TECHNICAL BRIEF

November 2017
The WRC operates in terms of the Water Research Act (Act 34 of 1971) and its mandate is to support water research and development as well as the building of a sustainable water research capacity in South Africa.

Tourism – the risks and opportunities offered by drought

In South Africa, drought is a recurring incident, with spatial and temporal characteristics that vary significantly from one region to another. A recently-concluded Water Research Commission (WRC) short-term study investigated the economic impact of the latest drought on South Africa's main economic sectors by studying the available literature. With regards to the tourism sector, the study focused on South Africa's most prominent nature reserves, namely the Kruger National Park and iSimangaliso Wetland Park. The study found the South African tourism sector to be broad and diverse, with far-reaching activities. Each of these activities have different needs and impacts associated with water. Therefore, the impact of the drought is difficult to evaluate across the single sector. As a result, there was found to be limited information on this topic.

Background and motivation for the study

Tourism is an important sector in South Africa, whose water needs are diverse and often indirect. The tourism sector represents almost 3% of the GDP of South Africa, which translates into 4.4% of employment in South Africa (2015 figures).

There are also many indirect contributions associated with tourism. According to the World Travel & Tourism Council, the tourism industry directly contributed R102 billion to South African GDP in 2012, and supports 10.3% of jobs in the country.

The tourism sector is diverse and complicated in terms of its water use and impacts. For instance, the direct impact of drought is important for activities such as rafting, boating, canoeing, or fishing that may not be possible in low-flow situations. Water shortages may also influence animal and bird migratory patterns affecting wildlife viewing or hunting.

There are indirect impacts of drought that may affect the profitability of the tourism sector too. In the recent drought, game reserves and parks were left with few options: (1) reducing the number animals by relocating them to places where there is still grazing, (2) reducing the numbers of animals by disposing of them through live sale, and (3) hunting in places.

For herbivores, an additional option is to bring in feed, such as hay, to supplement the limited grazing available in the veld. Increased operation costs, together with potential changes in visitor numbers, will negatively impact the sector. The ultimate outcome results in decreased tourist Rand earned for the local economy and a reduction in sales taxes, potentially leading to unemployment.

Drought and the Kruger National Park

The Sabie River during June 2016.

Some experiences from the Kruger National Park (KNP) in

the recent drought are of interest. The KNP is one of the largest game reserves in Africa. The park covers an area of 19 485 km^2 in the provinces of Limpopo and Mpumalanga in north-eastern South Africa.

The recent drought in the KNP had significant environmental consequences. However, there were limited changes to the actual number of visitors to the Park. In the 2014/2015 financial year, visitor numbers increased by 6,6% from 1 556 916 to 1 659 793.

Unlike hotels and restaurants which rely on municipal water supplies, the KNP obtains and treats its own water. Water supplies were not particularly interrupted by the 2016 drought.

The main impact of the drought insofar as water supply is concerned was to increase pumping costs because the Crocodile and Letaba rivers were very low (it is expensive to extract water from very low river levels). The drought also necessitated KNP to open boreholes that were not currently in use, which had impacts on expenditure.

Since the park was extracting water from extremely low flows during the drought, there were worries about water quality issues. However, with effective water quality monitoring, no water quality-related issues arose following the drought. However, the drought did result in an increase in water quality monitoring costs.

There are, however, some positive impacts of a drought. For instance, a positive outcome of the drought insofar as water supply is concerned was to increase water conservation awareness. The drought also appears to have had positive impact on game viewing opportunities and visitor numbers in KNP.

Addition hypothesized impacts of the drought, according to the KNP are as follows:

- KNP hypothesises that there might be relationship between drought intensity, cattle deaths and increased incidences of snaring at the KNP periphery. This follows increased snaring incidences on the periphery of KNP during drought events, but this is a matter for scientific investigation.
- The KNP also hypothesizes that the drought may be associated with the significant reduction in the number of rhinos poached: the vegetation is sparse, it is easier to track poachers and it is more difficult for them to hide.
- Finally following the drought, the KNP decided to undertake some hippo and buffalo off-take to supplement food to schools and orphanages in surrounding communities. KNP processed the meat before offering it to communities. Data available from KNP show that 72 hippos were culled and processed at a cost of R833,244 and 104 buffalo were culled and processed at a cost of R499,946.52 (hippo and buffalo are particularly sensitive to drought).

