**Cape Town Drought Response Film Library**

**Rolfe Eberhard interview | 23 October 2018 | Duration: 51:30**

**KEY POINTS**

* If the system had been managed according to agreed-upon rules, levels of dams at end of winter 2017 would have been substantially higher than they were, negating Day Zero risk
* Government can only be exonerated to some extent on the basis that the system was not designed to cope with such a rare and severe drought; it should take some responsibility because if the system had been operated in terms of its own rules and had been effectively managed the impact of the drought would not have been nearly as severe
* The emergency build programme planned during May to October 2017 was a costly distraction
* Demand management was the success story of the drought experience; significant reduction was achieved through pricing, pressure reduction and the Day Zero communication strategy; the pricing and pressure management strategies were the ones that were most effective in reducing demand; Day Zero was unfortunate and unnecessary; the costs of the Day Zero strategy exceeded the benefits
* Supply needs to be increased and diversified, adding more expensive groundwater, re-use and desalinated water, combined with surface augmentation, catchment management, and institutional strengthening
* Need to maintain focus on underlying systemic issues rather than crisis response
* All of South Africa’s cities are facing increasing water-related risks
* In its present state the national Department of Water and Sanitation poses a systemic risk to water management in South Africa – it is part of the problem and unless that problem is addressed improvements in water infrastructure management are unlikely
* Given the state of the national department, cities need to play a much more equal and partnering role with the national department in a relationship of accountable partnership between cities and national government
* A shift is needed away from crisis management towards public leadership
* Two lessons: 1) you cannot build yourself out of a drought: make sure infrastructure is in place before it is needed; don’t wait until it’s too late; 2) the system requires effective cooperation and responsible partnerships between players involved in its management

**INDEX**

00:00:05 Cape Town and the Western Cape Water Supply System; the 98% assurance level of supply; agriculture gets water at a 90% level of assurance: they can expect restrictions every ten years on average; the 2015-2017 drought in historical context; the severity of the drought in relation to the level of assurance; unlike major systems elsewhere in South Africa, the storage in the WCWSS is not a multi-year storage; seen in the context of the historical rainfall record, there is not unambiguous evidence that this drought was the result of climate change: the historical record itself is not evidence of climate change

00:05:06 The severity of the drought was not the fundamental reason for the crisis: the WCWSS is managed around a set of allocations and a set of rules around how restrictions are applied, and the availability of water is dependent on those allocations and rules being applied in the way that they were set out; “there is evidence to suggest that the system was over-allocated and that … users used more than they were entitled to, and that restrictions where they were implemented were implemented late and also not enforced, so in the early period of the drought there was over-abstraction from the system, more than there should have been if the system had been strictly applied”; in addition, alien vegetation has not been controlled to the extent that it should have been and this also contributed to less water being available in the system; a third factor has to do with the management of the system which was also not done correctly; “if you put those three factors together – the issue of abstractions, the implementation of restrictions, and the management of the system, if the system had been managed according to the rules and had been managed optimally … the evidence suggests that if the allocations and restrictions and management had been done according to agreed-upon rules and policies, that the level of the dams at the end of winter 2017 would have been substantially higher than they were, essentially negating the risk of Day Zero”

00:07:19 Government can be exonerated to some extent on the basis that the system was not designed to cope with a drought of this severity, an event of such low probability; “At the same time government should assume some responsibility because if the system had been operated in terms of its own rules and had been effectively managed the impact of the drought would have not been nearly as severe”

00:08:03 When dam levels reached 20% in May 2017 the mayor lost trust in the technical department to get the city through the drought and passed responsibility over to another part of her administration; scenario approach to planning then followed; scenario that was chosen based on three assumptions: 1) that it would not rain again; 2) that resources were not a constraint; 3) that the city could not rely on the wider water supply system; “on the basis of those three assumptions the city developed a plan to build itself out of the drought”; plan was to build 500 million litres per day of capacity over a very short period of six months – the thinking was that this could be provided and that this would be sufficient to meet the reduced needs of the city; capacity was to come from temporary desalination, some groundwater, and temporary re-use; this was an extremely expensive programme because temporary desalination costs a multiple of permanent desalination

