



# AVOIDING DAY ZERO:

How Cape Town cut its water usage by 50% in three years

The city of Cape Town in South Africa successfully reduced its water use by more than half in three years. The case study demonstrates that resource consumption can be reduced substantially and maintained at lower levels over a long period of time, at least in the face of an imminent threat of shortages. Cape Town's experience is directly relevant to other cities needing to reduce demand for scarce resources in the face of climate change or rapid population growth. Yet the initiative has also been criticized for exacerbating existing water inequalities faced by low-income communities and women. The case study therefore also highlights the need to simultaneously address other structural problems including among other things, the lack of voice and participation of women and marginalized communities in decision making, and the inequality of access to water.

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This case study was written by Bryony Wallace. Oxfam also acknowledges the assistance of Professor Steven Robins, Rukia Cornelius, Ruth Mayne, Filippo Artuso, Helen Wishart and David Wilson in its production. The series was conceived and managed by Irene Guijt and Ruth Mayne. For further information on the issues raised in this paper please email [ruthmayne1@oxfam.org.uk](mailto:ruthmayne1@oxfam.org.uk).

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The information in this publication was correct in April 2020 when the production was temporarily halted due to the COVID-19 pandemic.

Published by Oxfam GB for Oxfam International under ISBN 978-1-78748-577-8 in January 2021.

DOI: 10.21201/2020.5778

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# SUMMARY

Access to water is a basic human right and is essential for poverty reduction. In the face of an imminent water shortage, the city of Cape Town in South Africa successfully reduced its water use by more than half in three years, cutting it from 1.2bn litres per day in February 2015 to 516m litres per day in 2018. In comparison, Melbourne, Australia for example, took over 12 years to achieve a similar reduction during the Millennium Drought of 2001–09 (de Villiers, 2018; Government of South Australia, 2018; Rathi, 2018).

The impressive scale and speed of reduction safeguarded access to water for the city's 4,553,989 inhabitants and protected them from predicted related negative impacts such as sanitation failures, outbreaks of disease and social anarchy due to competition for drinking water (Watts, 2018). However, the water reduction scheme has also been criticized for exacerbating existing deep inequalities and social tensions.

Cape Town is a city of great inequality and extremes of wealth, which reflects the legacy of apartheid. In parts of the city there are mansions overlooking the sea, while other parts are shantytowns. The average annual household income in the City of Cape Town is R57,300 (approximately £ 2935.50) (Wazimap, 2019),<sup>1</sup> and access to water is unevenly distributed.

By 2015, the city experienced two consecutive years of extreme drought. Global warming is thought to have made drought three times more likely to occur (Mathiesen, 2018; Gabbatiss, 2018). Long-term population growth in Cape Town, government failure to improve water supply, long-term neglect of water security and unequal access to water in informal settlements also contributed to the severity of water shortages (Bohatch, 2017).

In 2016, the City of Cape Town authorities decided that they needed to take action and so introduced voluntary water bans for residents. However, the national government's Department of Water and Sanitation (DWS), which had regulatory control, ownership of and right to allocate water to users from the six dams that Cape Town depends on, was slow to act and also failed to limit the use of water by large-scale commercial agriculture (Rawlins, 2019). Thus in 2017 the City announced that it would take responsibility for solving the crisis by reducing residents' water consumption (Ziervogel, 2018). This was a remarkable step given that the City authorities had no legal ownership over the water. In May 2017 the Municipality declared a state of emergency covering the city (Parks et al., 2019) giving them the powers to control water use. Its initial focus was on domestic use and later on commercial and industrial properties (Parks et. al., 2019), while the DWS still oversaw water supply to agriculture.

The City's water use reduction strategies were aimed mainly at the general population, which in 2017 accounted for 69% of water use. Initially it introduced voluntary water restrictions and subsequently backed these with an awareness-raising media campaign (Day Zero and 'Think Water'), legislative bans, physical constraints on water use, monitoring and ultimately enforcement through the imposition of escalating tariffs and the installation of water management devices (WMDs) with the latter physically enforcing a daily limit on water use.

## KEY INSIGHTS

This case study contains important lessons, both positive and negative, for other countries and cities needing to reduce demand for scarce resources in the face of climate crisis or rapid population growth. It demonstrates that resource consumption can be reduced substantially and maintained at lower levels over a long period of time, at least in the face of an imminent threat of shortages. It shows the effectiveness of combining media campaigns with regulatory bans and physical restrictions to change behaviours and effective monitoring and enforcement. Although bans and physical restrictions can be controversial, if they are implemented unfairly or considered to unduly infringe on individual liberties, they can offer a quicker way of achieving mass behavioural change in the face of imminent shortages compared with voluntary approaches (Mayne et al., 2018).

