Climate Diplomacy

POLICY BRIEF

INTEGRATING WATER AND CLIMATE DIPLOMACY IN THE ORANGE-SENQU RIVER

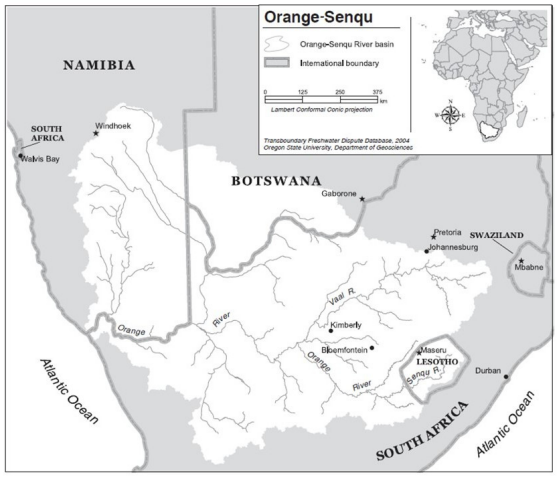
SABINE BLUMSTEIN, JUNE 2017

The Orange-Senqu Basin in Southern Africa is among the most developed basins on the African continent. Already affected by severe climate variabilities, future climate change could worsen existing challenges. Despite a high-level of institutional cooperation between all basin countries, existing water-related disagreements could be aggravated by the impacts of climate change. It is therefore vital for the basin to develop short- and long-term capacities to adapt to changing climatic conditions.

The Orange-Senqu Basin

The Orange-Senqu Basin is shared between the four Southern African countries of Lesotho, South Africa, Namibia and Botswana. The river originates in the Maluti mountain range of Lesotho, over 3000 m above sea level, where it is called the Senqu River. From the Lesotho Highlands, the river flows 2300 km through South Africa where it eventually joins its main tributary before forming the border between South Africa and Namibia, and finally flowing out into the Atlantic Ocean.

The Orange-Senqu Basin is one of the most intensely developed basins in Africa, hosting the continent's largest industrial area and one of Africa's most productive agricultural regions. The highly developed basin is regulated by thirty major dams (each having a storing capacity of more than 12 million m³) and a number of large intra- and inter-basin transfer schemes situated along the main river and its tributaries – these are predominantly located in the South African part of the basin (ORASECOM 2013: 3).



Map of the Orange-Senqu River Basin
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The majority of the abstracted water resources (more than 90 percent), are used in upstream areas by South Africa for agricultural production, and industrial and domestic consumption. Although the use of the river's water is extremely limited in Namibia and Lesotho, both economies are dependent upon the water resources of the Orange-Senqu for irrigated crop production and mining (Namibia) and hydropower as well as water sales (Lesotho). So far, Botswana only uses a negligible amount of the basin's groundwater.

The river basin also hosts one of the largest inter-basin water transfer schemes in Africa, the Lesotho Highlands Water Project (LHWP). The LHWP is a major binational project between South Africa and Lesotho, which is generally considered to be a successful example of benefit sharing through transboundary water cooperation. Whilst South Africa receives water resources for its industrial heartland (the Gauteng area), Lesotho obtains important revenues, and uses the structure to generate hydropower.

The project has, however, also been criticized for several corruption scandals, a lack of benefits for certain population groups, and because of disagreements with Namibia, which fears that the project (and further planned extensions) could negatively impact water flow in its part of the basin. The criticism of Namibia mirrors the countries' general feeling that the way in which the Orange-Senqu system is currently manged disproportionately benefits South Africa to the disadvantage of downstream countries Whilst there have been attempts to settle this dispute and find a long-term solution on water allocation, these have not yet materialized (Blumstein 2015: 135-137).