00:10:19 The detailed planning for the new-build programme took place over the period May to October 2017, and it gradually became clear that the costs were very significant; external review invited; plan reviewed November 2017; strong recommendation was not to proceed with temporary desalination as it was very expensive and the capacity could not be provided in time to get through 2017-2018 summer; external experts recommended that city should focus on demand reduction and groundwater which they believed would be both cheaper and quicker to develop; mayor accepted the key recommendations of the external review and the plan was revised; temporary desalination components of the plan substantially reduced; proceeded with only three temporary desalination plants that were far advanced; focus and attention shifted to demand management and to the groundwater programme; capacities of three temporary desalination plants are tiny (respectively seven, seven and two million litres per day) “and the contribution that these plants made to dam levels by the winter of 2018 [was] absolutely insignificant”; very expensive: water from those plants costs R43 per cubic metre (compared to about R5 per cubic metre for surface water on average including treatment, a factor of about 8 between the two); first water from these plants came on line in June 2018, not in time to make any difference to the threat of Day Zero during the 2017-2018 summer

00:13:23 In December 2017 it became clear to city government that aggressive demand management was the only way they were going to get through the drought; multiple strategies implemented: communication strategy, pricing strategy (prices significantly increased in February 2018), and reduced pressures in the system; in combination, these three interventions resulted in a very significant reduction in demand down to about 550 million litres per day compared to a previous summer-demand peak of 1,200 million litres per day

00:14:11 “The emergency build programme … was a costly distraction”

00:15:06 “The success story of the Cape Town drought is the way that Cape Town managed demand”: average consumption reduced from 1,000 million litres per day to below 600 million litres per day over the drought period; 330 litres per person per day used in 2000; reduced to 220 litres per person per day (for all users including losses) before the drought, to 140 litres during the drought

00:15:50 Reduction achieved through the three above-mentioned measures – pricing, pressure reduction, Day Zero communication; in his view, the pricing and pressure management strategies were the ones that were most effective in reducing demand

00:16:56 The story of agriculture in the drought; agriculture used more water than it should have in the early stages of the drought; enforcement of restrictions on agriculture in the later stages of the drought was a key reason Cape Town was able to get through the drought; significant impact on agricultural economy and jobs; “in some ways the severe restrictions towards the end of the drought were a consequence of not observing restrictions in the early part of the drought”

00:18:28 Day Zero adopted as a fear-based communication strategy towards the end of 2017 with the intention of scaring people into reducing consumption; “in my view, Day Zero was unfortunate and unnecessary for two important reasons: the first reason is if the system had been managed effectively in the early stages of the drought the threat of a Day Zero would not have existed, and secondly it was not necessary because there were effective mechanisms in place to reduce demand, namely pricing and pressure management. Those two mechanisms proved to be effective because demand has remained low even though Day Zero became cancelled”

00:19:54 Unfortunate consequences of Day Zero strategy; “the costs of the strategy were much higher than the benefits”

00:20:20 Supply needs to be increased and diversified; groundwater, re-use and desalinated water are more expensive than surface water, so the cost of water will increase; there is a trade-off between risk and cost; two key uncertainties: rainfall and how consumer water use will respond when restrictions are lifted; planning challenging; appropriate approach is to adopt scenario-based planning; necessary part of Cape Town’s water portfolio in future: new surface augmentation, catchment management, institutional strengthening, groundwater schemes, re-use, desalination; the way water is managed will also change: in the future, with much higher-cost water in the system, it will need to implement those on a dispatch basis, with desalination plants only running when dams are low; challenge is getting public acceptance for fact that expensive infrastructure is sitting idle at times

00:23:10 Pricing of water in Cape Town; normal and restriction tariffs; system designed to be revenue neutral; price increases during crisis period; billed revenue increased during the crisis but did not fully translate into cash revenue for the city government; cash collection remained stable through the process; the city government was able to continue to raise sufficient cash to run the system; punitive tariffs have unintended consequences and can result in economically inefficient decisions; at least 50% of total costs consist of cost of managing the distribution network; move towards fixed charge combined with usage-related variable charge