However, to be effective, bans need to have a clear rationale and public support. While the water reduction strategy was supported by sections of the public, some of its measures were criticized for exacerbating existing water inequalities and thereby contributing to existing social divisions and tensions. A key problem was the national government's initial failure to limit commercial water use by large-scale agriculture, which placed an unfair burden of reducing water use on local residents and businesses. Additionally, while some of the water reduction measures were relatively equitable, for example when they targeted luxury assets such as swimming pools and air-conditioning or exempted low-income households from tariffs, other measures were criticized as unfair. Informal settlements are responsible for only 3.6% of water consumption in Cape Town, compared with 64.5% used by formal settlements, but these communities were still targeted with WMDs and charges for over-use of water (Mnyakama, 2017; Parks et al., 2019). Moreover, the water restrictions disproportionately impacted low-income women: for example, domestic workers now had to wash laundry by hand rather than by using a washing machine (Cornelius, 2020). Additionally, many wealthier households were able to stock up on water from boreholes or fresh springs, but this was not an option for poorer households who could not afford to drill a borehole or who lived further away and did not own a car (Ibid.)

Such negative distributional impacts might have been avoided or reduced for example by: involving low-income communities and women in the design of water conservation measures at the outset; engaging them in participative social learning programmes to help strengthen their existing conservation practices; providing them with automatic exemptions from tariffs and WMDs; investing in water conservation measures such as water tanks, water filters, solar pumps and reducing water leaks (Cornelius, 2020); limiting the drilling of new boreholes by wealthier users; and imposing water restrictions on wealthy farmers and commercial businesses earlier on.

# WHAT CHANGED?

## THE CHALLENGE

The population of Cape Town is 4,553,989. The city's population has grown by 79% since 1995; however, water capacity has increased by only 15% (Holder and Kommenda, 2018). The city council depends largely on six dams, including the Theewaterskloof dam, which provides more than half of the water supplied to Cape Town. Although the upgrading of water pipes in 2003–4 helped to reduce demand, it also meant that the city slowed down its efforts to find alternative sources of water (Poppick, 2018).

By 2015, the city experienced two consecutive years with little rainfall, which was attributed to a combination of natural dry and wet cycles (El Niño and La Niña) and climate change.<sup>2</sup> The drought, combined with limited options for water supply, led to water rapidly running out and made water shortages a real and imminent threat. In 2015 it was calculated that if nothing was done, Cape Town would run out of water by 12 April 2018: this was dubbed 'Day Zero', the day that taps would run dry (Alexander, 2019; Stoddard, 2018). Approximately 39% of the population live in poverty, and they were likely to be the worst hit by water shortages (City of Cape Town, 2016).

## The City's water reduction strategy

### Water restrictions

The water emergency declared in 2017 gave the City powers to impose further restrictions on water. Before the emergency, proposed restrictions needed to be approved and sanctioned by the Council of the City of Cape Town, but during this period the Council could be bypassed (Parks et al., 2019). Restrictions included the following measures:

- **Household water limits:** Households were initially limited to 87 litres of water per day per person. The initial limits were voluntary. By early 2018, 55% of individuals were complying with the limit, but this was still not enough to avoid the Day Zero scenario. The restrictions were

tightened further to 55 litres per day per person and were reinforced by a Day Zero media campaign and by monitoring and enforcement measures (see below).

- **Bans:** Bans were introduced on filling public pools with local water; air-conditioning (which uses water); car washing; and using any drinkable water for gardening. In addition, taps and showerheads had to be replaced with water-efficient technology.

## Physical constraints on water use

- The City also pioneered extreme water pressure reduction, or ‘throttling’, in its water network: water pressure was dramatically reduced in the pipe network, resulting in intermittent supply to areas on high ground where many middle-class people lived.
- Leakages from pipes were reduced to save water.
- Hand sanitizers were introduced in business premises so that taps could be turned off.
- The City used water management devices (WMDs) to enforce restrictions on households using more than the permitted limits (see below).

## Non-domestic water use

- In September 2017, with Level 5 water restrictions in place, non-domestic water restrictions were introduced, with businesses required to reduce their water use by 20% compared with the same month the previous year (Parks et al., 2019).
- In January 2018, Level 6 restrictions were introduced requiring businesses to reduce water usage by 45% compared with their use in 2015 (Parks et al., 2019).

## The Day Zero media campaign

A media awareness-raising campaigning dubbed ‘Day Zero’ was launched in February 2018 to raise public awareness and to encourage people to work together to reduce water use. The campaign was designed to increase compliance with the water restrictions and bans that had been introduced.

## Monitoring and enforcement

Restrictions on water were initially voluntary but later they were enforced through monitoring, the introduction of tariffs, the use of WMDs and the publication of a disaster plan in February 2018 (Watts, 2018).

- **Monitoring:** Water levels in the dams surrounding Cape Town were monitored and the day that it would run dry published on a Water Dashboard – or map – which was made available to the public online. The Dashboard also, controversially, highlighted which households had complied with the reduced water consumption targets thereby

allowing residents to monitor and report on each other people's water use (City of Cape Town, 2019a). The map was based on behavioural economic research that demonstrated that people are incentivized to change their behaviour if there is public recognition that change is needed and visibility surrounding the social norm (Parks, et al, 2019). The map was discontinued in January 2019.

