

LEARNING FROM CRISIS

A series of modular learnings from the
2017-2018 Cape Town water crisis

THE RESILIENCE SHIFT

THE CAPE TOWN
DROUGHT RESPONSE
LEARNING INITIATIVE

module

5

The water resilience / fiscal resilience tension

When water users cut back on consumption, they are playing their part to conserve a scarce resource. But this puts the water provider under pressure as its revenue falls. The pricing structure can help.

Text component of module 5, accompanying the film www.vimeo.com/cinesouth/ctdri-trs-lfc-module-5

Duration: 13:51

The water resilience / fiscal resilience tension

Under water-scarce conditions the resource needs to be conserved, but pricing structures linking revenue to volume of water sold incentivise providers to maximise water sales. Reducing water use makes society more water resilient but leaves the municipal or other water provider less fiscally resilient due to reductions in revenue caused by lower water use and sales. As a result local authorities are often reluctant to encourage water savings even under conditions of increasing scarcity. A pricing model based solely or predominantly on a consumption charge is arguably redundant and unsustainable, and new approaches needed. The introduction of a fixed-charge component to the water tariff is one possible mechanism that goes some way towards alleviating the fiscal resilience / water resilience tension, by partially delinking water use and fiscal revenue.



There's always perverse incentives almost for the city to get households to consume more water, and any kind of attempts to get households to conserve is seen as a threat to the financial sustainability of the city

Prof Martine Visser

When the city for example reduces its water demand, while that's a success story in terms of water resilience and avoiding a potential Day Zero, it creates a real problem in terms of the city's municipal revenue

Helen Davies

This creates a *disincentive* to actually implement waterwise strategies in the city

Assoc Prof Gina Ziervogel

KEY POINTS

- A tension between water resilience and fiscal resilience arises whenever water is sold at a charge linked to volume of water consumed; successful conservation efforts that enhance water resilience by reducing consumption simultaneously reduce the revenue of the water provider, detrimentally impacting its fiscal resilience, with inevitable consequences for maintenance of the infrastructure and the longer-term physical resilience of the system
- As a result, local authorities are often hesitant to encourage water savings, even under conditions of increasing scarcity
- This tension is exacerbated in situations where a substantial proportion of the population does not pay for water and is cross-subsidised by paying users
- Particularly against the backdrop of climate change, a pricing model solely linked to consumption is redundant, unsustainable and in need of revision
- A fixed-cost component to the water tariff goes some way towards alleviating this tension, by partly delinking water use and the revenue of the water provider
- This makes it clear to users that they pay both for use of the system and for the water they consume: the fixed tariff pays for infrastructure and the water system as a whole, and the consumption tariff pays for water used
- This secures a minimum revenue base for the water provider
- For many users it does mean their water cost goes up; it also negatively impacts the business case for water-saving investments made on the basis of a pure consumption tariff, lengthening the payback period
- A simple two-step tariff structure without any reduced rates for initial consumption, with a higher basic rate, a punitively high rate for excessive water users, and continued cross-subsidisation of the poor, is an alternative

Interviewees in order of appearance:

Prof Martine Visser

Professor: School of Economics, University of Cape Town

Helen Davies

Chief Director: Green Economy, Western Cape Government

Assoc Prof Gina Ziervogel

Research chair: African Climate and Development Initiative, University of Cape Town

Dr Kevin Winter

Senior lecturer: Environmental and Geographical Science, University of Cape Town

Claire Pengelly

Water programme manager: GreenCape

Full interviews on [Cape Town Drought Response Learning Initiative](#) website

Opinions expressed by interviewees are personal viewpoints
and do not necessarily reflect those of their organisations

STRUCTURE

- 00:00:05 Hooks:
- City perversely incentivised to encourage water consumption; conservation as threat to city’s financial sustainability (MV)
 - Water demand reduction success stories help water resilience but create real problems for municipal revenue (HD)
 - This creates disincentives for the implementation of waterwise strategies (GZ)
- 00:01:07 **TENSION: CONCEPT – IMPLICATIONS – NEED**
- Notion of tension between water resilience and fiscal resilience explained
 - Some of its implications highlighted (GZ, KW, MV, CP)
 - Need for new approaches to pricing model motivated (GZ, MV)
- 00:08:36 **A REMEDY: OPERATION – IMPLICATIONS – ALTERNATIVE**
Fixed-charge component in water tariff as remedy
- How a fixed-charge component in tariff helps to address the tension by partially delinking water use and fiscal revenue:
- 00:08:36 fixed cost used worldwide, often linked to size of pipeline to property; impact on thinking: distinction between paying for water and paying for infrastructure that delivers it; helps both mindset and securing fixed income regardless of consumption levels; helps stabilise revenue (KW)
- 00:09:55 both structure and level of tariffs can be manipulated; fixed tariff to pay for infrastructure and system as a whole; consumption tariff to pay for use; in July 2018 fixed tariff introduced in Cape Town for businesses and households; two side-effects pointed out (HD)
- 00:11:28 case for simple two-step tariff structure as alternative (MV)
- 00:13:01 Close:
The aim is a much more sustainable pricing model where the city’s finances are not reliant on selling one of the scarcest resources we have (MV)