00:31:51 “It is misleading to see the water crisis only as a drought requiring a drought response; there are underlying systemic issues that influence the ability of the system to respond to periods of low rainfall; the danger is if the drought is only characterised as this very unusual event requiring a single drought response it takes the focus away from addressing the underlying issues”

00:32:48 “Water management requires long-term investments in infrastructure and if these are not made, when low rainfall comes it is too late to invest in building new infrastructure because building substantial new infrastructure takes years in planning and construction and implementation, and the only way you can get through a drought is through managing demand, so if the right infrastructure is not built at the right time the system has an increased inherent risk, and in a context where there is already climate variability and possible climate change that means that those risks are increasing and therefore it is imperative that South Africa as a whole and Cape Town improve the way that it manages its water infrastructure to become more robust and more resilient”

00:34:00 All cities in South Africa dependent on surface water schemes and therefore on systems that are managed to cater for drought; “where schemes are not put in place in time it exposes those cities to the risk that Cape Town has been exposed to”; serious issues and exposure to risk of low rainfall in other South African cities; “all of South Africa’s cities are facing increasing water-related risks”

00:35:09 Getting water management right in South Africa has a number of components: getting the right infrastructure in place; managing that infrastructure effectively; the status of the national DWS is a matter of public record: leadership instability, financial mismanagement, audit issues, serious problems related to project management and cost controls; “the capability of the department has eroded over time … in many cases there aren’t the skilled personnel to be undertaking the planning and the infrastructure management and maintenance that is necessary to maintain South Africa’s important water assets”

00:37:09 Significance of risks posed by water and seriousness of water situation in South Africa underappreciated; “not nearly enough attention has been given to the state of the management of water”; “in its present state the national department actually poses a systemic risk to water management in South Africa – it is part of the problem and unless that problem is addressed it is hard to see how there can be improvements in water infrastructure management in South Africa”

00:38:00 Dilemma: on the one hand not enough money is being spent on water infrastructure; on the other, the money that is spent on water infrastructure is not being spent efficiently and effectively; “it is hard to make a case for more money if the money that you have is not being well used; so there is a priority for South Africa to both improve the effectiveness of spend and then to increase the spending on infrastructure and then the maintenance of that infrastructure”

00:38:33 Water infrastructure has long lead times in terms of planning, construction and implementation; important planning component requires good data on existing water use, reliable ways of estimating future use, taking uncertainty into account, and understanding what’s happening to water availability; “these capabilities historically have been strong in South Africa but the capability to plan and to maintain updated information has declined and poses a significant risk to South Africa”; requirement to keep strategy up to date with periodic reviews not being adhered to; in the last few years the system of transparency has not been maintained

00:40:42 Non-revenue water: physical losses from the network plus unauthorised consumption; average NRW in South African cities 45%, which is relatively high; Cape Town: 15%; international best practice is to bring NRW down to at least below 15% and in some cases below 10%

00:41:46 Responsibility for water infrastructure in South African legislation rests with national and local government; this means that for systems to work these parties need to be cooperating; in the past the system was very dependent on a national department that was the lead agency, with the cities very much a junior partner in that relationship; “that situation needs to change: given the state of the national department and its capability, cities need to step up and play a much more of an equal and partnering role with the national department to solve these issues; so we need to move from a situation where there is blame to one where there is accountable partnerships between cities and national government to solve the water issues facing the cities”

00:43:01 South Africa’s water financing model; distinction between economic and social infrastructure; tariffs and grants; too much reliance on government grants in the past; in the future there should be more reliance on commercial finance; this has the additional advantage of bringing increased scrutiny into the water arena and will help to ensure that there are sound governance arrangements in place; if pricing is cost-reflective, finance can be raised: “financing per se is not a constraint as long as you get the pricing right; if the price level reflects the costs there will always be sufficient finance available to build infrastructure because it can be recovered and repaid through the tariff”; in South Africa there is an unfortunate blurring between economic and social infrastructure; this makes it difficult to raise commercial finance, and you end up subsidising users who should be paying the full cost