- **Water tariffs:**

- Prior to the crisis, water use of below 6 kilolitres (kl; 1kl = 1,000 litres) per month per household had been free for all households. The City increased tariffs to deter over-use in 2017. The tariffs were based on an escalating rate according to the volume of water used, in order to reduce non-essential use (See Table 1).
- Before the crisis poorer households (earning less than R6,000) could apply for a subsidy of R38 if they needed to use more water for up to an additional 4.5kl of water per month. This subsidy was increased to R40.50 in 2011/12 (City of Cape Town, 2011) and then to 10kl water per month in 2018/19.
- The City also imposed differential charges for homeless shelters, commercial premises and use by government (City of Cape Town, 2018).

**Table 1: Level 6 household water charges**

2017/18: monthly water use per household (kilolitres)	Indigent	Non-indigent
0 ≤ 6	–	R30.19
>6 ≤ 10.5	R17.91	R52.90
>10.5 ≤ 20	R115.00	R115.00
>20 ≤ 35	R345.00	R345.00
>35 ≤ 50	R920.00	R920.00
> 50	R920.00	R920.00

2018/19: monthly water use per household (kilolitres)	Indigent	Non-indigent
<6	–	R33.24
6-10	–	R52.90
>10.5 ≤ 35	R138.31	R138.31
>35	R1,150.00	R1,150.00

Source: City of Cape Town (2018).

- **WMDs:** WMDs work by restricting daily water supply to a property. The device is installed in the water pipe and, once the limit is reached, the water supply is reduced to a trickle until the following day. Households with consumption above 10,500 litres (2,773.8 gallons) per month were penalised by having a WMD fitted at their expense.

The devices were designed to restrict households to 350 litres (92.5 gallons) per day, or 10,500 litres (2,773.8 gallons) per month. As of March 2018, 46,000 WMDs had been installed (Parks et al, 2019).

## Exemptions from water use restrictions

As well as tariff exemptions for low income households outlined above:

- Households could apply for increased amounts of water based on the number of people living at the residence. (Parks, et al, 2019)
- Those who needed more water for their business, healthcare or for other extenuating circumstances could also apply for exemptions to the water use restrictions. Defining commercial grounds for exemption, the City stated: 'Water users, such as abattoirs, food processing industries, care facilities, animal shelters and other industries or facilities with special needs (health/safety-related only) must apply for exemption' (City of Cape Town, 2019b). Others with special requirements also needed to apply, with supporting documentation.

## POVERTY REDUCTION

Access to clean and affordable water is critical for people's survival, to prevent the spread of disease and for everyday living. It is also enshrined in the South African constitution and in the country's laws.<sup>3</sup> The original date for Day Zero was set for 12 April 2018, but the municipality was successful in preventing it from happening by halving the city's water use over the course of the three years (Alexander, 2019). Elsewhere, Melbourne, Australia for example, took over 12 years to achieve a similar reduction during the Millennium Drought of 2001–09 (de Villiers, 2018; Government of South Australia, 2018; Rathi, 2018).

The most negative impacts that were predicted and averted included failures of sanitation, the outbreak of diseases and social anarchy due to competition for drinking water (Watts, 2018). Low-income households were expected to be the worst hit as by a water crisis, because although they had access to water taps, they had less access to the numerous alternative means of sourcing water available to the middle-classes, such as drilling boreholes. Other negative impacts were also anticipated, including job losses, increases in food prices and reduced tourism, pushing many people into poverty (Neille et al., 2018).

In April 2018 the City of Cape Town stated on the Water Dashboard that Day Zero had been pushed back to 2019, but that the city was not in the clear and so water restrictions would remain, limiting total water use to 650m litres per day (Stoddard, 2018; Water Dashboard, 2019).

## STRUCTURAL CHANGES

A combination of the impending water shortage, the municipality's policies and practices - including the media campaign, the restrictions



and bans on water use and effective monitoring and enforcement - contributed to a large-scale shift in many residents' attitudes and behaviours towards water use (Parks et al, 2019). However, while many residents reduced their water consumption, low-income communities living in the informal sector were reportedly alienated and disempowered by the water reduction measures.

The media campaign successfully focused residents' minds and actions by setting a target date for Day Zero (Booyesen et al., 2019) by its publication of a possible future disaster plan helped to communicate the reality and imminence of the threat. Websites were set up to display current dam and consumption levels, and to help households understand their water use; and messages providing tips on how to save household water were published across various channels, from radio adverts, to flyers in water bills, to billboards around Cape Town. (Parks, et al, 2019). It also encouraged tourists to abide by the water restrictions with slogans such as 'Save like a local'.



Source: <https://www.tasafaris.com/blog/cape-town-water-crisis-save-like-local/>

There was some initial panic and some controversy over the Water Dashboard (see below) but overall the campaign succeeded in its aims without paralysing citizens with fear. Many of the recommended measures were widely adopted by residents (Parks et al, 2019). The media campaign also helped to create a sense of agency and pride in many Cape Town residents.

The water shortage and campaign contributed to the spread of a new awareness around water use (Booyesen et al, 2019; Enqvist and Ziervogel, 2019). Water infrastructure became a visible mainstream issue that was discussed widely among the public (Robins, 2019). Prior to this water infrastructure was a visible issue for poorer areas because of leaks, but was largely invisible and ignored by the middle-classes for whom it worked well.

