of Water Affairs and Forestry, Namibia.

SADC (2000) The Revised Southern African Development Community (SADC) Protocol on Shared Watercourses. Signed in Windhoek on 7 August 2000. SADC, Gaborone.

Savenije HHG, van der Zaag P (2000b) Conceptual framework for the management of shared river basins; with special reference to the SADC and EU. *Water policy*, 2:9-45.

Shilomboleni A (2007) *A Negotiation Dance: Equity on the Lower Orange River between South Africa and Namibia.* M.Sc. Thesis, UNESCO-IHE Institute For Water Education, Delft.

South Africa (2004) *National Water Resource Strategy First Edition*. Department of Water Affairs and Forestry, South Africa.

UN (1997) Convention on the Law of the Non-Navigational Uses of International Watercourses. Adopted by the United Nationals General Assembly in resolution 51/229 of May 1997. New York, United Nations.

van der Zaag P, Seyam IM, Savenije HHG (2002) Towards measurable criteria for equitable sharing of international resources. *Water Policy,* 4:19-32.

van der Zaag P (2007) Asymmetry and equity in water resources management; critical governance issues for Southern Africa. *Water Resources Management DOI*

Wolf AT (1999) “Criteria for Equitable Allocations: The heart of international water conflict.” *Natural Resources Forum,* 23 (1):3-30.

Appendix 1 Timetable of water developments on the Lower Orange River Basin 1994-2007

Date	Meetings	Venue	Main issues
06/10/1994	4th	Pretoria, South Africa	South Africa informed Namibia that it want to commence an Orange River Replanning Study (ORRS). The study is mainly concerned with development within South Africa. Information on Vaal Augmentation Planning Study (VAPS) was discussed. Namibia expresses concern that South Africa considers Orange and Vaal Rivers as two separate systems.
23/03/1995	5th	Swakopmund, Namibia	South Africa informs that ORRS has started. South Africa approached their legal Department to draft a document on the basis of water sharing with Namibia. The Parties agreed that the document will be drafted according to the history of sharing the resources and the Helsinki Rules. The question of no-objection document was raised on the LHWP phase one. Lesotho approached Namibia to ask for a no-objection document on the LHWP phase one.
06/07/1995	6th	Pretoria, South Africa	Namibia tables a preliminary document on water requirement from the Orange River. South Africa tables a proposed agreement on the Joint Orange River Planning Study.
18/03/1996	7th	Windhoek, Namibia	Namibia requests 60 Mm³/a for Haib Copper Mine. Permanent Water Commission (PWC) established a Working group.
28/06/1996	Special meeting	Windhoek, Namibia	The working group met and established that water could be made available for a definite period, for about 10 years. Issue of cost of water discussed but no recommendation.
17/09/1996	8th	Pretoria, South Africa	The 60 Mm³/a was decided. The challenge to Namibia was the payment cost as South Africa put its tariff on the 60 Mm³/a.
13/03/1997	9th	Windhoek, Namibia	A sub-committee with reference to the tariff for water of the Haib Copper Mine was appointed. The principle of “Grandfather’s Clause” was adopted by the Parties. The Grandfather’s Clause refers to the transfer of assets at the time of Namibia’s independence and recognises certain quantities of water used at time of the independence of Namibia as its right. The proposed bilateral agreement compelled Namibia and South Africa to agree in principle with broad criteria on: the Grandfather’s Clause, the environmental water requirements, a possible dam in the Lower Orange River at Noordoewer, a preliminary allocation of water to Namibia, the principle to arrive at a cost of temporal additional water to Namibia. South Africa drafted a Water Tariff Policy based on replacement costs of the respective dams.
16/10/1997	10th	Pretoria, South Africa	PWC formed a Technical Committee. PWC agreed that Namibia has a right to utilise water from

			the Orange River entitled to a so-called “basic allocation” but no quantification has been agreed upon. The Hon. Minister Helmut Angula (Namibia) requests the Hon. Minister Kader Asmal (South Africa) to discuss the cost of 50 Mm^3/a. Ministers agree on free of charge on the capital charge but no discussion on operation and maintenance costs. Ministers met and decided that the PWC should “fast track” a study on establishing the “basic allocation” from the Orange System which is due to Namibia. Namibia presents a document to the PWC, “Namibia’s View on Water Allocation and Cost”. The Namibian Cabinet instructed its negotiating team to negotiate the 50 Mm^3/a on free of charges.
23/02/1998	11th	Windhoek, Namibia	PWC refer back the issue of “Historic Entitlement” and the “Free Allocation” to the sub-committee demanding logical reasons as to why Historic Entitlement and the Free Allocation should be equal. The cost of water on Haib Copper Mine discussed to be 50-60 c/m^3 for untreated water. South Africa comments that the Historic Entitlement of Namibia could not be guaranteed in case of a drought and such a clause should be part of a treaty. Namibia wants a treaty to have a clause on pollution, water quality monitoring, water information sharing on the basin and warning. Vioolsdrift/ Noordoewer Joint Irrigation Authority met on 09/02/1998 to discuss outstanding debts from the irrigators. Cross border problems have been sorted out. VAPS study has been completed. The Subcommittee prepared a report to the PWC on Basic Allocation of Water to Namibia. South Africa questions why the “Free Allocation” proposed as the Basic Allocation of 50 Mm^3/a. Explanation was given that the “Basic Allocation” of water was the volume of water Namibia is entitled to based on historic considerations.
14/09/1998	12th	Pretoria, South Africa	South Africa opposes the term “Historic Entitlement” but rather “Basic Allocation”. The meeting proposed that the two Parties agree on the term “Basic Entitlement” in any documentation for the Ministers. Subsequently, Parties agreed to the terminology. South Africa tabled a document tittled “Equitable and Reasonable Utilisation of the Waters of the Orange River. Namibia reports that the Haib Copper Mine had been postponed due to low copper price.
15/03/1999	13th	Windhoek, Namibia	South Africa disputes whether the “historic allocation” should be free. South Africa prefers to use allocation rules other than those based on historical usage for water allocation. Negotiations reached a cul-de-sac as Parties differ on principle of water allocation and payment cost. Matters were referred to the Ministerial level. South Africa informs Namibia that 60 Mm^3/a can be supplied to Namibia up to the year 2007 in addition to the existing 50 Mm^3/a. Namibia questions the assurance of this water after 2007. South Africa opposes that the assurance depends on existing info on availability of water and the estimated demand growth in South Africa.
08/04/1999	Ministerial meeting	Windhoek, Namibia	The Ministers agreed that Namibia is entitled to a basic share of 50 Mm^3/a from the Orange River

