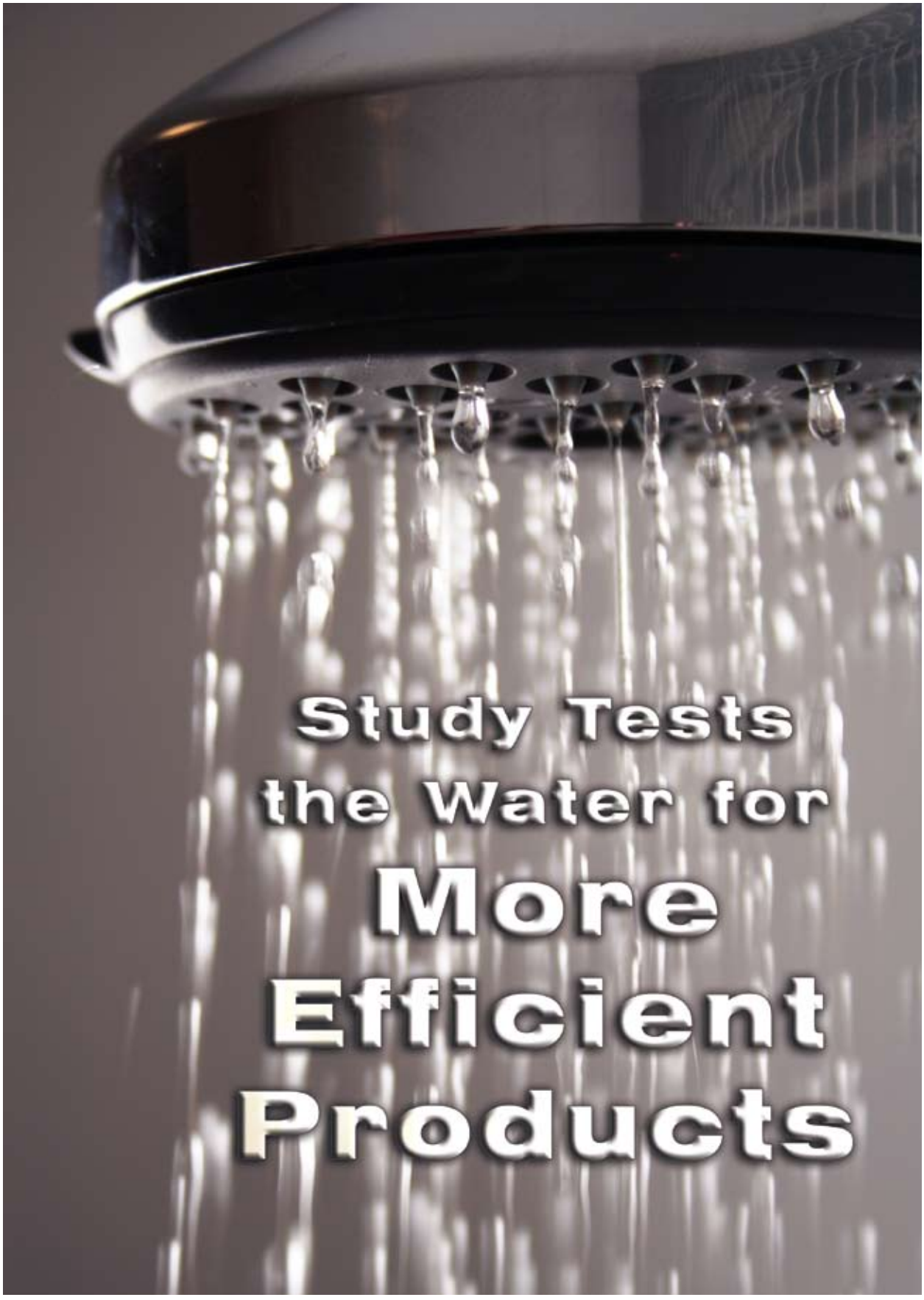

All photographs courtesy of www.sxc.hu

Living in an increasingly water-stressed country, South Africans need to become much more water efficient. This is one of the recommendations from a recently-completed study funded by the Water Research Commission (WRC).

Traditionally, water consuming products, such as toilets, showers, washing machines, dishwashers, baths and taps have been designed with functionality, aesthetics and cost in mind. Little attention was paid to how much water these items used.

However, global concerns such as burgeoning population growth and rapid urbanisation amid increased water scarcity has prompted the realisation that water can no longer be used with reckless abandon, and sparked investigations into ways of using water more appropriately and efficiently.