The water shortages and water reduction strategy also catalysed shifts in power dynamics between local and national government. Before the drought, responsibility for water management was split between the national, federal and municipal levels. At the national level, the DWS had full regulatory control, ownership and the right to allocate all water,

including from the six dams that supply Cape Town (Rawlins, 2019). A key shift in the established balance of power between local and national government occurred in 2017 when the City municipality, faced with the national government's slow response and the extent of the emergency, took control of the water crisis. The DWS had failed to maintain canals and water pumps, which had left them out of operation, and the municipality was also concerned that the DWS was not doing enough to limit water use by the agricultural sector in 2016–17 (Ziervogel, 2019). This shift in power was also linked to political competition between the City, which was governed by the opposition party the Democratic Alliance (DA), and the national government of the African National Congress (ANC). Both parties accused the other of using the crisis for political gain.

However, the case study has so far not adequately addressed other structural problems including (a) the lack of women and marginalised communities' voice in decision making, poor water infrastructure in informal communities and unequal access to and use of water by wealthy people and farmers or (b) resolved structural supply-side problems (see below).

## CHALLENGES

There were a number of trade-offs and unintended outcomes from the Day Zero campaign. First, some of the City's water restrictions were criticized for having an unequal impact. The Cape Town Water Crisis Coalition (WCC), a group established to express concerns about the effect of Day Zero on poor and working-class people, highlighted several problems. People living in informal settlements accounted for around 14% of the population but for only 4.7% of water use before the crisis began. Many already used shared taps and did not have flushing toilets (Robins, 2019). Yet water charges for lower-income households were not removed until February 2018. The water crisis and its management also disproportionately impacted on women (see Box 1). In contrast, some wealthy people were able to get around the bans by drilling boreholes or installing other private water sources.

### Box 1: The water crisis and women in the informal sector

Working-class women have been particularly negatively affected by the water crisis and the design flaws in the City's water reduction strategy. Oxfam's research with women in areas around Cape Town shows the following impacts and responses, among others:

- **Water consumption:** Whereas farm owners have either a JoJo tank for water collection, direct access to drinking water from springs and the funds to buy bottled water, farm workers are forced to collect water from polluted rivers, boreholes and dams which forces the farm workers to boil water multiple times to purify the water which even then can still lead to illness such as gastro and diarrhoea.

- **Women's hygiene and household sanitation:** With less water, women are forced to wait longer periods before washing clothes. The 20 litres of water they receive must also be used for cleansing during menstruation. Women often have no access to toilets with some having to walk 20 minutes to the railway line and use the bushes there for cover.
- **Violence:** Many women are not able to meet the demands of their spouses, for example to wash clothes. Externally the women face increased exposure to violence when either seeking clean water or using the toilet. In one area women must walk more than 10 minutes to access clean water from external water taps. These taps only switch on early in the morning between 1am and 4am, forcing the women to walk alone in poorly lit or dark streets to fetch water far from their homes. These women are exposed to violence from criminals who use the cover of dark to attack these women. Many women are unable to be accompanied to fetch the water as they are predominantly single parent households and their other family members are too young to walk with them.
- **Household gardens:** Some women have found ways to maintain their gardens by using agroecological techniques that reduce their water consumption through specific soil maintenance and seed choices as well harnessing traditional farming methods and technologically advances to find inventive ways of managing their crops.

Women interviewed identified a range of needs to help them manage the water crisis including, among other things:

- Physical investment in water testing and filtration equipment, solar driven water pumps, auxiliary plumbing pipes, water drip systems, scaffolding garden racks to create water wise gardens;
- Training and capacity-building about water purification, drought resistant agro-ecology, use of grey water systems and rain water collection, creation of moist compost, plumbing and electrical skills to maintain plumbing and pumps;
- Community social learning projects to raise consciousness and shift negative gender norms and behaviours and engage men and women in a more equitable shared responsibility for water.

Source: (Cornelius, 2020)

Another criticism was that the national government did not initially impose water restrictions on large-scale commercial farmers, a sector under its control, which meant that Cape Town's residents and businesses had to shoulder the burden of costs (Enqvist and Ziervogel, 2019).

Additionally, the WCC also argued that the hike in tariffs and the installation of WMDs contributed towards the commodification of water use and that the municipality's strategy was ultimately to privatize water (Robins, 2019). These dynamics contributed to wider social and political tension surrounding the water crisis. However, in February 2018 the national government did eventually act to restrict water to large-scale agricultural users. Additionally, in February 2018 farmers north of Cape Town donated about 10m litres of water to the city at a time when the drought was showing no signs of abating (Chutel, 2018).

Second, the City was criticized for not dealing with the crisis quickly enough, although national politics played a part in this. For example, National Freedom Party MP Ahmed Shaik Emam introduced a parliamentary debate on the crisis in which he insisted that the Day Zero campaign was being manipulated by the DA in order to award a R6bn contract to the Israeli government, though it was unspecified what the contract was for (Robins, 2019).

Third, getting the balance right between causing individuals sufficient alarm for them to comply with restrictions and avoiding the creation of mass panic was a delicate act that the City did not always get right. For example, supermarkets were forced to limit the number of bottles of water that each customer could purchase, suppliers ran out of water tanks and there was a waiting list of over a year for drilling boreholes (Watts, 2018). The City Government was initially criticized for its handling of the crisis as free-flowing water at the Newlands Spring was left open to public access and, as a result, people crowded to fight for their turn at the taps (Watts, 2018). This problem was later mitigated by the use of neighbourhood tracking and water-reducing technology.