Drought and iSimangaliso Wetland Park

An aerial view of Isimangaliso Wetland Park.

Another South African National Park, iSimangaliso Wetland Park, also shared their perspectives on the drought. iSimangaliso Wetland Park (a UNESCO World Heritage Site) is situated on the east coast of KwaZulu-Natal, South Africa, about 275 km north of Durban.

It is South Africa's third-largest protected area, spanning 280 km of coastline, from the Mozambican border in the north to Mapelane south of the Lake St Lucia estuary, and made up of around 3 280 km2 of natural ecosystems, managed by the iSimangaliso Authority.

The iSimangaliso Wetland Park was very proactive in communicating the impact and also its response to the drought in 2015/2016. The following excerpts are taken from their website https://isimangaliso.com. "The drought, in combination with the effects of the historical long-term separation of the Umfolozi River from the Lake St Lucia system by previous management strategies, has produced extremely low lake levels and higher salinities, particularly in the northern parts of the estuarine lake system. Land use activities, such as commercial plantations, are placing further strain on the water resources in the Park."

During the drought, the higher salinity levels began to reach the limits of tolerance of the normal estuarine invertebrate

fauna. A number of actions were undertaken to mitigate the effects of the drought. These included pumping water to artificial boreholes as well as putting out a tender to remove portions of dredged soil in Lake St Lucia estuary in an effort to restore natural ecosystem function to the estuary.

Other impacts of the drought, according to interviews with iSimangaliso staff include:

- Game viewing was improved as animals would cluster around available water points. On the contrary, fishing in the northern part of the park was negatively affected as the lake dried out.
- Natural resources harvesting, for example, 'incema' (a rush used for making mats) was negatively affected by drought to the point that it could not take place in 2016 as the 'incema' was not enough for sustainable harvesting. There was also pressure on the park by local communities to allow cattle to graze in the park during the drought.
- Businesses around the iSimangaliso Wetland Park were negatively affected as they had to find alternative sources of water. Some of the business dug boreholes while other opted to purchase water. One lodge was shut down as getting water was costly.
- It seems that businesses had to absorb the cost associated with water shortages and in turn not offer accommodation discounts where they could have done so in a normal year. The accommodation prices did increase following the drought.

Conclusions

We do not understand the makeup of our tourism sector sufficiently. Furthermore, we do not understand the exact impacts of water shortages or drought on the sector.

Therefore, a full analysis of the tourism sector, including its impact to the economy through direct and indirect means is necessary. This analysis also needs to include reference to how water is a core operating need, not only for the tourists themselves, but also for the animals and natural ecosystems that many of our tourism sites are situated around.

Key questions regarding the impact of drought on the tourism sector include:

- What are the water-related needs of the entire tourism sector? This includes quantity, quality, timing and also water needs for ecosystem function.
- What are the costs if these needs are not met? For example, do we experience less tourism numbers? Are our profit margins reduced as a result of higher operating costs?
- What are the opportunities that we have seen as a result of the drought? This includes investments into water saving technologies and improving efficiencies. How can these be quantified?
- What does a depressed tourism sector do to the broader economy of South Africa? What are the indirect impacts?

Recommendations

As a major sector within the economy of South Africa, it is critical that we get a better understanding of the interplay of water shortages and the tourism sector.
Also, in many cases the South African tourism sector is supported by a functioning natural ecosystem. Therefore, it is critical that we evaluate the value of tourism through protection of our natural ecosystems too.

Associated reports,
Impacts of drought induced water shortages in South Africa: Areas for future research, (**Project No. K5/2604**) and *Impacts of drought induced water shortages in South Africa: Economic analysis* (**Project No. K5/2604**). Contact Publications at Tel: (012) 761-9300, Email: orders@wrc.org.za or Visit: www.wrc.org.za to download a free copy.