DROUGHT

Desalination an option, but we need a clear strategy for water supply

The steps required include assessment of management and upgrading of resources and infrastructure

Matthew Burnell

Is desalination SA's defence against climate change or a quick fix? In the next 30 years, the country, and particularly the western part, will become hotter and drier and will experience more extreme weather, droughts and floods. Given that the Western Cape is already experiencing the devastating effect of protracted drought-imposed water restrictions, it is becoming increasingly evident that without a clear, definitive strategy to deal with water resources adequately and urgently, SA and its people are in trouble.

When the water crisis in Cape Town was first debated in late 2015, the city indicated that it was considering various water supply options, including desalination, the process of turning salty ocean water into drinking water. With a lengthy coastline, one would think that desalination is a natural solution, but it is energy intensive and expensive to maintain. The city put these plans on hold at the time to search for better water supply alternatives.

Since then, available water supply in Cape Town has reached a critical point. In the middle of July, dam levels in the Western Cape were at 26%. The last 10% of water in these dams is considered difficult to use, which means there was actually only 16% available.

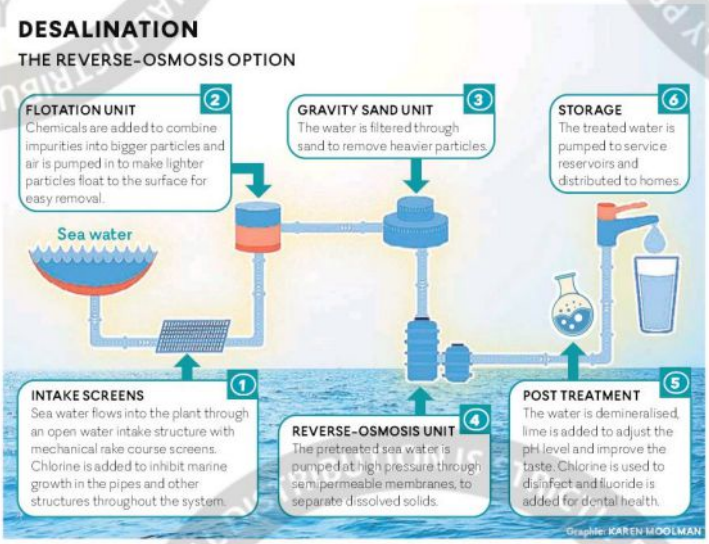
But water scarcity is not just confined to the Western Cape. The National Water Resource Strategy recognises that the demand for water supply is increasing rapidly and that the country is fast approaching the full utilisation of available water.

This, compounded by the water crisis in the Western Cape and the climate change forecasts for the next 30 years developed by the Academy of Science of SA, has forced Cape Town, and indeed the country, to reconsider desalination as a viable option.

Last week, the city advertised its first tender for the desalination of water as part of a R2bn initiative to produce an additional 500-million litres of potable water a day.

Desalination may be a near-term solution, but it must be considered through the lens of a long-term water supply strategy that includes:

- A thorough assessment of the management of existing water resources and infrastructure and ensuring these are appropriately maintained and upgraded;
- Improving existing supply mechanisms, such as treating and reusing water, rain water harvesting, reducing the amount of water that is lost to water leaks and educating communities about better management of water use; and



- Improving collaboration and partnership between critical government departments such as water and sanitation, environmental affairs, science and technology and public works, and industry associations, so that the implementation of critical short- and long-term plans is expedited without compromising the environment or the communities in which these projects will be rolled out.

It is expected that the National Water and Sanitation Master Plan will be published in September, 13 months later than originally expected. The purpose of the plan is to give effect to the above objectives and assist the government in allocating funds for the development of water and sanitation services.

In addition, it seeks to tackle some challenges in the water-supply sector including the fact that infrastructure is not properly maintained, which leads to viable surface water sources becoming polluted and unusable.

The National Environmental Management Act and the environmental impact assessment regulations require that any person who intends developing and operating a desalination plant must consider, assess and report on the environmental, social and economic effects of the proposed plant to the competent authority for approval.

With water levels reaching dangerously low levels, desalination plants are likely be installed and operated in emergency conditions, without necessarily fully considering the effects.

There are a number of ways of removing salt from water.

Reverse osmosis, in which water is forced through microfilters leaving the salt behind; and distillation, in which water is boiled and the vapour collected.

These are the most prolific or common options. Both require costly infrastructure to be built and are energy-intensive.

In June, Cape Town issued a request for information calling on parties to submit "possible solutions to augment the city's potable water supply by using reverse osmosis, desalination or similar plants to produce between 100 to 500 megalitres of potable water per day from the sea water, other surface water resources or even treated run-off".

Whichever options Cape Town chooses, it will need to act quickly to avoid water supply issues similar to those experienced recently in Richards Bay.

Acting quickly, however, should not compromise the assessment of the environmental, social and economic effects associated with these projects. Some of the other critical effects, aside from the need to supply water as a basic human right, are:

- Although reverse osmosis may require less energy than other forms of desalination, it uses more energy than other forms of water supply.

Where this energy is obtained from traditional energy supply (through burning fossil fuels), it is likely to significantly contribute towards climate change, which, ironically, is one of the reasons for the lack of water in the region;

- Increased reliance on fossil fuels would run contrary to SA's obligations in terms of the Paris Agreement;
- It has been suggested plants that use renewable energy may further reduce the environmental effects.

However, the use of renewable energy may increase the cost of "manufacturing" as these technologies are more expensive than traditional forms of energy and will require additional investment to deal with the intermittent supply.

Recent reports by companies involved in desalination have indicated that water can be provided within existing municipal rates. However, it is assumed that these assessments have been considered in light of a coal-based energy supply;

- Climate change is expected to result in variations in weather such as floods and droughts. It has been reported that "significant precipitation changes [can] also destabilise the economic viability of desalination plants, and experience has shown that unexpectedly high precipitation at some periods has idled or even retired some".

This was recently evident in Australia, where desalination plants were built during a period of drought only to become obsolete when heavy rains occurred; and

- The effects of chemicals used in the desalination process that are discharged (along with brine water) into the ocean have not been fully considered and assessed to ensure that these do not have a significant impact on the environment, particularly coastal regions that include sensitive environments.

While the UN predicts that 14% of the world will depend on desalination to meet their water needs by 2025, the problem is that we're looking at desalination as a silver bullet to deal with an immediate need for our short-term water supply.

Sober minds need to look at all the options before making commitments from which the country cannot return.

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