Fourth, the crisis and the campaign contributed to an increase in demand for single-use plastic water containers (Watts, 2018). Bottled water has been imported in larger quantities and individuals have even transported water from elsewhere in South Africa to fill swimming pools (de Villiers, 2018). Water is, of course, essential for everyday life, but the increased consumption of single-use plastic is inherently damaging to the environment.

However, others have noted how the crisis brought people together against a common threat. One teacher noted that people from a diverse range of backgrounds would mix and chat while queuing for water (Watts, 2018). Others have noted an increased awareness and sense of responsibility about water conservation and utilization. Some have gone further and claimed that reduced water supplies have acted as an equalizer. Elements of the media have presented the crisis as a 'great leveller', despite infrastructure and water inequalities (Robins, 2019), as businesses, the middle-classes and commercial farmers were all at risk, and middle-class households experienced what it is like to flush a toilet with 'grey water' (Watts, 2018). 'Grey water' is water that has already been used for washing and cannot be drunk.

## DURABILITY

**Environmental sustainability:** The water restrictions and monitoring and enforcement measures are still in place and reduced water use had been maintained at 600m litres per day as of 7 November 2019 (Water Dashboard, 2019). Rainfall in June 2018 saved the city from the most extreme measures (Morris, 2018), and the goal now is to keep water usage below 650m litres per day (Water Dashboard, 2019). Yet individuals cannot reduce their water consumption below a certain minimum level, so the City is also striving to diversify its water supplies.

New desalination plants are under construction, and three temporary ones have already been built (WWF, 2019). New wells are being drilled and a plant to reuse effluent is being constructed. However, most of these projects are only half-completed and are not due to kick in until after 2020 (Welch, 2018), although the municipality is pushing to have some of them up and running as soon as possible. With the population continuing to grow, there is still concern that water demand will outstrip supply (Ibid.). The City authorities, therefore, continue to plan for the possibility of having to turn off the taps.

**Economic sustainability:** According to the Deputy Mayor, Ian Neilson, the city can afford to tackle the crisis (Watts, 2018) – however, this takes resources away from other pressing needs. Moreover, the Day Zero campaign has harmed the tourism industry, which is important to the city's economy (Welch, 2018); warnings of water queues are likely to have reduced the number of visitors to the city. If the impact cannot be mitigated, the impact on the industry and on the City's budget will worsen.

**Social sustainability:** As noted, the unequal impacts on poorer households, such as the charges for over-using water in place before February 2018, have contributed to social tensions. Negative impacts might have been avoided by steps such as: involving low-income communities in the design of measures, introducing earlier automatic exemptions from water charges and WMDs for them and instead incentivizing them to participate in appropriate and supportive behaviour change programmes; investing in reducing water leaks and improving water infrastructure in low-income areas; limiting the drilling of new boreholes by wealthy households; and by the national government imposing water restrictions on commercial farmers and other businesses at an earlier stage.

## HOW WAS CHANGE ACHIEVED?

### CHANGE DYNAMIC AND PATHWAYS TO SCALE

Change at scale was achieved vertically by the Cape Town municipality using a wide range of powers to reduce water consumption, as described above. Further, functional scaling took place when the municipality complemented its restrictions with a media campaign and then introduced further restrictions on water use in January 2018. The largest reductions in the city's water use occurred during the Day Zero media campaign (Booyesen et al., 2019; Enqvist and Ziervogel, 2019). Horizontal

scaling also occurred with the spread of new attitudes and social norms among residents regarding water use (Robins, 2019; Parks et al, 2019), as outlined above.

## CONTEXTUAL DRIVERS

Key factors that catalysed the City's water reduction campaign were impending water shortages linked to the drought, combined with the slowness of the national government to take action and rivalry between political parties. Long-term factors, such as the growing population of Cape Town and a lack of investment in diversifying water supplies, also contributed. The campaign was needed to avoid the consequences of this long-term inaction.

There were also constraining factors, one of which was that the impacts of climate change were underestimated. The ruling ANC and the opposition party DA, which runs the city, both made mistakes concerning water management (Welch, 2018). The ANC initially dismissed the water shortage as a short-term drought and did not account for growing demand; it was assumed that rainfall would resume with the same pattern as before, but this was not the case. As a result, to preserve water stocks changes had to be swift and attitudes needed to change quickly (Ibid.). Both parties had political motives that restricted action at the beginning of the crisis. Sustainable water use is now taken more seriously and is recognized as a serious problem both by the government and by the public.

The drastic actions taken by the municipality to raise awareness and reduce the water use were central to avoiding Day Zero. They were essential given the national government's initial failure to take the crisis seriously. The positive response of many residents to the crisis was also crucial to the campaign's success.

## TIMELINE OF SCALING

**2005:** Level 1 Water Restrictions introduced.

**2015:** With little rainfall, water levels at dams begin to dwindle. The city's water use stands at 1.2bn litres per day (Robins, 2019).

