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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

Sanitation

Evaluation of sanitation upgrading programmes – The bucket eradication programme

A completed WRC-funded study evaluated the extent of compliance by municipalities to the bucket eradication programme.

Eradicating the bucket system

In 2006, former President Thabo Mbeki set a target in his State of the Nation address for the removal of all sanitation bucket systems in South Africa by December 2007.

In February, 2005, the sanitation bucket backlog in formal townships was 252 254 buckets. The 2007 target was not met, but by July 2009, 244 258 buckets had been replaced. Most of the buckets were replaced by waterborne sanitation systems.

This study was initiated to assess how a selection of municipalities went about to eradicate the bucket system, what worked and what did not work, to evaluate the extent of compliance of the bucket eradication programme with sanitation policy principles, and to assess the impact of the programme on the quality of life of beneficiary communities.

Case studies

The study used five case study municipalities (Mangaung, Sol Plaatje, City of Matlosana, Makana and Tokologo municipalities) to conduct an in-depth evaluation of the bucket eradication programme. Survey questionnaires for deployed engineers and beneficiary municipalities were used to assess the role played by the engineers in the implementation of the bucket eradication programme.

Focus group discussions were held with representatives of the beneficiary communities in the municipalities to assess their perceptions of the impact of the programme on the quality of their lives, and workshops were used to solicit inputs from the relevant sanitation stakeholders. The study made use of secondary data to get a thorough understanding of sanitation service delivery in the selected case study municipalities and surveyed municipalities.

Extent of compliance with sanitation policy principles

All case study municipalities complied with the sanitation policy principle of ensuring access to basic sanitation service as a right – a 100% sanitation subsidy was provided to all registered indigents. However, they did not make any provision for meeting the special sanitation needs of physically disabled, frail and other vulnerable groups. A one-size-fits-all toilet was constructed for each household.

Health and hygiene education as well as user education was neglected by four case study municipalities, who claimed that these components were not included in the bucket eradication programme budget. The lack of user education contributed to the problem of regular blockage of household toilets due to the use of inappropriate materials for anal cleansing and disposal of foreign materials into the toilets.

Only one of the municipalities engaged the beneficiary households in the selection of the sanitation technology option. One of the case study municipalities learned a costly lesson when it replaced buckets with VIP toilets without consulting the beneficiary community. These toilets were rejected and vandalised by angry community members, who demanded waterborne sanitation.

The decision to replace buckets with waterborne sanitation was not based on a thorough assessment of the affordability of this higher level of service for municipalities and the beneficiary households. All the case study municipalities were concerned about the long-term financial sustainability of the waterborne sanitation system because the beneficiaries

of the bucket eradication programme were not paying for sanitation services except in one case study municipality where households were not registered as indigent were paying for sanitation services. All five municipalities were facing a problem of increasing operations and maintenance costs for sewerage services because of high incidence of blocked drains and sewers.

Only one case study municipality conducted a thorough assessment of water availability, capacity of water supply infrastructure and wastewater treatment capacity before taking a decision to replace buckets with a waterborne sanitation system. Four case study municipalities received low average Green Drop scores in the range of 0% to 52%, and only one municipality received a score of 76% in the last Green Drop assessment (2011) before publication of the study.

The wastewater quality compliance ranged from 0% to 83% Green Drop score for the five case study municipalities. The poor performance was attributed to the lack of technical skills, poor operations and maintenance and, in some cases, the wastewater treatment plants had already exceeded the design capacity. One of the case study municipalities was discharging non-compliant effluent from two of its plants because the wastewater treatment processes were compromised by high biological oxygen demand wastewater from the local abattoir and chicken industry, which was discharged into municipal sewers without pre-treatment.

Four case study municipalities did not include water-saving measures during the installation of waterborne sanitation systems. Only one municipality installed six-litre cisterns in household toilets to save water.

Perceptions of beneficiary households

Representatives of the beneficiary households were satisfied with the waterborne sanitation facilities. They believed that the quality of their lives had improved, and their human dignity had been restored as they were no longer subjected to the 'dehumanising' buckets.

