SASTEP Water Efficient Toilet Initiative

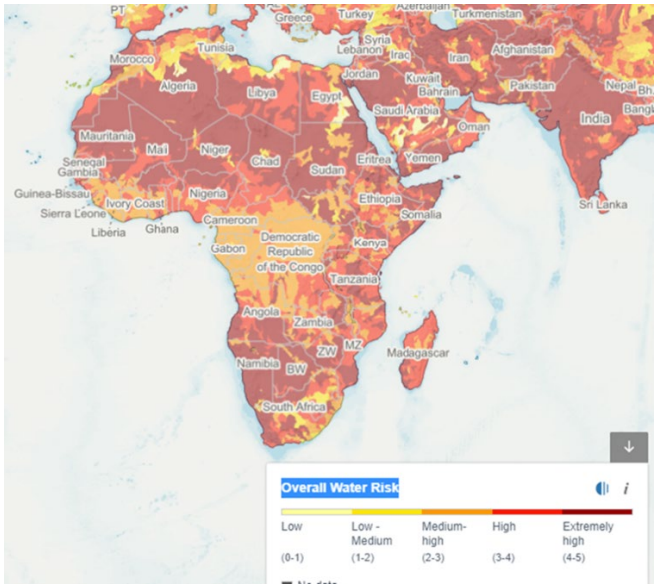
The SASTEP Water Efficient Toilet Initiative is driven to promote large scale adoption and designation of low flush and other water efficient toilets in South Africa. The current sanitation paradigm where large volume of potable water is used to flush and transport faecal wastes from homes to centralized wastewater treatment plants (WWTP) needs to evolve to ensure sustainability. Although next generation non-sewered sanitation systems (NSSS) offers a shift and long-term solution to current practices, in the short term we need to better manage our current systems and maximise valuable resources. Low flush and other water efficient toilets offer opportunities in this regard.

Climate change and drought

Climate change is causing recurring droughts, low and varied rainfall patterns. Dropping water levels, taps in homes and businesses being turned off, four million residents queuing up at water collection points and a city bracing up for a public health crisis and possible outbreak of public disorder. These were the realities facing the city of Cape Town during the drought of 2017. The situation in cape town served as a warning to not only south Africa but to other nations. The Cape Town drought embodied the country's vulnerability to climate change and dwindling water resources.

