

How household water use practices changed during the Cape Town drought

Phikolomzi Matikinca, Gina Ziervogel and Johan Enqvist



RESEARCH OVERVIEW

The occurrence of water crises in many parts of the world, alongside growing urban populations, changing climates, and a lack of maintenance of infrastructure, raises the need for municipal authorities to consider water demand management (WDM) strategies and sustainable consumption of water resources. Many cities have prioritised WDM strategies based on price and non-price mechanisms. Previous literature shows no consensus as to which of these measures are most effective for managing residential water demand. To understand the impacts and effectiveness of these mechanisms, we need to understand how people respond to them.

Cape Town endured an increasingly severe drought from 2015 to 2018. In response, from 2017 to 2018 the City of Cape Town (CoCT) ramped up their WDM strategies to encourage residents to save water, thereby curbing water demand. This research focused on three such strategies: water restrictions, increased water tariffs, and the Day Zero communication campaign. Day Zero referred to the day when dam levels would be so low that the water remaining in them would have to be used for essential services and household taps would be turned off. Little is understood about how effective these measures were and how well the public understood, interpreted and incorporated these mechanisms into their own household water use practices.

The research explored the impacts and effectiveness of the CoCT's WDM strategies on household water use practices during the water crisis. Qualitative data was obtained through in-depth semi-structured interviews with a non-representative sample of 20 individuals living in households who were required to pay a water bill. Respondents came from different suburbs and income groups. They were all aware of the CoCT's strategies. A version of social practice theory was used as a lens to understand how respondents applied the strategies in their daily household water use practices, enabling an assessment of which strategy was effective at achieving sustainable water use practices.

KEY FINDINGS

Most participants understood the nature and purpose of the City of Cape Town's water restrictions, water tariffs and Day Zero communication campaign.

Water restrictions and the Day Zero communication campaign were seen as having a greater impact on participants' water conservation behaviour.

Water tariffs were considered to be ineffective and did not encourage people to save water in their households. Most participants appeared to misunderstand how water tariffs work.

Most participants continued to maintain the changes they made to their household water use practices for at least a year after the severest restrictions were dropped.

However, a few changed back to using water as they did before the interventions.

Behaviour change mostly occurred in household water use practices related to personal hygiene (e.g. toilet flushing). Usually these are thought to be difficult to influence.

Full paper:

Matikinca, P., Ziervogel, G. and Enqvist, J.P. 2020. Drought response impacts on household water use practices in Cape Town, South Africa. *Water Policy* 22:483–500.

Keywords:

behaviour change; Cape Town drought; Day Zero; water demand management; water restrictions; water tariffs.

UNPACKING THE RESEARCH

Cape Town is a city of four million people. Domestic consumption in households uses the largest share (70%) of the city's water supply. As the drought worsened, actions to limit household water demand were essential.

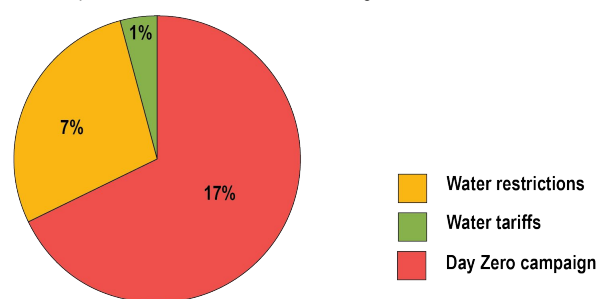
Most participants became aware of water restrictions in 2017 and of the Day Zero campaign in 2018. These were seen as being most impactful on water conservation awareness and behaviour change.

There were mixed responses to the strategies. Some respondents felt fearful due to the Day Zero messaging, others frustrated that their water bill remained high even though they had put water saving measures in place, and still others inspired to reconsider how they used water.

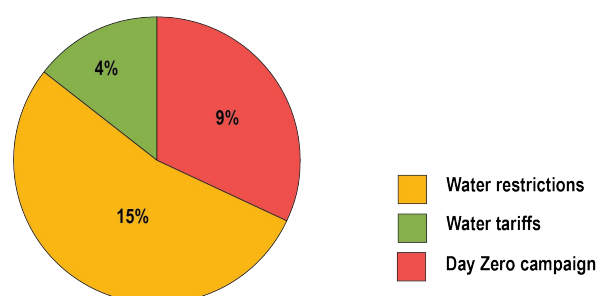
The Day Zero campaign helped to encourage water saving even with regards to personal hygiene, which is usually thought to be very difficult to influence.

Water tariffs were considered the least effective way to change households' behaviour around water use. The way water tariffs work was often misunderstood, creating a sense that they were unfair. Most respondents were concerned that high water users could continue to use water at pre-drought levels if their household could afford to settle the water bill at the end of each month.

Measures perceived as most effective for raising awareness about the water crisis



Measures perceived as most effective for encouraging water saving



"We are conscious of the fact that the drought is a very serious issue, not in Cape Town only but also some parts of the world. Learning about it and having knowledge of how serious it is, encouraged us to maintain the changes."

Respondent 4, Observatory

CONSIDERATIONS FOR POLICY, PRACTICE AND RESEARCH

- Campaigns that raise concern for an impending threat, such as the Day Zero campaign, can play a role in priming residents to accept behaviour change such as water restrictions. The Day Zero campaign was an effective action to raise awareness about the water crisis, educating and encouraging residents to pay attention to it and to change their water use behaviour at a household level.
- In Cape Town, residents responded better to non-price mechanisms, such as implementing water restrictions, and were more resistant to price mechanisms, such as increasing water tariffs. Some of this resistance came from misunderstanding. Approaches that are not clearly communicated, or that are reactive, tend to come across as top down, forcing people to respond without a clear understanding of the measures.
- Where interventions were clearly communicated and information was made widely available, such as the Day Zero campaign, positive behaviour changes were seen.
- Some, but not all, respondents maintained their drought water use practices a year after the severest restrictions ended. Continuing education programmes to keep residents updated with water related issues could encourage long term water saving behaviour.
- Building public trust and engaging with residents, while partnering with neighbourhood groups who represent different areas, administrative divisions, water groups and local contexts will create understanding at the City and ensure that residents' concerns are considered in the governance of the water supply system.

FURTHER READING

Booyesen, M.J., Visser, M. & Burger, R. 2019. Temporal case study of household behavioural response to Cape Town's "Day Zero" using smart meter data. *Water Research*. 149:414–420.

City of Cape Town. 2018. *Water outlook 2018 report*. Revision 25. Department of Water and Sanitation: City of Cape Town.

Olmstead, S. & Stavits, R. 2009. Comparing price and nonprice approaches to urban water conservation. *Water Resources Research*. 45:1–10.

Ziervogel, G. 2019. *Unpacking the Cape Town drought: Lessons learned*. Report for Cities Support Programme. African Centre for Cities: University of Cape Town.

ACDI is a research and training institute that brings together academics across the University of Cape Town and beyond, NGOs, business, civil society and government to coproduce and test new insights, evidence and innovations that will help to solve Africa's climate and development challenges.

Published by the African Climate and Development Initiative, University of Cape Town
www.acdi.uct.ac.za

Authors: Phikolomzi Matikinca, pmatikinca@sun.ac.za
Gina Ziervogel, gina@csag.uct.ac.za
John Enqvist, johan.enqvist@su.se