**January 2016:** Level 2 Water Restrictions introduced (Atlanticbeachestate.co, 2019)

**November 2016:** Level 3 Water Restrictions introduced.

**Late 2016:** The City of Cape Town launches its 'Think Water' campaign, which includes the slogan 'Care a little, save a lot'.

**February 2017:** The City warns that it has only 135 days of water supply

left. The then mayor, Patricia de Lille, outlines the worst-case scenario, but there is no mention of taps being turned off.

**June 2017:** Level 4 Water Restrictions introduced

**September 2017:** Level 5 Water Restrictions introduced

**November 2017:** The Day Zero strategy is designed by communications agency Resolve Communications, headed by former DA leader Tony Leon, and is adopted by Mayor de Lille. It is accompanied by the online Water Dashboard, which calculates a date for Day Zero based on fluctuating dam levels and water consumption.

**January 2018:** Level 6 Water Restrictions introduced. The City releases an online 'water map', which allows residents to monitor the water usage of their neighbours. Each household is colour-coded depending on whether it exceeds the water allowance or complies with it. The first ever 'water police' force is established, with 60 officers, whose role is to investigate the wasting and illegal sale of water. Water use by the city is reduced to 511m litres per day in early 2018, half the level it was at in 2015.

The Water Crisis Coalition (WCC) is established to challenge increased tariffs for water and to call for wider public access to the city's springs.

**February 2018:** A group of WCC activists protest outside the Coca-Cola Peninsula Beverages plant in Parow.

**March 2018:** National Freedom Party MP Ahmed Shaik Emam introduces a parliamentary debate, insisting that the DA has 'manipulated' the water crisis in order to award a R6bn contract to the Israeli government.

**March 2018:** The DA's national leader, Mmusi Maimane, announces that the Day Zero scenario will be avoided in 2018. After the City's initially alarmist language, residents are now praised for their efforts. However, water use is still above the City's target and many claim that this praise is premature and is a political move before elections. Others argue that it is to prevent panic escalating. Water restrictions are still in place, and any household breaching the limit is still penalized. Some 6,000 WMDs are still being installed each month.

## ANNEX 1 AT A GLANCE

<i>Case study name</i>	<i>Avoiding 'Day Zero': How Cape town cut its water usage by 50% in three years</i>
<i>Organization</i>	City of Cape Town municipality
<i>Geographical location and country type</i>	<p>Cape Town, South Africa</p> <p>Income: Low-income. 55.5% of the population live in poverty (World Bank, 2014).</p> <p>Inequality: One of the most unequal countries in the world: Palma ratio of 7.07 in 2015 (UNWIDER, 2019)</p> <p>Human Development Index (HDI): ranked 79<sup>th</sup> out of 189 countries (UNHDR, 2019)</p> <p>Gender gap: ranked 17<sup>th</sup> of 153 countries (WEF, 2020)</p> <p>Civic space: 'narrowed' (CIVICUS, 2019)</p> <p>Climate risk: ranked 79<sup>th</sup> of 181 countries (CRI, 1999–2018)</p> <p>Fragility: 'elevated warning' (Fragile States Index, 2019)</p> <p>Ecological Risk: medium exposure to ecological threat</p>
<i>Time period</i>	2015 to present
<i>Systemic challenge</i>	Climate breakdown (rising temperatures reduce rainfall and lead to drought) and resource scarcity (water)
<i>Type(s) of poverty reduction</i>	<p>Access to water for Cape Town's population of 4.6 million and hence safeguarding people's health</p> <p>In 2016, 39% of the population were living in poverty – over 1,755,000 people (City of Cape Town, 2016)</p>
<i>Scale of poverty reduction</i>	<p>Population of Cape Town saved from scenario of water running out</p> <p>Women's time use</p>
<i>Structural changes</i>	<p>Changes to government policy and practice</p> <p>Greater awareness and spread of sustainable water practices</p>
<i>Routes to scale</i>	Intentional change achieved by vertical and functional scaling.
<i>Challenges and limitations</i>	Some inequitable impacts on low income communities and women, and limited progress on supply-side solutions
<i>Evidence base</i>	The evidence of reduction in water use comes from the City of Cape Town's own monitoring. However, it is difficult to untangle the contribution of the municipality's measures from people switching water sources. Evidence of impacts and structural changes is taken from a mix of academic studies, news sources and Oxfam's qualitative interviews with low income women in communities around Cape Town.



# NOTES

1 'Average annual household income' figures are only an estimate and should be used with care. They can be compared between two locations to obtain a general idea of how income differs, but cannot be relied upon as an accurate indicator of disposable income. The figure has calculated by finding the median income band, and then using the middle point of that band. For example, if the median income band is 'R153,801–R307,600', then we have used R230,700 as the average household income.

2 Global warming is thought to have made drought three times more likely to occur (Mathiesen, 2018; Gabbatiss, 2018), and if climate change is not mitigated, droughts are expected to become more common (NOAA, 2019; Gabbatiss, 2018).