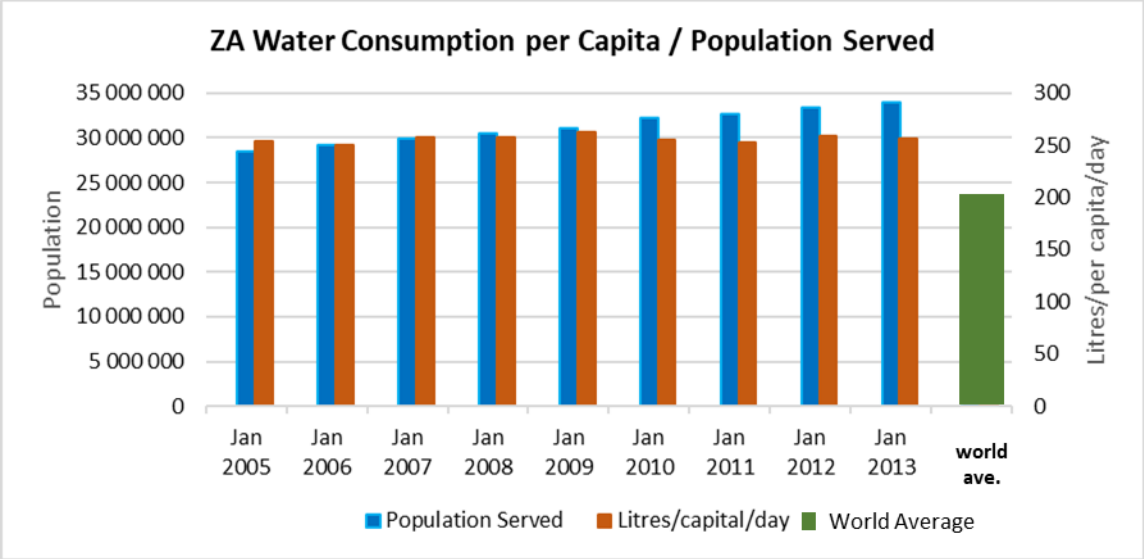
Water stress

According to the WRI, water stress is the ratio of total withdrawals to total renewable supply in a given area". In the case of Western Cape, an extremely high-water stress level means 80% of available total renewable supply is being withdrawn for use on an annual basis. A recent report by the World Resources Institute (WRI) ranks South Africa #48 on the world water stress list and the country is categorized at a medium-high water stress level country, although parts such as the Western Cape is categorized as extremely high water stress level (https://www.wri.org/blog/2019/08/17-countries-home-one-quarter-world-population-face-extremely-high-water-stress).



Inefficient waste use and wastage

The water stress levels in south Africa is not only driven by low water resources but also driven by over excessive and unsustainable use by end-users, leaks, and poor resource management. South Africa consumes up to 250 litres per capita per day compared to a world average of 180 litres per capita per day (Heeden & Cilliers, 2014).



The level of water use in comparison to available resources is unsustainable and consequently, an urgent rethink of the way water resources can be better managed is required.

Access to safe drinking water and adequate sanitation are inextricably linked and has a direct impact on the health and well-being of communities. It is an essential factor in ensuring sustainable health improvement and reduction of poverty. The socioeconomic impact of poor sanitation extends beyond the cost of disease outbreaks and the economic impact can be high.

What is a water efficient toilet?

Water efficient toilets minimize the amount of water used to convey the waste collect in the bowl to the backend treatment, collection, or conveyance system

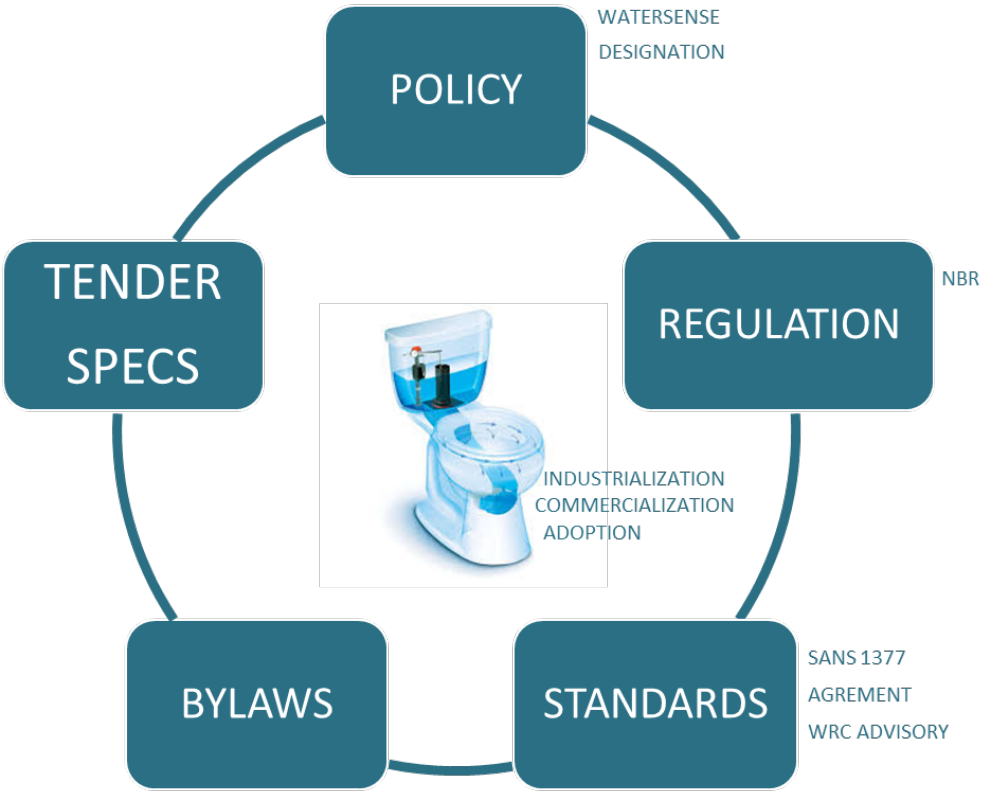
- Traditional toilets use between 10- 15 liters for flushing
- Modern toilets use 6 – 8 liters for flushing
- High efficiency toilet can operate at 2-3-liter flushes
- Vacuum can be used to achieve 0.5 – 1.0-liter flushes

According to STATSA, over 10 million homes in South Africa use some sort of waterborne sanitation either connected to centralized reticulation system or to a septic or conservancy tanks.