There are many examples of water demand management and water conservation campaigns that have been implemented around the world: the city of Seattle in the US, for example, has reduced its water consumption by 1% each year over the last 23 years despite a 23% increase in its population. In southern Africa, the city of Windhoek has managed to reduce the average consumption from 320 ℓ per person/day to 220 ℓ per person/day over the last 30 years.

Closer to home, water conservation programmes carried out in the various municipalities supplied by Rand Water have seen the annual growth rate in the water supply to the water board's supply area reduce from 3,3% to virtually zero over the last three years, despite a concurrent 3,3% population growth rate. Cape Town, which has been through several years of water stress in the last few years, has developed a holistic water conservation strategy, which includes the promulgation of the most comprehensive water conservation bylaws in South Africa.

Left: *It is relatively easy and inexpensive to swap out shower fittings with more water efficient products.*

The WRC-commissioned study, conducted by Partners in Development (PID), included four surveys in order to gauge the status and use of water efficient devices in South Africa. Firstly, commercial and institutional settings such as hotels and hostels were investigated; secondly, the suppliers of plumbing fittings were studied; thirdly the architectural profession was surveyed; and finally the knowledge and attitude of 1 428 home owners in ten towns and cities across South Africa were tested.

INCREASED AWARENESS

According to project leader David Still the study found clear evidence that water efficient devices are becoming more common. "From the City of Cape Town's programme to replace all the automatic flushing urinals in public buildings and install Hippo Bag displacement devices in all the old large capacity school toilet cisterns, to the sophisticated infrared operating taps and urinals that are becoming standard at airports, there is a move towards water saving and water efficiency," he says.

"We have the legislation and policies in place, however, we lack the capacity to drive the process."

Speaking at the 10th Annual Water Distribution Analysis (WDSA) Conference, held in the Kruger National Park in August, Still noted that the larger hotel groups were signing on to environmental programmes, one of whose components is sustainable water use, and that there were encouraging examples where university hostels and other public buildings were being retrofitted with water-saving cisterns, taps and showers.

Some of the worst offenders for high water usage are government buildings. For example, among the 50 highest water users in Pietermaritzburg, in KwaZulu-Natal, are several public schools which do not have boarding establishments. It is therefore felt the State should take the lead by ensuring its buildings are as water efficient as possible. "This would have an impact on the civil service, which employs over a million people, and the population at large, which would see the State leading by example," said Still.

LOCALLY AVAILABLE PRODUCTS

The increasing market share of water efficient devices is apparent on the showroom floors of the major plumbing suppliers. This is almost in spite of the suppliers, who as a rule do not push water efficiency. "The reason aerated taps, dual flush toilets, water efficient baths, basins and showers are increasingly being sold, is that these are becoming the standard in the countries of manufacture in Europe and the East. While South Africans are sometime still wary of six-litre flush toilets these, or even more efficient designs are now the standard in parts of the US, the UK and Europe," reported Still.

According to Jay Bhagwan, WRC Director: Water Use and Waste Management, lack of strong enforcement and regulation remain the greatest challenges in South Africa. "We have

MAIN RECOMMENDATIONS FROM THE STUDY

Government must lead by example

The State landlord, the Department of Public Works, should embark on an audit of water usage and the presence of water efficient devices in all buildings under their care. This would have an impact on the civil service, which employs over a million people, as well as the population at large, which would see the State leading by example.

SA needs a labelling system for water efficient devices

South Africa should emulate the water efficiency labelling system practiced in other countries, of which the most advanced appears to be the Australian WELS label. The label is not just a general 'green' label, but includes product specific information and a graded rating from 0 to 6 stars.

SA needs a nationally sponsored public education campaign regarding water efficient devices

The State needs to make a case for water saving with the public. This campaign should appeal both to the public's sense of civic duty (it is the right thing to do), while not underestimating their intelligence (answering questions like "Why don't we just building bigger dams?" and "If I am prepared to pay for what I use why can't I use as much as I want?").

Information on water efficient devices must be easily obtainable

The public and even the building industry are still relatively ill-informed about water efficient devices. Water conservation in the built environment should be taught at undergraduate

level to architects and at FET colleges to plumbers. Water saving tips should be regularly distributed with municipal accounts, and should be displayed in appropriate locations.

