



It is estimated that there is enough fresh water on the planet for 7 billion people. Currently the world population stands at a little more than 7.3 billion

If there are no major interventions to reduce demand growth and boost supply, the gap between the amount of water needed and the amount that is available will widen to more than 3 km³ per year by 2035, as demand jumps to just under 20 km³ while supply reaches just more than 16 km³.

The agricultural sector is the largest user of water, accounting for 57% (8.9 km³) of total water usage. Demand by the sector is predicted to increase to 9.7 km³ by 2035.

However, through the use of new irrigation technology and by breeding new plant cultivars that are more tolerant to drought and heat-stress, the agriculture sector can vastly improve on its water-use efficiency.

Ceres valley fruit and vegetable producer Rossouw Cillie says that by implementing irrigation scheduling and new irrigation technology, they were able to increase water-use efficiency, thus lowering water use by up to 40% in terms of water applied compared to yield realised.

Fruit and vine farmers in the Western Cape also have access to a free digital irrigation management tool, FruitLook. It is an open-web portal, financed by the Western Cape's Department of Agriculture, and provides satellite-based information that enables producers to measure use efficiency. In a survey conducted among farmers using the programme, 60% said that FruitLook had helped them manage their water more efficiently by at least 10%.

Another example is a project by SAB and the University of the Free State to develop what the former refers to as a 'world first for barley farmers' in providing a 'scientific alternative and effective method of barley irrigation'.

The Precision Irrigation of Barley project is aimed at lowering a crop's total water footprint and increasing its sustainability.

A pilot study for the project in the Northern Cape barley irrigation area of Douglas has yielded a 48% or 19.2 million hectolitre water saving in its first year on a 1 491 ha plot of barley land. The programme has since been expanded to 100 smallholders and 180 commercial barley farmers, and now covers a total area of more than 12 822 ha of land in the province.

Precision Irrigation is a water-scheduling computer programme based on scientific and biological principles, and calculates the exact amount of water needed to produce high-quality, optimum crop yields in different soil types,' explains SAB agriculturist Frikkie Lubbe.

The programme effectively eliminates any excess water use during irrigation, 'thus reducing risk to the producer and ensuring optimum yield and quality of barley', he says.

SA's water woes can also, in part, be addressed by cutting back on wastage (non-revenue water).

A 2012 study by the Water Research Commission established that more than 35% of municipal water is lost through leaking pipes and inadequate infrastructure.

According to the ISS paper, little progress has been made since then to rectify the situation.

Earlier this year, Mokonyane said in a statement that the 'department is fully aware of the fact that the inability to deal with issues of operations and maintenance also compromises the water quality, hence the current focus on water licensing processes and regulation of the sector by the department'. She added that the department planned to achieve a 15% reduction in water losses during the 2015/16 financial year.

On a municipal level, the solution to reducing demand does not only lie in lessening the amount of non-revenue water but also in changing water-use behaviour.

As the ISS paper points out, with the average per capita water consumption in SA being higher than in most other countries, 'behavioural changes in municipal consumption are particularly important. Central to this required change in attitude is the emerging global notion of stewardship, which is based on an ethos of sustainable custodianship rather than on consumption', the paper states.

If, by 2035, per capita municipal consumption could be lowered to the world average, expected demand would fall from 7.18 km³ to 5.74 km³, in which case the demand/supply gap would be reduced by almost half.

Moderate increases in surface-water yield – through an increase in the treatment of waste water, as well as a 70% increase in the amount of groundwater used and the amount of freshwater made available by desalination – can further help close the gap between supply and demand.

SA is facing a potential water crisis and the current policies of the Department of Water and Sanitation, as set out in the NWRS, are not sufficient to address the water constraints facing the country, according to the ISS paper.

'Even if policies that would close the demand/supply gap by 2035 are put in place now, South Africa will still be over-exploiting water for the next 20 years.'

It suggests that any attempt to narrow this gap must include 'policies to reduce demand, increase supply, improve efficiency and create the necessary incentives for the transition to a recycling economy'. 🍃