	Number of households
Flush toilet connected to a public sewerage system	10 225 000
Flush toilet connected to a septic or conservancy tank	655 000
	10 880 000

The conversion of these toilet to water types will assist in better managing this value resource. Also, this presents an opportunity for South African toilet manufacturers. The conversion of existing high flush volume toilet pedestal to water efficient will drive demand and manufacturing opportunities.

The SASTEP Water Efficient Toilet Initiative therefore aims to foster the adoption and proliferation of water efficient toilets in every home in South Africa. The WRC, through SASTEP is leading and coordinating a multi-stakeholder approach to address several hurdles that have previous hampered the adoption of water efficient toilets. The initiative looks to address policy, regulation, standardization, by-laws, and other instrument that be used to foster the adoption. The aim is to drive existing or recommend new policies that will lead to the designation of water efficient in all new development as well as the retrofitting of existing high flush volume toilet pedestal.



Two study projects have been initiated to drive this initiative:

A. Water Efficient Toilet Pedestal Test Protocol
B. Desktop Review of Policies, Regulations, Standards and Bylaws related to Low-Flush / Water efficient Toilets

The Pollution Research Group (PRG) and the Water Group have been respectively selected to execute the projects.

A. Water Efficient Toilet Pedestal Test Protocol

Aims

1. Identify and compile a list of all commercially available and developmental stage water efficient toilets in South Africa
2. Develop a performance testing protocol for standardization of low flush toilet technologies in South Africa and test identified pedestals using the protocol
3. Evaluate the impact of low flush toilets on water consumption at the household and municipal level
4. Test the effect of low flush volumes on internal and external piping and reticulation systems, as well as on wastewater treatment plants
5. Provide engineering guidance toward the adoption of water efficient toilets and considerations for policy making to guide the rollout of water efficient toilets on a national scale

Expected Outcomes

1. Technology scan of water efficient pedestals that are commercially available or in late stage

2. development in South Africa
3. Standardized protocol for testing performance of a water efficient pedestal to allow selection for South African contexts
4. Compendium of low flush pedestals available in South Africa with detailed description, technical information, performance, and limitations
5. Report on effects of widespread low flush pedestal adoption including impacts on household and municipal water consumption, impacts on pipework within the household boundary and the reticulation system, and impacts on existing wastewater treatment works

B. Desktop Review of Policies, Regulations, Standards and Bylaws related to Low-Flush / Water efficient Toilets

Aims

1. Carry out a systematic review South African policy, regulations and standards governing low flush / water efficient toilets in relation to readily available comparative International information
2. To identify gaps in policies, regulations and standards that deter the adoption and uptake of low flush / water efficient toilets, specifically in terms of the South African context
3. To provide recommendations to allow for enabling South African policies, regulations and standards that encourage the adoption and uptake of low flush / water efficient toilets
4. To provide comment on mitigation concepts and actions for any other aspects that may deter the recommendation from being adopted and implemented
5. To, where possible, identify potential recommendations for incentives and rebates that could be utilized to enhance the uptake of the technology.

Expected Outcomes

1. Develop a policy and regulatory toolbox that will enhance the adoption and uptake of low flush / water efficient toilets

a. Policies
b. Regulations
c. Bylaws
d. Model standard

2. Develop a policy brief to support and promote a national policy for the adoption of low flush / water efficient toilets (recommend incentives and rebates that can be included in the brief)
3. Develop recommendation for the development of a generic tender specification document for the procurement of low flush / water efficient toilets

Stakeholder organizations

The following stakeholder organizations have been invited as reference group members to assist in steering the project and ensure a cross-sectional engagement and buy-in

- Department of Water and Sanitation (DWS)
- Water Research Commission (WRC)
- Department of Trade and Industry (dti)
- South African Bureau of Standards (SABS)
- Department of Science and Innovation (DSI)
- National Regulator for Compulsory Specifications (NRCS)
- Trade & Industrial Policy Strategies (TIPS)
- Municipalities and waterboards.