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- 00:01:07 “From a resilience perspective there’s a tension between getting people to reduce water use [...] and making sure there’s enough money in the system to run it efficiently and well; ... and so there’s a fine balance between wanting people to reduce water [consumption] and actually having enough money to run the system”
- “You’re on a resource that’s increasingly unsteady, and is needing to be conserved, and you’re selling water at a particular price in order to sustain the system in order to subsidise the poor; and that equation in terms of the imbalance of a scarce resource ... and you still need to subsidise, is an extremely difficult balancing act”
- “The city I think was still a bit wary of getting people to ... save too much because inherently ... there’s this sort of tricky relationship between too much savings and the city being financially resilient, so I think when it’s not dire the city is sometimes reluctant to motivate citizens to save too much”
- 00:02:49 During the Cape Town crisis, many users went off-grid, mainly by accessing groundwater with boreholes, which affected municipal revenue. But a household user that is completely off-grid with its potable water supply is still using the sanitation system. Sanitation is charged for as a percentage of the user’s water bill. “So if you’re no longer receiving any potable water to your residence but you’re still using the sanitation system, you’re paying nothing for ... the sanitation services”
- 00:04:07 “The less water that is used, the less revenue there is, which creates a tension between water resilience and fiscal resilience, so new ways of thinking about financing water are needed”
- 00:04:52 “The fiscal model of how the municipality resource water and service delivery needs to be looked at very closely; the current model, what it does is it requires the municipality to sell as much water or electricity as possible in order to finance service delivery, also [the delivery of] other services, non-water-related”
- The impact of the need to cross-subsidise the poorest part of the population
- “This model really isn’t sustainable, not when you’re talking about conserving water and operating from a water-scarce base, because there’s always perverse incentives almost for the city to encourage households to consume *more* water, and any kind of attempts to get households to conserve is seen as a threat to the financial sustainability of the city”; this model prevails in South Africa and most other countries in the world; “the crisis in Cape Town has given us the opportunity to really lead that conversation of why this model is redundant and how it needs to be changed”

- 00:06:37 How municipalities are funded; “municipalities have a real challenge in terms of potentially reducing one revenue source; what’s also important to recognise within a country like South Africa is municipalities have to cross-subsidise across their services as well ...; so there’s a portion of the population that doesn’t pay for water; but part of those water charges and payments are funded or cross-subsidised by those who do pay for water; so it’s quite a complex situation, and it also means that when the city for example reduces its water demand, while that’s a success story in terms of water resilience and avoiding a potential Day Zero, it creates a real problem in terms of the city’s municipal revenue”; after the crisis, does one want bounceback to pre-drought usage levels or not? bounceback would mean buffer not maintained, and insufficient allowance for future population and economic growth
- 00:08:36 Fixed cost introduced as part of tariff; linked to size of pipeline entering the property; introduced in Cape Town during the crisis; “what it does, it starts to change people’s thinking a little bit about where water comes from; it doesn’t come from a tap but comes through a long line of pipelines that have to be carefully managed before it reaches your property; you’re not paying for water – you are paying for the infrastructure that delivers it; that’s a useful way of managing both the mindset but also of ensuring that there’s a fixed income at the same time”; revenue stabilised at a time of varying price levels
- 00:09:55 Structure and level of tariffs can be played around with; fixed tariff to pay for infrastructure and system as a whole; consumption tariff based on how much water you use; in July 2018 fixed tariff for both businesses and households introduced in Cape Town; for a lot of people that means their basic cost of water goes up; “it means that you secure at least a significant portion of revenue to manage the city’s water infrastructure, which is what they need in terms of making sure that they’ve got a well maintained system that doesn’t lose water through leaks etcetera”; it does also mean businesses and households that don’t use too much water might be hard hit by the introduction of the fixed tariff; it also affects the business case for investments made on the basis of a pure consumption charge – payback period lengthened
- 00:11:28 Fixed charge really good idea: it helps cover basic service delivery cost, and it takes away the link between water consumption and fiscal resilience; “but at the same time I think there’s also easier ways to structure the tariff”; no free basic water initially; simple two-step tariff; proviso that poorest part of population always provided for; “that’s a much more sustainable model to ensure that water is being valued at its true worth, that you still have cross-subsidisation for the poor, but that you don’t have this model where the city’s finances is reliant on selling some of the scarcest resources that we have”

Suggestions for discussion:

- How would one go about establishing the optimal balance between fixed and usage-based charges in the water tariff?
- What alternative pricing structures can be considered, and what would their advantages and drawbacks be relative to the pricing structures mentioned here?

Further references:

- On the revenue-neutral design of a tariff structure, with price hikes accompanying restriction level increases, aimed at delivering the same total revenue to the water provider at varying total consumption levels, see interview with Dr Rolfe Eberhard in the Cape Town Drought Response Film Library: 00:23:10

Source material from the Cape Town Drought Response Film Library,
a research resource of the University of Cape Town's African Climate and Development Initiative



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