



THINK NAMIBIA

FACT SHEET ON:

Water Pollution

THE UPPER SWAKOP BASIN - IMPLICATIONS IN THE FACE OF CLIMATE CHANGE

The purpose of this fact sheet is to highlight the implications of water pollution in the Upper Swakop Basin and its impacts in the face of climate change.

Introduction

The Upper Swakop Basin is one of 12 Water Basins in Namibia. As stipulated in the Basin Management Approach (BMA) Guidebook (MAWF, 2013); a number of criteria are used to demarcate such basins, these include:

- geographic extent of surface and groundwater catchments
- water supply infrastructure and schemes
- land use
- administrative regions and areas
- population density and settlement

As highlighted in a report written by Pazvakawambwa et al., (2012), the Central Area of Namibia (CAN), which is supplied with water from the Upper Swakop Basin (part of the Swakop River catchment upstream of the Swakoppoort and Von Bach dams), is facing a water supply crisis due to the increasing pollution of the Swakoppoort Dam, one of the major water sources. If this situation is allowed to continue, the water security for the Khomas Region, as well as parts of Erongo and Otjozondjupa Regions will be compromised, with resultant negative impacts on the economy of the country.

The CAN makes a major contribution to Namibia's Gross Domestic Product (GDP) and many industries within this area are highly dependent on the availability of water. The area comprises of the City of Windhoek and the towns of Okahandja and

Karibib, among other consumers. Windhoek is the capital city of Namibia and sits in the catchment of Swakoppoort and von Bach dams, from which the city is supplied.

The veins of the Upper Swakop River and its tributaries drain through the City of Windhoek and Okahandja Town. An integration of three dams, namely Omatako, Von Bach and Swakoppoort, in conjunction with groundwater, supplies the CAN. Omatako dam is a tributary of the Okavango and water is pumped from there to von Bach immediately after it rains. Windhoek and Okahandja and a large number of scattered industries lie within the Upper Swakop Basin, and they contribute significant pollution loads into some of the source dams. Figure 1 depicts the Upper Swakop Basin.

In view of the economic importance of the CAN the risk of water shortages occurring within the CAN over the next 10 years, i.e. until 2021, is unacceptably high, both in terms of the predicted magnitudes as well as the probabilities of such shortfalls occurring.

The Swakoppoort Dam has a major impact on the quantity and security of water supply in the Central Area of Namibia. The deteriorating water quality of Swakoppoort Dam increases the risk of not having enough water in the Central Area"

(Pazvakawambwa et.al., 2012)

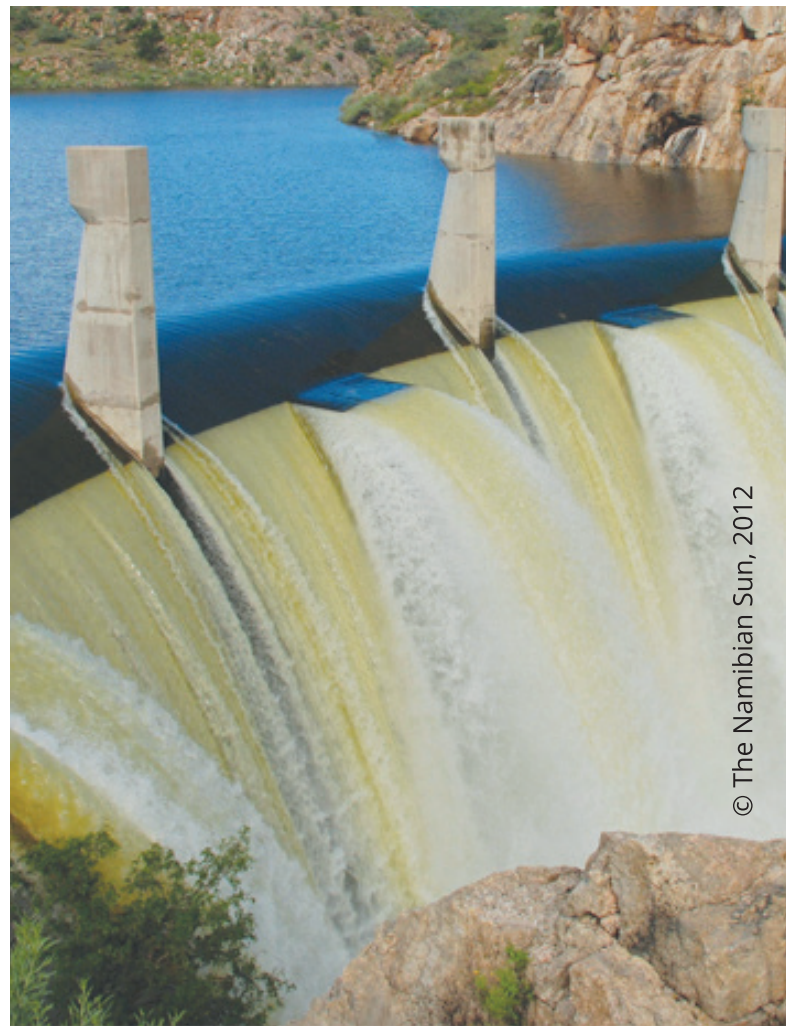
In view of the economic importance of the CAN the risk of water shortages occurring within the CAN over the next 10 years, i.e. until 2021, is unacceptably high, both in terms of the predicted magnitudes as well as the probabilities of such shortfalls occurring. The Swakoppoort Dam has a major impact on the quantity and security of water supply in the Central Area/Upper Swakop Basin. The deteriorating water quality of Swakoppoort Dam increases the risk of not having enough water in the Central Area (Pazvakawambwa et.al., 2012).

