

EXTREME WEATHER

Drought | South Africa | 2017-18

This case study is part of an extreme weather impact project, in partnership with Swiss RE Corporate Solutions and Marsh & McLennan Companies, which aims to identify and share best practice within the energy sector to enable more agile and adaptive response to extreme weather and natural hazard impacts on energy systems and supplies.

CASE STUDY AT GLANCE



WEATHER EVENT
Drought



ORGANISATION
Department of National Treasury



INDUSTRY SUB-SECTOR
Governmental body

The Western Cape province in South Africa experienced below average rainfall over the period 2015-2017, which led to the worst drought since 1904 and an unprecedented water shortage. Cape Town was particularly affected by this rainfall deficit. It directly impacted the area surrounding the six large

reservoirs that provide fresh water to the city's 3.7 million residents. The water level in key regional reservoirs and dams was so low that several areas experienced blackouts. The water crisis was so extreme at the beginning of 2018 that Cape Town was expected to run out of water ("Day Zero") in March 2018. Fortunately, crisis was averted thanks to city-wide pleas to locals and visitors to regulate water use, including restrictions on taking baths, flushing the toilet and washing clothes. Cape Town hotels removed bath plugs and encouraged guests to take quick showers. Some restaurants refused to serve tap water, while car hire firms stopped washing their vehicles.

This case study explores Cape Town's drought experience and depicts key lessons and recommendations to share with other cities, municipalities and those trying to strengthen capacity to cope with climate extremes and build a water resilient city.

CONTEXT

ORGANISATIONAL PROFILE: DEPARTMENT OF NATIONAL TREASURY

- Manages national economic policy, prepares the South African government's annual budget and manages the government's finances.

2017-18 CAPE TOWN DROUGHT

- 30% to 50% below average rainfall in a large region persisted for three years (2015-2017).
- This was caused by a strong rainfall anomaly in the shoulder seasons (March-May and August-October), while the core of the rainy winter season (June and July) was characterised by near normal rainfall.

In South Africa, municipalities are mandated to provide clean drinking water. To achieve this, requires the availability of sufficient bulk water, which is the responsibility of the National Department of Water and Sanitation (NDWS). Intergovernmental coordination across the spheres of government is therefore very important. The Cape Town drought highlighted some of the weaknesses in intergovernmental coordination both from a technical and institutional perspective. For example, when the City of Cape Town (CoCT) wanted restrictions to be supported by the national sphere, they experienced delays. Management of the Western Cape Water Supply System (WCWSS), led by NDWS with input from the CoCT and other users was under strain, in part due to neglect of the system in recent years and insufficient data to support its optimal management.

WATER IMPACTS



Water storage declined rapidly and left the four million residents of Cape Town at risk of shortages.



Dams were at below 25% capacity in January 2018, putting strain on hydro generation and causing blackouts. With the next wet season several months away, Cape Town was heading towards "Zero Day"

RESILIENCE: PREVENTION AND IMMEDIATE RESPONSE

During the Cape Town drought, there was initial uncertainty in the business sector regarding the severity of the drought as well as how to coordinate response actions. As the drought progressed, collaboration between the City government, the Western Cape Government's Department of Economic Development and Tourism (DEDAT), GreenCape, Wesgro and National Business Initiative (NBI) helped to build partnerships with the business sector, addressing concerns and identifying areas for collaboration. It became clear that businesses could help to increase water efficiency and could communicate to a broad set of people. However, other partnerships were less developed, such as those between government and civil society.

Furthermore, the understanding of the water resources situation in early 2017 was not comprehensive, and more importantly, the communication and understanding of the available data was limited. This made it hard to gauge whether the crisis could be resolved and what alternative plans would require. As the severity of the drought unfolded, citizens and businesses lacked a proper understanding of the scale of the problem and response action. Communication was focused on restrictions and what it meant to only use 87 litres per person a day, and later in 2018, 50 litres per day. There was less clarity and communication about the overarching strategy and management of the situation.

Although restrictions were accompanied by increased tariffs, the lower water use resulted in less revenue for the CoCT. However, the city faced not only the fixed costs of service delivery associated with existing infrastructure and staff, but also a rising expenditure requirement to introduce demand management measures (metering) and augment water supply (such as boreholes). This created an immediate stress on the water department as a trading service and required the city to re-prioritise its overall expenditures to provide additional support.

In early 2018 when Day Zero was said to be imminent, it led to fear, panic and several unintended consequences, including a negative impact on the tourism sector. As 2018 progressed and Day Zero was "cancelled", information became more readily

available. Tools such as a dashboard showing weekly dam levels and usage data, the Water Outlooks outlining the water augmentation responses and demand management strategies as well as the Green Dot map, all helped to better inform the public and increase understanding of the situation.

International experts were mobilised quickly thanks to partnership between the CoCT and the Cities Support Programme in National Treasury. These experts were able to provide examples from other countries and evaluate the plans of the City. Within South Africa there are experts who have been previously involved in managing the water system who moved into consultancy or retired. Drawing on them was important as they hold institutional memory and understand the academics working on related issues who provided useful knowledge, served as sounding boards and helped to think through aspects of the response, to both those inside and outside of the municipality.

Water demand management is critical during a crisis, as new water cannot come on stream easily in the short term. In Cape Town, the fact that the water demand management department was established and had many tools in place, such as pressure reduction zones and water management devices, before the drought, made it easier to scale up efforts in the height of the crisis. Notwithstanding, the drought drew attention to the many households that live with poor water access and experience the reality of queuing for water, effectively experiencing "Day Zero" daily. Insufficient investment in infrastructure and management of the whole WCWSS significantly exposed the water supply system to risk. In addition, the drought showed how vulnerable the City was in relying almost solely on surface water. In response, the City has invested in re-use, groundwater and is exploring permanent desalination. Portfolio and project management capacity was another important capacity the CoCT utilised when needing to implement projects quickly. If this capacity is in place before a crisis it is easier for projects to go from conception to implementation relatively quickly. If this capacity is not in place it is hard to implement new projects, and to make priority decisions.

RECOMMENDATIONS

- 1 Identify and strengthen intergovernmental coordination.
- 2 Strengthen collaboration across departments within municipalities through strong trust-building leadership, instilling a culture of collaboration enabled through the necessary structures with associated lines of accountability.
- 3 Institute training for officials from skilled, professional communicators in effective communication of technical information that includes how choices can be framed appropriately.
- 4 Assess the availability of data and implement plans to improve data availability and analysis by partnering with local universities and engaging with regional Water and Sanitation offices.
- 5 Explicitly incorporate climate change into water demand and supply forecasts.
- 6 Identify and engage experts both internationally and nationally, who can help to review suggested plans and responses.
- 7 Develop a strategy to manage all the support and advice provided so that it helps to manage the crisis better rather than adding pressure.
- 8 Invest in upgrading infrastructure so that it is not put under significant strain that is likely to lead to leaks and poor supply during a crisis.
- 9 Commercial loans should be used more to finance water infrastructure, with scarce grant money used in a targeted way.
- 10 Assess leadership and adaptive capacity within the municipality before a crisis hits, so that resources can be mobilized quickly to address the gaps.
- 11 Implement scenario-based planning for water resources and evaluate the current capacity to deal with this change in order to identify priorities for adaptation.