The Future Okavango — Policy Brief

Perspectives for a joint water management in the Okavango Catchment

THE FUTURE OKAVANGO

The focus of the research project 'The Future Okavango' was on sustainable resource management in the Okavango Basin, comprising areas in Angola, Namibia, and Botswana.

Current challenges

The water quantity varies with the seasonality of rainfalls in the northern part of the Catchment in Angola. Currently, the water abstraction is comparably low, but taking into account the forecast climate changes as well as the planned land use changes it is expected to become a topic of conflict of interests.

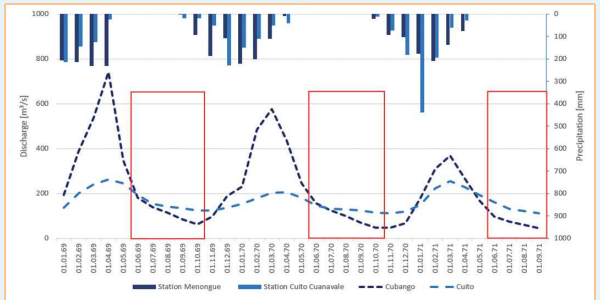
Key Findings

Water flow is generated in the Angolan highlands. Here, peatlands stabilize water quality and buffer peak flows

Hydrological assessment lead to the conclusion that most of the runoff generation takes place in the Angolan highlands. The movement of water received during intense rainfall is slowed down by peat soils through infiltration and retention in the soil matrix. In the dry season, the peatlands ensure the essential baseflow runoff for the main tributaries, the Cubangoand the Cuito, and, thereby, ensure the minimum inflow into the panhandle and towards the Okavango Delta. The pristine peatlands in the northern part of the Okavango catchment are essential to providing peak flow buffering and base-flow contribution to keep the flow pattern stable, as the Cubango river has a high intra-annual variability in discharge delivered to downstream areas.

The broad wetlands along the Cuito stabilize water flow and thus safeguard minimal flow to the delta in the dry season

The geomorphological settings in the Cuito catchment have led to the creation of a very broad meandering riverbed: Despite the fact that the catchment size of the Cuito river is only half the size of the Cubango river catchment, the flow length of the Cuito is almost 75 % of that of the Cubango River. The wide areas in between the river meanders are covered in part with peaty wetlands. The wetlands along the rivers have several hydrological functions. Firstly, with rising water levels during flood events, they display increased water content and raised groundwater level, and thus reduce the runoff in the riverbed. With falling river water level they feed back the stored water and are thus the main driver of base-flow contribution towards the Okavango Delta. The retention function results in a smoothened hydrograph with longer but flatter rising and falling limbs. In comparison with the flow pattern of the Cubango,the Cuito delivers essential base-flow to the delta during the dry season from May to September. Additionally, the wetlands significantly contribute to the quality of the flowing water.



Rainfall runoff pattern from the main tributaries of the Okavango River.

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Key Findings

The flow regime is influenced by damming for hydropower, irrigation (esp. green schemes), and other abstractions

The current flow regime of the main tributaries, and therefore the integral flow regime of the Okavango River, can be described as a flood pulse system. During the rainy season flood peaks deliver an essential amount of water to the delta. The influence of damming the river flow is obvious. Damming and/or the implementation of reservoirs in the riverbed leads to buffered runoff generation. As such, flood pulses are buffered in their intensity and extended in duration. At the moment water abstraction is not influencing the flow pattern because the amount of water which is extracted by large green schemes is rather small compared to the amount of water in the river.

Annual flow rates to the delta are much more impacted by land-use changes than by climate changes

Climate change scenarios up to 2030 indicate that already minor changes in the flow pattern will affect the amount of water reaching the Panhandle and the delta. Computer simulations carried out within the project have shown that the impacts of climate change affect the headwater catchments in different ways: more water will be contributed by the Cubango and less water will come from the Cuito, but in total, only a small amount of water will be missing at the entrance of the Panhandle at Mohembo. This is contrasted by possible changes in land use. Implementation of expanded agro-industrial schemes, using large amounts of river water for irrigation, will primarily affect regional flow patterns, but indirectly also the flow pattern of the entire downstream river system. If the planned schemes in the Angolan part of the headwater catchments as well as in the Namibian Kavango region are realized they will affect the low-flow conditions tremendously. Therefore, the conversion to agro-industrial land use will affect the flow pattern more than climate change.

There is a need to develop more effective and inclusive water-related policies for the sustainable use of water resources of the basin. The inclusion of local stakeholders in this process would strengthen the role and function of transnational institutions

The political anthropological field work conducted along the border between Namibia and Angola on both sides of the river produced a complex picture with regard to the use and management of water and the natural resources related to the Kavango River: During meetings at village level problems with respect to the use of the river, its waters, and natural resources were discussed. The answers of traditional leaders, government employees, and farmers to questions about access to water, the rules to protect water, the role and function of governmental water management, the role and function of traditional leaders, and the working of water committees showed not only a wide-spread awareness about the need to develop more effective policies and strategies for the sustainable use of water and natural resources of the basin, but also indicated the potential ability of the people to engage themselves in those policies and strategies. The transborder consultations under the traditional leadership from both sides of the river continue, and are certainly a challenge to the national policies, but also to international arrangements, such as OKACOM.

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Recommendations

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Recommendations for a Sustainable Management Planning

With the current climate and gauging measurement network (including the six gauging stations revitalized within the TFO project) it is possible to assess the impact of climate- and land-use changes at the basin scale. The hydrological assessment and the integrated modelling approach performed within TFO led to a fundamental systems description of the two main tributaries of the Okavango River, the Cubango and Cuito River sub-basins. These two are fundamentally different in their dominant hydrological processes and their intra annual/seasonal contribution to the Okavango Delta inflow. These differences should be taken into account in catchment management planning, esp. concerning the realization of large scale irrigation and water abstraction schemes.

Strengthen the mandate and the funding of the Permanent Okavango River Basin Water Commission

The need for a trans-national cooperation was already recognized as early as 1991, but compared to other river commissions in southern Africa, the Permanent Okavango River Basin Water Commission (OKACOM) has a weak mandate and cannot fulfill its envisioned advisory role. Committed state-based funding, independent of donor support, and a stronger mandate are needed to promote coordinated and environmentally sustainable regional water-resources development, while addressing the legitimate social and economic needs of each of the riparian states.

At the same time more local transnational cooperation can be observed with communities negotiating customary natural resource management laws across borders. The inclusion of local stakeholders in trans-border negotiations which aim at the protection of water and natural resources on both sides of the river can potentially strengthen the role and function of OKAKOM.

Disclaimer:
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