Impact of Climate Change on the Upper Swakop Basin

Namibia is a water scarce country where potential evaporation exceeds precipitation. The semi-arid conditions make Namibian water resources vulnerable, where the impact of human activities and increased population pressure usually exceeds the natural impacts. Even without human influence, climate variability and climate change will bring about added stress to Namibia's water resources. Global warming will contribute to a change in temperature of 1°C to 3.5°C in summer and 1°C to 4°C in winter in Namibia, which will lead to increases in evaporation and evapotranspiration in the range of 5-15% (MET, 2008).

Low or no rainfall patterns have been occurring over the CAN in recent years since 2011 and as a result, the dam levels have been drastically reduced leading to reduced flows and lower groundwater levels, putting such ecosystems at risk of being permanently threatened.

The Climate Change Adaptability and Vulnerability Assessment Report (2008) highlights that high water temperatures and longer periods of low flow tend to exacerbate many forms of water pollution. Pollutants include sediments, nutrients, dissolved organic carbon, pathogens, pesticides and salt. When runoff declines we could find a reduction in the services provided by the water resources, thus climate change could affect not only the quantity of water, but also the quality.



The Swakoppoort Dam is one of the reservoirs which central Namibia, and in particular the Upper Swakop Basin, depends on for water

Conclusion

The CAN is a center for many industrial, agricultural, mining and domestic activities, each of them relying on water resources. Because of its arid condition, the security of water supply in this area, and in particular the Upper Swakop Basin, is strongly dependent on both the quality and quantity of raw water in the Omatako, Von Bach and Swakoppoort dams. While considerable attention has been devoted to the optimization of the quantity of water from these dams, little is actually done with regards to the protection of the quality of the sources of water in this Basin. Prevention of water pollution is the responsibility of all, based on the principle that any person disposing of any effluent or waste has not only a duty of care to prevent pollution, but the responsibility to pay for the measures to prevent such pollution.

Glossary:

Water Pollution

Water pollution is the contamination of water bodies (e.g. rivers, oceans, aquifers and groundwater). This form of environmental degradation occurs when pollutants are directly or indirectly discharged into water bodies without adequate treatment to remove harmful compounds.

River Basin

A river basin is the land that water flows across or under on its way to a river. Just as a bathtub catches all of the water that falls within its sides, a river basin sends all of the water falling within it to a central river and out to an estuary or to the ocean.

Surface Runoff

Surface runoff (also known as overland flow) is the flow of water that occurs when excess stormwater, meltwater, or other sources flows over the earth's surface.

Water Quality

Water quality refers to the chemical, physical, biological, and radiological characteristics of water. It is a measure of the condition of water relative to the requirements of one or more biotic species and or to any human need or purpose.

References:

Basin Management Approach-A Guidebook. Second Edition. 2013. Ministry of Agriculture, Water and Forestry. Windhoek, Namibia.

Pazvakawambwa G.T., Tjipangandjara K.F and Chulu E. 2012. Workshop Proceedings: Management of the Upper Swakop Basin. NamWater. Windhoek, Namibia.

Dirkx E., Hager C., Tadross M., Bethune S., and Curtis B. 2008. Climate Change Vulnerability and Adaptation Assessment Namibia. 2008. Ministry of Environment and Tourism. Windhoek, Namibia.

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