3 <https://www.justice.gov.za/legislation/constitution/SACConstitution-web-eng.pdf>

# REFERENCES

Alexander, C. (2019). "Looking Back On Cape Town's Drought And 'Day Zero' - Citylab". Citylab.Com. <https://www.citylab.com/environment/2019/04/cape-town-water-conservation-south-africa-drought/587011/>.

Atlanticbeachestate.co. (2019). Level 2 Water Restrictions. [http://atlanticbeachestate.co/wp-content/uploads/2015/05/LEVEL-2-WATER-RESTRICTIONS-POSTER\\_Eng-aug-16.pdf](http://atlanticbeachestate.co/wp-content/uploads/2015/05/LEVEL-2-WATER-RESTRICTIONS-POSTER_Eng-aug-16.pdf)

Bohatch, T. (2017). What's causing Cape Town's water crisis? GroundUp News. <https://www.groundup.org.za/article/whats-causing-cape-towns-water-crisis/>

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

Brandt, K. (2017). 18,000 water-saving devices installed across CT metro. Eyewitness News. <https://ewn.co.za/2017/12/04/18-000-water-saving-devices-installed-across-ct-metro>

Chutel, L. (2018). Farmers now accustomed to a drying climate are donating water to Cape Town. Quartz Africa. <https://qz.com/africa/1201156/farmers-now-accustomed-to-a-drying-climate-are-donating-water-to-cape-town/>

City of Cape Town. (2011). City of Cape Town Annual Report 2010/11. Westerncape.gov.za. <https://www.westerncape.gov.za/text/2012/11/annual-report-city-of-cape-town-2010-2011.pdf>

City of Cape Town. (2016). SEP: Socio Economic Profile. Western Cape Government. [https://www.westerncape.gov.za/assets/departments/treasury/Documents/Socio-economic-profiles/2016/City-of-Cape-Town/city\\_of\\_cape\\_town\\_2016\\_socio-economic\\_profile\\_sep-lg.pdf](https://www.westerncape.gov.za/assets/departments/treasury/Documents/Socio-economic-profiles/2016/City-of-Cape-Town/city_of_cape_town_2016_socio-economic_profile_sep-lg.pdf)

City of Cape Town. (2018). Tariffs, Fees and Charges Book 2018/19 Budget. [http://resource.capetown.gov.za/documentcentre/Documents/Financial documents/Budget 2018-2019 Annexure 6 Tariff Fees and Charges Book.pdf](http://resource.capetown.gov.za/documentcentre/Documents/Financial%20documents/Budget%202018-2019%20Annexure%206%20Tariff%20Fees%20and%20Charges%20Book.pdf)

City of Cape Town. (2019a). Water Viewer Map. Citymaps.capetown.gov.za. <https://citymaps.capetown.gov.za/waterviewer/>

City of Cape Town. (2019b). The Following Water Restrictions are Applicable from 1 March 2019 Until Further Notice. Resource.capetown.gov.za.  
<http://resource.capetown.gov.za/documentcentre/Documents/Forms%2C%20notices%2C%20tariffs%20and%20lists/L3-WaterRestrictionOverviewNotice-Eng.pdf>

City of Cape Town. (2019c). Apply for indigent rates relief. <https://www.capetown.gov.za/City-Connect/Apply/Financial-relief-and-rebates/Individuals/Apply-for-indigent-rates-relief>

de Villiers, J. (2018). How Cape Town avoided Day Zero and cut its water usage by 50% in 3 years – it took Melbourne 12 years to do the same. Businessinsider.co.za.  
<https://www.businessinsider.co.za/how-cape-town-cut-its-water-usage-by-50-in-3-years-it-took-melbourne-12-years-to-do-the-same-2018-3>

Eckstein, D, Kunzel, V. Schafer, L. and Wingses, M. (2020) Global Climate Risk Index, German Watch

Ecological Threat Register (2020) Understanding Ecological Threats, Resilience and Peace, Institute for Economics and Peace. [https://www.visionofhumanity.org/wp-content/uploads/2020/10/ETR\\_2020\\_web-1.pdf](https://www.visionofhumanity.org/wp-content/uploads/2020/10/ETR_2020_web-1.pdf)

Enqvist, J.P. and G. Ziervogel. (2019). Water governance and justice in Cape Town: An overview. WIREs Water. <https://onlinelibrary.wiley.com/doi/full/10.1002/wat2.1354>

Fund for Peace (2019) Fragile States Index, Annual Report, 2019

Gabbatiss, J. (2018). Cape Town is approaching drought 'Day Zero', and climate change could be to blame. The Independent. <https://www.independent.co.uk/environment/cape-town-drought-day-zero-climate-change-global-warming-south-africa-a8236511.html>

Government of South Australia. (2018). Millennium drought. Government of South Australia. <https://www.environment.sa.gov.au/topics/river-murray/about-the-river/millennium-drought>

Holder, J. and N. Kommenda. (2018). Day Zero: How Cape Town is running out of water. The Guardian. <https://www.theguardian.com/cities/ng-interactive/2018/feb/03/day-zero-how-cape-town-running-out-water>

Human Development Repor (HDR) (2019) Beyond income, beyond averages, beyond today: inequalities in human development in the 21st century, UNDP

