

Disrupters driving Cape Town's water security

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The Western Cape region of South Africa is experiencing one of the worst droughts on record as a result of receiving well below average rainfall from 2015 onwards. By June 2017 the six main storage dams supplying the City of Cape Town (CoCT) were almost depleted with less than 9% of useable water available before the taps would run dry. Cape Town is almost entirely dependent on stored surface water and is facing disaster if it receives no significant rainfall over the remaining winter period or if the city's planned pilot projects are unable to add any sufficient supplies to the system in the short term, e.g. desalination, treated effluent and abstraction from aquifers. 'Day zero' was averted this year with the late arrival of winter rainfall on 6 June and subsequent weather systems that have made landfall. However, it is estimated that it will take two or three average rainfall seasons to replenish the dams to volumes last seen in 2014. The drought caught CoCT officials and public alike unaware. A successful water conservation and demand management programme over the last 10 years reduced usage to 20% below the city's available supply despite rapid increases in population. In 2015 the CoCT won recognition for this programme in the form of a C40 Cities Award; with hindsight, however, the success of the City's water demand programme created a false sense of security in managing the demand. Water managers typically use historical data to predict future prospects and plans based on an assumption that the future is stable and predictable. It is like drawing comfort from looking in the rear view mirror on the journey and then being confronted by an oncoming vehicle coming in the opposite direction in the same lane as shown by the drawing. The road looks better from behind as opposed to the challenge of changing future prospects ahead.

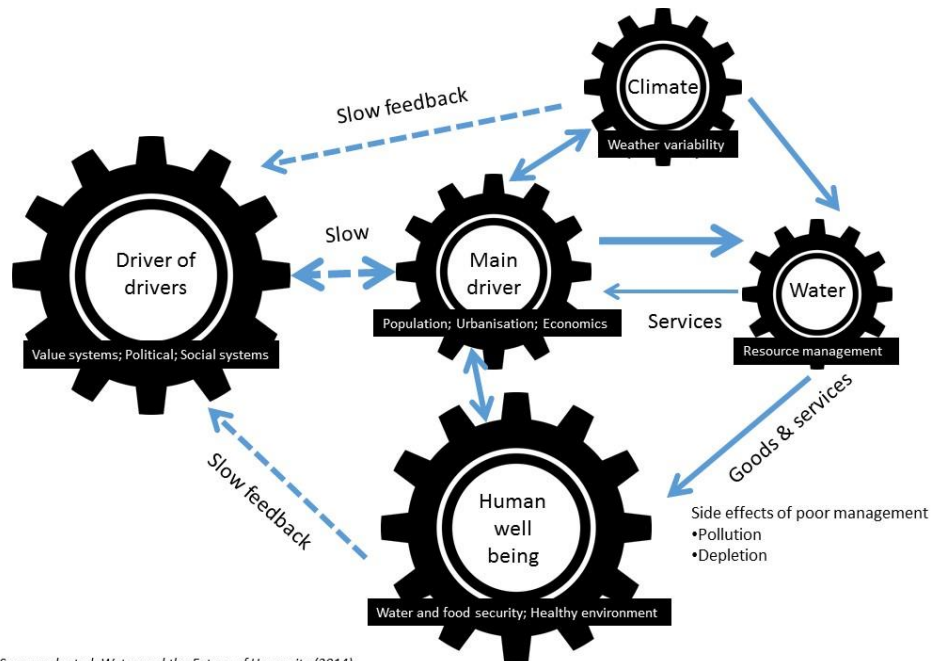


[Caption] Drought is a disrupter, but not the only one (Artwork credit: Chip Snaddon)

Disrupters of water security

Drought is a natural phenomenon. It is difficult to predict in a changing climate, but when drought combines with other disrupters the result can be a 'perfect storm'. The Western Cape region is facing consecutive years of below average rainfall. However other drivers that are constantly changing the water resource management system are largely slow, creeping factors that fail to attract political will or financial investment to secure a longer term plan. These are the main drivers that operate at a macro level and are a combination of population growth, rapid urbanisation and declining financial resources - directly influencing human well-being and health of ecosystems in cities and creating negative impacts in terms of poor water quality and limited supply. Climate change elevates the risk further in an already fragile system especially when disrupts and

creates an immediate disorder in the system. The final 'driver of drivers', in which values are embedded in individual and collective attitudes, beliefs, actions and habits, is slow to adapt to changes for a number of reasons: water availability is taken for granted; water resources are not perceived as having a high priority; media and social media in particular, together with city officials, politicians and academics send mixed messages that leave citizens confused about what can or should be done to manage water more efficiently; and finally, public apathy to adapt to water scarcity.



[Caption] Drivers and disrupters in managing water resources

What can we learn and put into action?

Lessons from the Australian Millennial Drought show that threat of water scarcity was clearly understood from the experience of several severe droughts. Still, the government and public were only able to act once the risk became extreme; thereafter actions were swift, with investment in technologies and infrastructure which included desalination systems. The public accepted these measures even if it meant an increase of 40 to 70% in the cost of water. Investments were also made in raising public awareness through information and education that was used to inform attitudes about drought and make it socially unacceptable to waste water. Finally, the Australians also learnt that there are no quick fixes and conceded that it would take many more years of action and initiatives before the threat of drought could finally be overcome.

It appears the city of Cape Town is following a similar drought situation as has happened in Australia and other parts of the world such as the state of California in the United States. The city cannot afford to run dry. Plans are in place to make a substantial investment in exploiting alternative water sources, including the desalination option. With luck this will deal with the immediate crisis, but supplying more water will do little to reboot the 'driver of drivers' that is characterised by stubborn, hard to change, social and political, and value systems. We need to take long term actions that will embed water into the social and ecological health of the city.

Actions for adapting to future droughts

One reaction to drought is that it is soon forgotten once it rains and when dams are full again. An alternative reaction is to 'climate proof' the city to become far more water sensitive in terms of shaping the city of Cape Town for the future. Here are some suggestions for starting the conversation:

1. The city is a catchment. Why not capture and store stormwater in different parts of the city; for example in rain tanks, detention ponds, recharging aquifers and floodplains?
2. The waterways are the blue and green corridors within the city where water should be used to regenerate tired and dirty parts of the urban environment. Why not regenerate the waterways, improve the amenity value of these rivers and streams, and enable trees and plants to cool down the city against increasing urban temperatures?
3. Regenerate ecological services. Why not bring nature back into the city and use natural processes to clean and treat water? Why can't we build public urban spaces to showcase the value of water in providing services, for example, for growing food, for using water in public transport or for re-purposing the use of stored water for sanitation?
4. Actively reduce the feedback loop between the known disrupters and ability of the public to appreciate the value of water. Why can't we have a sustainable water supply that is augmented by alternative water sources such as stormwater, greywater or treated effluent that is used for particular purposes? How can water become integral to urban life rather than a taken-for-granted resource?

These actions and questions are occupying the attention of city managers in water scarce regions around the world. For Cape Town, the immediate imperative is to deal with the risk of running out of water. At the same time, it will need to take a long term action programme to build a water sensitive city that can adapt to future droughts. The future of the city will need to bring water management much closer to where it matters: as an integral resource that informs planning and designs; and where citizens can become more skilled in safely handling a range of water sources that are used for different purposes, e.g. sanitation, garden irrigation and growing food.

Reference

Gulbenkian Think Tank on Water and the Future of Humanity (2014) *Water and the Future of Humanity Revisiting Water Security*, Springer, ISBN: 978-3-319-01456-2