Orange-Senqu River Basin in the Lesotho Highlands
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Climate Change affecting the Orange-Senqu River

The basin's climate is characterized by high variability. Rainfall can significantly deviate from mean annual precipitation, particularly in the arid western regions of the basin. Periods of floods, such as those experienced during 2010/11, and extended drought periods, as witnessed during the 1990s and between 2014 and 2016, are common characteristics of the basin's climate.

CLIMATE CHANGE WILL INCREASE EXISTING CLIMATIC VARIABILITIES

AND AFFECT LIVELIHOOD OPPORTUNITIES AND ECOSYSTEMS.

Climate change is expected to impact upon and increase these variabilities. The Intergovernmental Panel on Climate Change (IPCC) forecasts decreasing amounts of precipitation and surface runoff for the southern African region, with particular implications for groundwater recharge (IPCC 2008: 81–82). For the Orange-Senqu system, climate models show an average increase in temperature between 1 and 3.5 degrees in different parts of the basin by mid-century. Rainfall is expected to slightly decrease in most midstream and downstream areas and increase in the upper stream, the Lesotho Highlands (Knoesen et al. 2009: 6-7; ORASECOM 2011: 6–10). The translation of these projected climatic changes into runoff generation is extremely difficult, and scenarios are considered to be very uncertain. Whilst river runoff is likely to increase in both the Lesotho part of the basin and the source of the Caledon River in South Africa, other

tributaries in the Lower Orange-Senqu are likely to experience a decrease in runoff (ORASECOM 2011: 17).

Climatic changes are likely to influence livelihood opportunities and the river ecosystem. Rising temperatures and evapotranspiration, for example, would increase crop and livestock water requirements. Whilst large-scale agribusinesses may be able to offset these impacts through technological advances and intensified irrigation, small-scale farmers with limited technological and financial resources are more likely to suffer both yield and financial losses. Increasing number of droughts could additionally affect water availability for urban areas and industrial centres and, as previous droughts have shown, affect electricity production.

Increasing amounts of floods could furthermore increase the already looming problem of soil erosion, causing loss of agricultural land and siltation of dams.

Managing Climate Change

To manage the resources of the river basin and provide the adaptive capacities necessary to mediate the negative impacts of climate change, the riparian countries have employed different climate change policies and adaptation plans at both national and regional levels.

TO MANAGE THE IMPACTS OF CLIMATE CHANGE

FIRST STEPS HAVE BEEN TAKEN AT THE REGIONAL LEVEL BY THE REGIONAL RIVER BASIN ORANISATION.

However, the planning of national water and climate change adaptation often occurs without the consideration of the dependencies and impacts upon other riparians, or a thorough assessment of potential synergies for joint actions. For example, South Africa has developed a National Adaptation Strategy (2016), which identifies vulnerabilities and the adaptations required for various sectors, including agriculture, health, mining and energy. Although the strategy generally recognizes the importance of transboundary water cooperation and outlines the need to strive towards transboundary agreements that enable adaptive responses and cooperation with the Southern African Development Community (SADC), it does not detail the nature, or specific content, of such regional adaptive responses. Indeed, this is surprising considering that South Africa itself is highly dependent upon water sources originating from upstream Lesotho and impacts water availability downstream (particularly in Namibia).

At the regional level, all riparians are members of the Orange-Senqu River Basin Commission (ORASECOM), which serves as a technical advisor to the four member countries on issues relating to *"the development, utilization and conservation of the water resources in the River System"* (2000 Agreement, Art. 4). The Commission has taken first steps to address issues of climate change. For example, it has conducted a study to downscale global climate change models for the Orange-Senqu Basin to derive more precise information on the impacts of climate change for the four riparian countries (ORASECOM 2011). The Commission also initiated a water quality monitoring program, which has included regular basin-wide water quality surveys since 2010

(ORASECOM 2010). The parameters monitored through this program can provide important indicators for observing the impacts of climate change at the river basin level.

