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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.

TECHNICAL BRIEF

# Municipal water supply

## Critical assessment of raising the basic level of water services

A completed study, funded by the Water Research Commission, investigated the implications and benefits of raising the basic level of services in South African municipalities.

## Policies and laws that govern water supply

The 1994 Water Services Policy White Paper focused on the institutions and mechanisms needed to remedy the backlogs in the country and, in 1996, the Constitution introduced a human rights dimension for access to adequate and sustainable water supply and services.

In 1997, the Water Services Act ensured the right of access to basic water supply and sanitation, while providing a regulatory framework for the establishment of water services institutions to provide these services. In 2000, the Free Basic Water Policy was introduced, which stated that municipalities had to provide a minimum of 25 ℓ of potable water per person per day (or 6 000 ℓ per households per month) within 200 m of the household. This water supply has to be uninterrupted, with a minimum flow of 10 ℓ per minute in the case of communal water points.

It is clear that the evolution of water sector policies in South Africa demonstrates government's appreciation of the role of water in improving the livelihood of all South Africans. However, even with a strong and enabling policy and legislative environment, it is well acknowledged that people cannot move forward on just a basic level of service.

## Water for productive needs

Households need at least 50 to 200 ℓ per capita per day of water for both domestic and small-scale multiple uses. Direct and indirect benefits of a higher level of service include improvements in population health, better nutrition, improved education outcomes, better gender equality through reduced burden on female members of households, and a decrease in economic vulnerability of poorer households.

The lack of access to safe water and hygiene practices is the third most significant risk factor for poor health in South Africa. Diarrhoeal disease, for example, is widely recognised as the principal result of inadequate water. Sustainable access to water alleviates collection responsibilities for the community, especially women and children.

This WRC study aimed to do the following:

- Assess and quantify the implications related to raising the basic level of water services on a municipality
- Identify potential opportunities, problems and challenges arising with water improvement projects for a municipality
- Identify alternate strategies to raising the basic level of water services
- Recommend best practices in terms of addressing different service level scenarios and identifying further research needs.

## Financial and technical model

A comprehensive financial and technical model was developed to determine the implications of raising the basic level of services for a municipality. The model allows users to input required water services scenarios, and the output is given as a cost for each required level of service.

In addition to the cost implications for the level of service, the model also raises a number of flags to highlight issues that cannot be captured as a cost. The outputs of the models can be extrapolated to a national level to highlight some potential national level implications and conclusions.

The model was tested on the Ditsobotla Local Municipality, formerly known as the Lichtenburg Municipality, which is within the Ngaka Modiri Molema District Municipality in the North West Province. The municipality was selected because it has both rural and urban areas, and has a variety of water-supply systems.

Water-supply scenarios investigated included, among others, all households with RDP connection and dry sanitation versus all households with RDP connection, water treatment works source and dry sanitation; or all households with hard connection and dry sanitation, and so forth.

## Financial implications of increasing water supply

The financial implications for the local municipality of increasing the level of water supply from a RDP standard to a yard level water supply with dry sanitation are marginal, yet the benefits remain significant. However, metering all yard connections increases the cost significantly, hence the municipality would need to decide on more cost-effective strategies to control consumption – either with a soft approach, such as training and education, or technical approaches, such as flow and pressure control.

This result is understandable given that the installation of meters at the municipal level is not very far advanced. For a full service to be provided to the entire community, a substantial increase in the national costs per household will need to take place. The additional staff required to move towards a full level of service should be considered by policy makers. This shortage of skills at water and wastewater treatment works is a very real concern for municipalities.

Following the development of the model for the Ditsobotla Local Municipality, the model was then applied on a national scale. Two applications of the model were carried out. The first application was the so called 'roll up method', while the second was the so-called 'step method'.

The 'roll up' method indicates that the costs for bringing the entire 2001 population up to a full level of service would be in the order of R110-billion. Once this infrastructure has been constructed, the annual costs of servicing and maintaining it would be in the order of R26-billion.

The results of the 'step up' model indicate that the total capital costs for bringing the entire 2001 population up to a full level of service would be in the order of R145-billion.

The model shows that the progress up the steps of the water ladder is not one of smooth transitions. Indications are that the following per household costs would be applicable:

| Water ladder step | | Per household cost (R) |
|---|---|---|
| Starting level of service | Ending level of service | |
| No service | Standpipe, communal taps, VIP latrines | 7 730.68 |
| Standpipe and communal taps | Yard taps and VIP latrines | 3 520.44 |
| Yard taps | House connections, waterborne sanitation | 15 972.99 |

South Africa has made the initial decision to make the first step on the ladder in 1994 and the decision to take subsequent steps has not been made. **The model concludes that bringing all households to a yard tap level of service with a minimum sanitation level of VIP latrines, would have half the cost implications of the 1994 decision.**

In contrast, the step beyond this level, to house connections and waterborne sewerage, would have significant cost implications. In light of the cost increases for water services, the distribution of the burden to pay for these costs would have to be considered. Currently, water services practice is to provide a free basic service. The level of this service – communal standpipes and 6 000 ℓ per household per month – is provided for free. There is currently no need to differentiate between the basic service and the free aspect of the service.

This situation is the result of the human rights consideration that the minimum quantity and quality of water supply should be free to all South African residents. In moving up the water services ladder this separation would have to be made.

Once the human rights requirement has been fulfilled, moving above this level could involve households shouldering some of the costs of the improved level of service. Thus the new basic level of supply need not be free. The free component could be left at the standpipe and 6 000 ℓ/hh/month level, while tariffs are charged for additional water supplies.

It must be noted that to move from standpipes to yard taps, at the same volume of water supplied, will be far more expensive than to leave the standpipes in place and increase the volume of water supplied. Obviously the volume of water supplied will have an upper limit, beyond which larger supply pipes will have to be installed, but 24 hour off-takes can be carried out to great effect to delay this step.

Thus, it is submitted that the increase of the volume of water does not incur the main costs. The major costs are incurred for the improvement of the physical infrastructure necessary to increase the quality of service. Therefore, it is possible to increase the free basic volume of water, but not to increase the free basic quality of water service. It is the quality of service improvements that would require household financial participation, not an increase in the free basic volume of water.

In this light, the concept of free and basic water should be separated. The free water supply could be moved up to standpipe connections, and a higher volume of water service. The basic water supply could be set to yard connections and ventilated improved pit (VIP) latrines, for example. Funding for this supply would have to be sourced, at least partially, from affected households.

Owing to the requirement for greater financial participation from households in the provision of water services, the setting of a national policy with regards to the basic water supply is seen to be counter-productive. Improvements in the basic water supply should be made in consultation and participation with communities. The results of this consultation will not be uniform across the country.

Various factors will influence community decisions – not least of which are the costs of improved supply, but this would include raw water availability and the other sues to which water could be put at household level. Hence, a single basic water services standard would run the risk of not obtaining household participation.

## Human resources needs

The additional human resources required for a move to a full waterborne level of service is estimated at 13 400 people. This is in addition to the 40 000 people estimated by the model required to service the 2001 infrastructure.

A skilled human resource base is essential to ensure that the full lifespan of the infrastructure is realised. A lack of regular maintenance by skilled personnel services to reduce the economic life of the infrastructure, which has very serious implications for the lifecycle costs of moving up the water services ladder.

**Further reading:**
To order the report, *Critical assessment of raising the basic level of water services* (**Report No. 1892/1/13**) contact Publications at Tel: (012) 330-0340, Email: orders@wrc.org.za, or Visit: www.wrc.org.za to download a free copy.