POLICY BRIEF

September 2017
The WRC operates in terms of the Water Research Act (Act 34 of 1971) and its mandate is to support water research and development as well as the building of a sustainable water research capacity in South Africa.

Coping and adaptation strategies for agricultural water use during drought periods

South Africa has been experiencing one of the worst droughts in history, with provinces such as the Western Cape still threatened with serious water shortages. Agriculture has been hardest hit by the drought. This Water Research Commission (WRC) study answered the need for an urgent review of the country's drought response strategies for the agricultural industry and to come up with a basket of options that farmers can adopt during the drought.

Background

Agriculture takes up about 60% of the South Africa's national water use. The agricultural sector is highly sensitive to extreme climatic events, high climatic variability and change, including drought. Drought and water scarcity are set to become more regular phenomena in South Africa as a result of high climatic variability and change. Therefore, there is a need to invest in building farmer resilience, high adaptive capacity and also strengthen the ability to cope and adapt to drought.

In 2016, the Water Research Commission (WRC) launched a project to identify the current knowledge on drought, indigenous knowledge systems around coping with drought, as well as to investigate ways in which Government managed the drought at both national and provincial level. The study also reviewed drought coping and adaptation strategies in dryland cropping systems, irrigation, livestock and mixed systems. The study was undertaken by the Cape Peninsula University of Technology.

Main findings

Definition of 'drought'
Drought is generally defined as 'a shortage of rainfall over a prolonged period in which normal water needs are not met.' Unlike other natural disasters, such as floods, it is difficult to determine when a drought starts and ends, and its impact is not easily measured as it involves economic, social, natural and environmental aspects.

The review identified four basic categories of drought: meteorological drought, agricultural drought, hydrological drought and socio-economic drought. The focus here is the agricultural drought.

It is well known that South Africa's average annual rainfall falls well below the international average of 860 mm per annum. Rainfall is unevenly distributed across the country and is unpredictable and unreliable. Drought is, therefore, a regular occurrence.

Drought impacts in South Africa
Drought impacts were categorised into agricultural, economical, socio-economic and environmental impacts. When the review was undertaken (in 2016) the current drought had already impacted agriculture severely.

It was difficult to measure the impacts of drought on a provincial basis due to the lack of available information. However, it had been reported that significant livestock mortalities and crop failure had occurred (Figures 1 & 2). Among others, this resulted in an increase in maize imports, South Africa's staple crop.

Water volumes in dams, lakes and rivers declined significantly, leading to severe water-supply issues in some parts of the country.

Drought effects are felt long after the drought has dissipated, which poses serious socio-economic challenges. In South Africa, the rising cost of food was revealed as one major effect of drought. Another challenge was workforce retrenchments and closure of small town businesses (particularly in those towns dependent on agriculture-related income).

Response to drought

At the time of the study there was limited information available that could be used to determine the pattern of occurrence of the drought of 2014-2016 period. Attempts were made to review drought occurrence according to each province. While some provinces declared disasters in some municipalities this came at different times during the drought.

The National Drought Management Plan, which was developed as stipulated by the Disaster Management Act (No. 57 of 2002), provides a framework for provincial drought management in South Africa. Each province is required to draft a drought management plan according to its needs. However, the fact that the national plan was last revised in 2005 was considered worrying. There were areas within the plan that were found to be unclear. The challenge is that this ambiguity could filter down into provincial plans and impact implementation. The study team could only identify provincial drought management plans for the Western and Northern Cape provinces.

A significant challenge is the fact that despite its regular occurrence and the presence of sound policies, drought management in South Africa remains largely reactive. At the national level, huge sums of money have been injected into drought mitigation strategies that appear largely unstructured, uncoordinated and unmonitored. This nullifies the incredible effort shown by government departments to mitigate against drought.

National level drought mitigation measures included borehole drilling, fodder provision, movement of cattle to state-owned land, and water restrictions.

Early warning systems

Drought mitigation components, i.e. early warning systems and indigenous knowledge systems were also reviewed. Findings show that early warning systems play a significant role in mitigating drought effects if managed effectively.

Indigenous coping strategies were found to be valuable, sustainable and affordable ways of managing drought.

Farmers need to be encouraged and supported to use and maintain their local knowledge on coping and adapting to drought. However, indigenous knowledge is not sufficient to manage drought effectively, unless it is complemented with scientific knowledge. Indigenous coping strategies need to be properly documented to avoid loss, instead of being transferred from one generation to another through undocumented stories. Effective drought management is a result of proper planning and foresight. Drought relief should only be applied when all other efforts have been exhausted to avoid or mitigate the effects of drought.

Drought is an inevitability in South Africa, and implementing the available mitigating and adaptation strategies could go a long way in addressing drought before it affects people, particularly the rural poor, which are especially vulnerable.

Drought relief, if not managed or coordinated properly, has the potential to create dependence syndrome on the government financial fiscus. Farmers rather need to be empowered to engage in drought management efforts, they must take proactive measures and use climate advisory information provided through knowledge generation organisations, academics and extension services in order to make decisions for themselves and to manage their own activities.

Figure 1. Example of drought affecting crops in 2015.

To order the report, ***Coping and adaptation strategies for agricultural water use during drought periods*** (**Report No. KV 363/17**), contact Publications at Tel: (012) 761-9300, Email: orders@wrc.org.za or Visit: www.wrc.org.za to download a free copy.