			System, which is free of capital charge. A rate will be available to cover the operation and maintenance costs. The Ministers agreed that the PWC should formalise the discussion in the agreement. Ministers also agree to Joint Management Study of the Lower Orange River.
09/04/1999	Special PWC meeting	Windhoek, Namibia	It was agreed that the Namibian basic share of 50 Mm³/a be formalised in an agreement. Namibia requests clarity on how the rate of 0.56 c/m³ was calculated. South Africa apportioned the cost as: operation and maintenance costs of the two dams = 0.42 c/m³, operation and maintenance of the Lower Orange River = 0.13 c/m³ and Catchment Management = 0.01 c/m³. Namibia further asked 20 Mm³/a of the interim quantity of 60 Mm³/a at a charge to cover operation and maintenance costs until at the end of 2007. The Planning Sub-committee was tasked to draft the proposal for the 40 Mm³/a allocation to Namibia.
26/04/2000	14th	Cape Town, South Africa	Agreed that the quantity of 50 Mm³/a and the interim quantity of 60 Mm³/a be minuted as agreed by the officials after the meeting of the two Ministers dated 08/04/1999. A drafting team comprised one member from each side was appointed. The target for draft agreement is June 2000.
16/07/2001	15th	Windhoek, Namibia	Draft 5 of the water sharing agreement discussed. Namibia asks clarification on basis of the capital cost of water for the additional 40 Mm³/a. The issue of "Basic/Historic Entitlement" on 50 Mm³/a intensified. The Minutes of the 13th PWC Meeting dated 15/03/1999 agreed the matter to be resolved at Ministerial Level; paragraph 7.5 of the Minutes. The undecided on the status of operation and maintenance costs about the "Historic Entitlement" brought the negotiation at halt.
24/04/2002	16th	Pretoria, South Africa	South Africa and Namibia agree that "Basic/Historic Entitlement" changed to "Agreed Allocation". Namibia feels there should be no cost apportioned to the first 50 Mm³/a. The matter was postponed for further discussion at the next meeting.
13/12/2002	17th	Cape Town, South Africa	South Africa and Namibia discuss the text of Draft 12. Agreed on some changes but payment for first 50 Mm³/a is disputed.
12/06/2003	18th	Swakopmund, Namibia	Namibia repeats its proposal that 50 Mm³/a should be free of charges.
19/11/2003	19th	Pretoria, South Africa	The drafting committee finalised the Agreement, except for bracketed part where Namibia requests South Africa that 50 Mm³/a to be free of charges. The drafting committee agrees to place the Draft Agreement on hold pending the outcome of the LORMS study.
21/04/2004	20th	Windhoek, Namibia	Namibia states that financiers and donors of projects on the LOR require assurance on agreed quantity of water that is legally available.
16-17/09/2004	21st	Pretoria, South Africa	Namibia asks for confirmation on the letter dated 20/08/2004 from Hon. Minister Angula

			requesting Hon. Minister Asmal to confirm Namibia's right to 50 Mm³/a from the Orange River. PWC agreed that the issue is a political one and be referred at Ministerial meeting.
01/02/2005	22nd	Windhoek, Namibia	No progress on dispute of water allocation and payment cost as Ministers did not meet.
06/04/2005	23rd	Vioolsdrift, South Africa	No progress on dispute of water allocation and payment cost as Ministers did not meet.
14/09/2005	24th	Windhoek, Namibia	No progress as Ministers did not meet.
31/01/2006	25th	Cape Town, South Africa	No progress as Ministers did not meet.
12/05/2006	Ministerial meeting	Windhoek, Namibia	Hon. Minister Sonjica (South Africa) of Water Affairs and Forestry and Hon. Minister Iyambo (Namibia) of Agriculture Water and Forestry agree that a joint dam be build on the Noordoewer to re-regulate the flow of water and make more water available to users on the Lower Orange River. Ministers instructed the PWC to draft an agreement with guiding principles of water sharing.
01/08/2006	26th	Windhoek, Namibia	South Africa and Namibia agree that Namibia may raise minor changes to Draft 14.2 to be considered by the Drafting Committee.
02/02/2007	27th	South Africa	Namibia made changes on Draft 14.4. South Africa to consider changes proposed by Namibia. South Africa and Namibia reached consensus that Draft 14.4 becomes the basis for finalising the treaty. The treaty is still under scrutiny between the Parties.

The timetable is compiled on the basis of the minutes of the PWC meeting and interviews held with the officials from both side of the Parties.