00:45:55 Water infrastructure requires long-term thinking and decision-making but municipalities operate on a much shorter political cycle; consequence is that long-term decisions get neglected in favour of short-term political priorities; “this is a very dangerous and risky situation for South Africa that is water scarce and water insecure; it is very important that adequate infrastructure is in place and managed well to secure South Africa’s water future; there is a need to rethink the way that water is managed with a view to ensuring that the longer-term nature of water is taken into account in the decision-making processes; this might require a separation of infrastructure management for water away from the short-term election cycles of politicians”; “in most places in the world water is managed by a professionally managed utility that sits at arm’s length from the day-to-day politics of a local government or a national government”; in South Africa the experience with utilities that are state-owned has not been good, so special attention should be given to ensure governance arrangements are in place to avoid undue influence over those utilities

00:47:35 “It is misleading to see periods of low rainfall as crises requiring a crisis response. Periods of low rainfall are expected in South Africa and need to be catered for through effective planning and management; effective planning and management requires sound public leadership to put in place the institutions and effective management for those systems”

00:48:00 “A shift is needed in the way that water is managed, away from crisis management towards public leadership; public leadership will take into account the longer-term perspective and ensure that there are effective investments and management arrangements put in place to secure our future”

00:48:18 Two lessons gained through the drought experience: 1) it is not possible to build yourself out of a drought: once the drought hit the only realistic option was to manage demand to get through the drought; the extended learning from that is that the city needs to ensure that it has the infrastructure in place before it is needed rather than waiting until it’s too late; 2) the WCWSS involves many players and the effective management of the system requires effective cooperation and responsible partnerships between the users of the system

00:49:19 His professional experience during the crisis

**BIO**

Dr Rolfe Eberhard is an economist and independent public policy professional. He advised the technical lead at the City of Cape Town on behalf of National Treasury on responses to the water crisis in 2017 and 2018, including water demand management, price reform, ground water development, reuse and desalination. He supported the City in the development of a forward-looking water strategy during 2018.

Rolfe has published opinion pieces in Business Day on water, including:

• “Blame game won’t solve Cape Town’s water crisis: Public leaders in all three levels of government must rise above political and personal interests to avoid a humanitarian and economic catastrophe.” (9 January 2018)

<https://www.businesslive.co.za/bd/opinion/2018-01-09-blame-game-wont-solve-cape-towns-water-crisis/>

• “Keeping the water flowing is as important as keeping the lights on. Reform of the sector is urgent and SA dare not leave it to those responsible for the parlous state of affairs.” (19 July 2018)

<https://www.businesslive.co.za/bd/opinion/2018-07-19-keeping-the-water-flowing-is-as-important-as-keeping-the-lights-on/>

• “Cape is no exception: water crisis risks are systemic and affect all of SA: Four shifts are needed to manage dangers posed by a combination of low investment and poor management.” (18 September 2018)

<https://www.businesslive.co.za/bd/opinion/2018-09-11-cape-is-no-exception-water-crisis-risks-are-systemic-and-affect-all-of-sa/>

Rolfe was a co-author of the 2016 World Bank publication ‘Providing Water to Poor People in African Cities Effectively: Lessons from Utility reform.’ He authored the report “Improving access to urban water sustainably in sub-Saharan Africa and beyond: A way forward for German Development Cooperation and its Partners based on a review of two decades of involvement in urban water sector reforms in Africa” (GIZ, 2018). He has advised the Kenyan government on devolution in the water sector in the period 2011 to 2017, working with the World Bank and GIZ and has convened leadership programs for African water utility CEOs, the mayors and city managers for the eight metros in South Africa. He advised the Minister of Water as part of the National Water Advisory Council in the period 2011 to 2013 and was lead drafter of the 2003 national water services policy and the water regulation and water support policies for the national water department.

Rolfe has a PhD (Economics) from the University of London (2002) and degrees in Engineering and Philosophy. He works independently as an international water adviser.