In addition, ORASECOM is currently planning to develop a "Climate Resilient Water Resources Investment Strategy and Multipurpose Project Preparation". The aim of this investment strategy is to propose and plan joint investments, including, but not limited to, infrastructure projects that support climate resilience, and to plan one specific transboundary project (at pre-feasibility level). This project is funded by the African Water Facility (AWF) and NEPAD Infrastructure Project Preparation Facility (NEPAD-IPPF).

While ORASECOM has generally contributed a lot to improve the knowledge on the Orange-Senqu River Basin – through a broad-range of studies similar to those on climate change modelling – it has not exercised any significant influence on the way water storage and transfer schemes are managed. It is however these infrastructures which are likely to be affected by increasing climate variabilities and which, additionally, could be used by riparians to adapt to changes (e.g. through increasing storage capacities). It remains to be seen whether this proposed water resource investment strategy provides a first step into this direction.

Linking (national) Climate Adaptation with the Basin-level

An important factor to consider in the climate change resilience of water management therefore, is the necessity to coordinate the large number of national and bilateral storage and water transfer systems in the Orange-Senqu Basin. Whilst the basin-wide organisation of ORASECOM could potentially provide such a coordination role, it has not fulfilled this role so far. There are several reasons for this, including the fact that the basin-wide agreement gives precedence to the pre-existing bilateral water treaties (which primarily deal with water allocation issues), which makes it difficult for ORASECOM to fulfil a basin-wide planning role and, secondly, the preference of the most powerful basin player South Africa which, for a long time, favoured managing water issues at the bilateral basis.

The absence of basin-level coordination, however, limits reliable adaptation planning for downstream riparians Nambia and Botswana. At present, both use a very limited amount of water, but are in need of additional water resources to adapt to an increasingly drier climate. In addition, a lack of regional coordination limits the scale and scope of potential benefits that could be derived.

Considering population growth and economic development in combination with climatic pressures, significant trade-offs in terms of water allocation are likely to occur between the development aspirations of different riparian countries (and sectors). These scenarios have social, economic and ecological consequences that could benefit from stronger integration between regional water and

(hitherto primarily national) climate adaptation planning. For example, Botswana, which already suffers water scarcity, has identified climate change as a key issue affecting water resources and socio-economic development opportunities of the country. Botswana will, therefore, increasingly rely on transboundary water resources and additional water storage. Considering the high temperatures and consequently evaporative losses in the country, water storage could be more efficiently realized in either Lesotho or South Africa.

Additionally, alterations in flow regime have significantly changed the river mouth in Namibia and threatened the functioning of its ecosystem. To protect the ecosystem of the river mouth requires more water flow and greater seasonal fluctuations in the Lower Orange-Senqu to improve ecosystem functioning. This can however only be realized through a coordinated effort, at least including South Africa and Namibia.

Carefully employing existing water and climate diplomacy instruments could help bring about improvements in these and other cases, benefiting all basin countries.

Recommendations

The scale of, and interdependencies between the different challenges call for integrated action, where possible at the regional level. Although the Orange-Senqu River Basin already is among Africa's most highly institutionalized and stable basins in terms of water cooperation, the current state could be further improved to all riparians' benefit. At the same time, given its stability the basin might come to constitute an interesting model for demonstrating the benefits of integrated action. Potential entry points for supporting climate change adaptation and a closer integration of climate and water diplomacy-tools include efforts to:

- Identify potential synergies for coordinated adaptation planning at the basin-level – and potentially use adaptation projects to further strengthen transboundary water cooperation;
- Strengthen OKACOM's role as regional coordination platform for water issues, including water allocation;
- Support activities that help to link regional and national adaptation activities and contribute toward better coordination between various governance levels (vertically) and between different basin-countries;
- Explore the possibility to tap bilateral and multilateral climate funding to facilitate and strengthen regional climate adaptation projects (e.g. those of ORASECOM).

ENTRY POINTS FOR SUPPORTING ADAPTATION:

ESTABLISH STRONGER LINKAGES BETWEEN NATIONAL AND REGIONAL ADAPTATION PLANNING.

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