

# Millions of Rands saved at Cape Town schools through water conservation

## Using smart metering, maintenance and behavioural change

At the height of the Cape Town water crisis a research study was conducted by a collaborative team from the University of Cape Town (UCT) and Stellenbosch University (SU) in 2018. They investigated the impact that a combination of smart water meters, basic infrastructure upgrades and behavioural interventions could have on reducing water usage at schools across the Western Cape. The project was branded the *#SmartWaterMeterChallenge* and was headed by Prof. Thinus Booysen (SU) and Prof. Martine Visser (UCT).

Through sponsorship from Shoprite Holdings, Shoprite suppliers, the Western Cape Department of Education and Department of the Premier, **345 schools received smart water meters** along with basic maintenance upgrades to their water infrastructure. The installation of smart water meters and data collection was managed by BridgloT (<http://www.schoolswater.co.za/>), a company founded by Thinus Booysen. After meter installation, a research team, headed by Martine Visser along with behavioural economists Johanna Brühl and Kenneth Berger used information supplied by BridgloT's smart water meters, to test behavioural interventions. Behavioural treatment in the form of information feedback and an inter school competition were tested amongst a subset of 120 schools. This subset of schools was split into three groups.

The first group received a weekly feedback report with graphical representations of their water usage. The second group received the same feedback information but were also entered into an inter school competition. The competition group schools received an updated leader board each week that ranked their school's water savings relative to other schools. The final group did not receive any feedback reports and thus formed the control group. Between April and September 2018, the water usage of schools was monitored and compared to the control group.

## THE SMART WATER METER -CHALLENGE-

The results from this study have contributed to two academic papers that are in the process of publication. The first paper ([Booyesen, Ripunda & Visser, 2019](#)) evaluated the impact of the maintenance campaign and found that basic infrastructure repairs worth R 5 000 **reduced water leaks by 28% within five days**. The second paper focused solely on the effectiveness of the behavioural interventions and found that the treatments led to **reductions in water usage of between 15 and 26%**. Interestingly, the information feedback was found to be more effective in reducing night time water use, indicating better water usage by the staff, while the competition was found to be more effective during the day time, indicating better water usage by the pupils. The contrast highlights the way feedback was understood differently by the two groups, with different effects on their assumption of responsibility.

Overall, the project yielded significant reductions in water use and highlights the dramatic financial savings that the combination of smart technology and behavioural interventions can have.

Out of the total 345 schools, Shoprite sponsored 100 schools to participate in this at a cost of R30 000 per school. This amount covered meter installation, maintenance and a year's subscription to BridgloT. **The total investment of R3 million produced a saving of R12 million in a year**. Thus, not only did Shoprite's contribution aid in Cape Town avoiding *Day Zero*, but it provided a massive financial saving for schools.

When considering the water saved across the entire project at all 345 schools a total investment of R10.5 million produced a dramatic saving of **R39 million**. This research shows that there are significant gains that can be made from improving the efficiency of water usage in schools. In fact, scaling up the roll out of these interventions across South Africa will provide a return on investment of **R1.5 billion in the first year** - enough to employ an additional staff member at every second school in the country. Additional employment will also be created through the maintenance and meter installation that will be required. Such an expansion will have a significant impact of improving the sustainability of water – a resource that is becoming increasingly scarce in South Africa