Mathiesen, K. (2018). Cape Town 'Day Zero' drought odds tripled by climate change. Climate Home News. <https://www.climatechangenews.com/2018/07/13/cape-town-day-zero-drought-odds-tripled-climate-change/>

Mayne, R., M. Kesmaecker-Wissing, J. Miziniak and L. Knight. (2018). Influencing Behaviours and Practices to Tackle Poverty and Injustice. Oxfam. <https://policy-practice.oxfam.org.uk/publications/influencing-behaviours-and-practices-to-tackle-poverty-and-injustice-620407>

Mnyakama, M. (2017). Informal settlements only use 4% of municipal water. Elitsha. <http://wwmp.org.za/elitsha/2017/09/18/informal-settlements-only-use-4-of-municipal-water/>

Morris, H. (2018). How Cape Town beat the worst drought in its history. The Telegraph. <https://www.telegraph.co.uk/travel/destinations/africa/south-africa/cape-town/articles/day-zero-averted-cape-town-drought/>

Neille, D., M. Van Der Merwe and L. Dougan. (2018). Cape Of Storms To Come. Features.dailymaverick.co.za. <https://features.dailymaverick.co.za/cape-of-storms-to-come/cape-of-storms-to-come-part-1.html>

- NOAA. (2019). What are El Niño and La Niña? Oceanservice.noaa.gov.  
<https://oceanservice.noaa.gov/facts/ninonina.html>
- Parks, R., M. McLaren, R. Toumib and U. Rivett. (2019). Experiences and lessons in managing water from Cape Town. Grantham Institute Briefing Paper No 29. Imperial College London.  
<https://www.imperial.ac.uk/media/imperial-college/grantham-institute/public/publications/briefing-papers/Experiences-and-lessons-in-managing-water.pdf>
- Poppick, L. (2018). What's Behind Cape Town's Water Woes? Smithsonian.  
<https://www.smithsonianmag.com/science-nature/day-zero-looms-cape-town-water-crisis-may-signify-new-normal-180968128/>
- Rathi, A. (2018). What Cape Town could learn from Melbourne's success cutting its water consumption in half. Quartz Africa. <https://qz.com/africa/1198839/what-cape-town-could-learn-from-melbournes-success-cutting-its-water-consumption-in-half/>
- Rawlins, J. (2019). Political economy of water reallocation in South Africa: Insights from the Western Cape water crisis. *Water Security*, 1–7.  
<https://www.sciencedirect.com/science/article/pii/S2468312418300312>
- Robins, S. (2019). 'Day Zero', Hydraulic Citizenship and the Defence of the Commons in Cape Town: A Case Study of the Politics of Water and its Infrastructures (2017–2018). *Journal of Southern African Studies*, 45:1, 5-29. DOI: 10.1080/03057070.2019.1552424
- Stoddard, E. (2018). Cape Town 'Day Zero' pushed back to 2019 as dams fill up in South Africa. Reuters. <https://www.reuters.com/article/us-safrica-drought-idUSKCN1HA1LN>
- UNU-WIDER (2019) World Income Inequality Data Base (WIID), United Nations University, UNU-WIDER <https://www.wider.unu.edu/project/wiid-world-income-inequality-database>
- WWF. (2019). Cape Town: Avoiding "Day Zero". <http://wwf.panda.org/?343091/Cape-Town-Avoiding-Day-Zero>
- Water Dashboard. (2019). Day Zero. The City of Cape Town. <https://coct.co/water-dashboard/>
- Watts, J. (2018). Cape Town faces Day Zero: what happens when the city turns off the taps? The Guardian. <https://www.theguardian.com/cities/2018/feb/03/day-zero-cape-town-turns-off-taps>
- Wazimap. (2019). Wazimap profile: City of Cape Town, Western Cape. Wazimap.  
<https://wazimap.co.za/profiles/municipality-CPT-city-of-cape-town/>
- Welch, C. (2018). Why Cape Town Is Running Out of Water, and Who's Next. National Geographic.com. <https://www.nationalgeographic.com/news/2018/02/cape-town-running-out-of-water-drought-taps-shutoff-other-cities/>
- World Economic Forum (WEF) (2020) Global Gender Gap Report 2020 , Insight Report
- World Bank. (2014). Poverty Headcount Ratio at National Poverty Lines.  
(<https://data.worldbank.org/indicator/SI.POV.NAHC?locations=ZA>)
- Ziervogel, G. (2018). Climate adaptation and water scarcity in southern Africa. *Current History*, 181–186.  
[https://www.researchgate.net/publication/324971581\\_Climate\\_adaptation\\_and\\_water\\_scarcity\\_in\\_Southern\\_Africa](https://www.researchgate.net/publication/324971581_Climate_adaptation_and_water_scarcity_in_Southern_Africa)
- Ziervogel, G. (2019). Unpacking the Cape Town drought: Lessons learned. Cape Town, South Africa: Cities Support Programme and National Treasury of South Africa.  
[https://www.africancentreforcities.net/wp-content/uploads/2019/02/Ziervogel-2019-Lessons-from-Cape-Town-Drought\\_A.pdf](https://www.africancentreforcities.net/wp-content/uploads/2019/02/Ziervogel-2019-Lessons-from-Cape-Town-Drought_A.pdf)

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