Municipal bylaws must include provisions relating to water efficiency and water conservation, and ideally there should be convergence across municipalities

It would help if there was more consensus between municipalities on water bylaws, particularly in the case of a large conurbation such as Gauteng, which spans several municipal jurisdictions.

Building codes and bylaws must converge

Bylaws relating to the types of showers, baths and toilets installed in houses are really only enforceable for new housing stock, and even then it seems unlikely that municipalities have enough building inspectors to do this work adequately. If would be far simpler to inspect at the source, i.e. to control what products are sold by the plumbing suppliers.

A section needs to be added to the building code to bring it into line with modern water efficient good practice. If this was done, then the suppliers and specifiers would be able to follow without worrying that they are out of line with standard practice.

Retrofit programmes with rebates (where appropriate) should be encouraged

In South Africa there are many millions of poor people who are not required to pay for their water supply. While the official policy guideline is that each family should get a lifeline amount of water of 6 kℓ free, in some urban areas the reality is that no water is paid for. For people in these areas there is no incentive to conserve water. In such areas, it may pay a municipality to intervene with schemes to retrofit water efficient devices, even if the full cost were to be borne by the municipality.

Water supply pressures must be decreased

Water supply pressures in South Africa are, in general, far above international norms. No more than four bars of pressure is needed for domestic water supply, and municipalities would save both themselves and their customers money if they took steps to regulate the pressure in their systems down to this level.

Informative billing

Even educated customers take little time to attempt to understand or analyse their utility bills, which typically combine water, electricity, refuse removal and sewage charges. With modern technology it would be possible to include simple graphic information, such as a graph showing how water consumption has varied from month to month for the last 12 months. With such easy to read, visual information, consumers can be more easily alerted to leaks or wastage on their properties.

the legislation and policies in place, however, we lack the capacity to drive the process." Bhagwan believes more drive needs to come from the broader society, since water wastage affects us all. "Inefficient use of water is a bad disease which can severely impact our water security in future."

ANTIQUATED BUILDING CODE

While there is some evidence that architects are moving towards an awareness of sustainable water use, the building profession in general is still quite conservative, with a strong tendency to stick to tried and tested products. This sector is guided strongly by the building code, and the view of respondents to the survey was generally that only if the building codes were changed would they consider implementing more water saving devices.

"The penetration of water efficient devices into the South African domestic market is going to be slow and gradual, probably taking a generation or two to become the norm."

Therefore one of the recommendations from the study is that a section needs to be added to the building code to bring it into line with modern water efficient good practice and legislation. "If this was done, then suppliers and specifiers would be able to follow without worrying that they are out of line with standard practice," said Still.

FINANCIAL CONSIDERATIONS

The 1 428 homeowners surveyed came from a range of socio-economic backgrounds in ten South African cities and towns. A total of 29% of these homeowners indicated that they already had at least one water efficient device in the home.

WHAT IS A WATER EFFICIENT DEVICE?

A water efficient device is one which serves the same function as its standard alternative, without any reduction in performance, while using less water.

Typically, only about 20% of the respondents in the average town believed they might possibly use too much water, but significantly more (nearly 50%) have considered reducing their water consumption.

According to the study, the factors which prevent people from installing water efficient devices include a lack of knowledge about water efficient devices, the fact that they might not own their own home (renting), or that they cannot afford to make changes, among others. "Conversely the conditions which would persuade people to move to water efficient devices include an increase in the price of water, if rebates were offered for the installation of water savings devices, if there were water restrictions, if they had a better understanding of water efficient devices and if the use of hosepipes was banned."

Whereas it makes economic sense to install water efficient devices in new buildings, the economics of retrofitting water efficient devices to existing housing stock is very variable, depending on the device and setting in question, the project team found.

The quickest and cheapest water efficiency retrofit measure for the domestic market is the aerated shower head. "It is relatively easy and inexpensive to swap out shower fittings and these will typically pay for themselves in water savings in a few years," noted Still.

Many water efficient products are now available on the market.

However, the economics of changing out toilet cisterns and pans is rather less attractive, unless they are in a setting where they are used by more users than would be found in the average home. "For this reason, large-scale changes to the existing housing stock are unlikely, and therefore the penetration of water efficient devices into the South African domestic market is going to be slow and gradual, probably taking a generation or two to become the norm," reported Still.

To order the report, ***The Status and Use of Drinking Water Conservation and Savings Devices in the Domestic and Commercial Environments in South Africa*** (**Report No: TT 358/08**) contact Publications at Tel: (012) 330-0340 or E-mail: orders@wrc.org.za