Use of innovative sanitation technologies

Tokologo Municipality was piloting close circuit wastewater treatment and recycling sanitation. Although there were problems with reliability of the system, the users were happy to have waterborne sanitation facilities. However, more research was required to resolve the technical problems associated with the technology, such as the expected increase in salinity and its potential impact on the biological wastewater treatment processes.

Makana Municipality, in partnership with Rhodes University, successfully piloted integrated algal pond system technology for the treatment of municipal sewage. They demonstrated that this low-cost and robust wastewater treatment technology can produce effluents that are compliant with effluent discharge quality standards while producing algae that can be used in crop production.

The role of deployed engineers in the bucket eradication programme

The deployed engineers made a significant contribution to the acceleration of the eradication of the buckets from formal townships, but they played a limited role in influencing the municipalities in the choice of sanitation technology options as a political decision was already in place to replace buckets with the waterborne sanitation system. The engineers mentored junior technical officials to operate and maintain the new wastewater treatment works. A few engineers trained the plant operators on the requirements of the Blue Drop and Green Drop assessment programmes. It was not possible to transfer technical skills in all the municipalities as there were cases where there were no technically qualified municipal officials who could be trained to operate and maintain new or upgraded wastewater treatment works.

Financial performance of selected municipalities

A review of the financial performance of seven selected municipalities was conducted over a period of three years (2008-2010) following the eradication of the majority of buckets. The aim of the review was to identify trends in annual revenue, expenditure, bad debts, as well as water and sewerage debtors which could impact financial viability of these municipalities.

The review highlighted the following:

- All selected municipalities experienced problems with revenue collection due to high unemployment levels, poor credit control and debt collection;
- Increasing dependency on equitable share. In two out of the seven municipalities the equitable share accounted for more than 40% of the total annual revenue in 2010;
- Low levels of expenditure on repairs and maintenance. All seven municipalities were spending less than 7% of their revenue on repairs and maintenance, while five municipalities showed a reduction in expenditure for this component over the three years of the review;

- Increase in water and sewerage debtors. Five out of the seven reviewed municipalities showed an increase in water and sanitation debtors over the review period. Only one municipality showed a decrease in debtors during the review period.
- Five out of the seven municipalities reviewed were implementing stringent measures to improve revenue collection, credit control and debt recovery.

Problems associated with sustainable sanitation delivery

Several problems were discovered in the case study municipalities which compromised sustainability of sanitation delivery. Political aspects included:

- Political targets overlooked the definition of sanitation as a service that goes beyond the provision of a toilet;
- The bucket eradication programme was not preceded by proper strategic sanitation planning;
- The focus was placed on the number of buckets replaced, rather than on the quality of the new sanitation service;
- There was no emphasis on health and hygiene education.

In terms of institutional aspects the following problems are highlighted in the final study report, among others:

- Municipal officials were forced to succumb to political pressure to replace buckets with waterborne sanitation under difficult technical, environmental and socio-economic conditions;
- Despite the removal of buckets in formal townships, the case study municipalities continued to perpetuate the use of buckets in informal settlements without sanitation facilities;
- The transfer of sanitation responsibility from the Department of Water Affairs to the Department of Human Settlements created confusion regarding the institutional responsibility for sanitation regulation.

In addition, several financial aspects are highlighted, including the fact that Government failed to couple investments in infrastructure with matching investment in technical capacity for operation and maintenance of the infrastructure; and that all the reviewed municipalities were struggling with huge debts as a result of non-payment of municipal services.

Lessons learnt

The study captured several valuable lessons learnt:

- Sanitation service delivery is a complex process that cannot be reduced to a toilet.
- Failure to invest in water-efficient sanitation technologies could put pressure on local water resources.
- Partnerships between local universities and municipalities can contribute solutions to sanitation challenges.
- Municipalities are implementing stringent measures to improve revenue collection.
- It is crucial for municipalities to take ownership of sanitation infrastructure projects.
- Repair and replacement of malfunctioning components of wastewater treatment works should not be subjected to rigid municipal procurement procedures.

Further reading:
To order the report, ***Evaluation of sanitation upgrading programmes – The case of the bucket eradication programme*** (**Report No. 2016/1/13**) contact Publications at Tel: (012) 330-0340, Email: orders@wrc.org.za, or Visit: www.wrc.org.za to download a free copy.