

# Water Loss and Demand Management Performance Improvement through the South African Municipal Benchmarking Initiative

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**Abstract:** The South African Local Government Association and Water Research Commission re-launched the National Municipal Benchmarking Initiative (MBI) in South Africa in April 2011. The project aims to allow municipal officials to use water services benchmarking to strive for continual performance improvement, while building on the experience of their peers to make the most efficient use of available resources to improve service delivery and customer services. A key feature of the initiative is the use of a modular, tiered approach to encourage and enable all municipalities to participate, at a level aligned with their current capabilities and future aspirations. “Water Loss and Demand Management” was selected as one of the first six benchmarking modules. In addition to the provision of access to tools, case studies, etc, a number of Performance Indicators (PIs) were developed and implemented. This paper provides insight to the module/PI/web-enabled tool development process, and feedback on key progress and lessons learned to-date.

**Keywords:** water demand management; benchmarking; performance indicators

## INTRODUCTION

Local Government municipalities in South Africa have contributed significantly towards increased access to a wide range of basic and improved municipal services, including the eradication of water supply and sanitation backlogs. Notwithstanding the progress made, there is a critical need to make existing service levels whilst ensuring that the 2014 basic service delivery targets are met, within an environment of growing development-driven water demand and increasing water scarcity, increasing urbanisation, and demand for higher levels of service provision. In order to attain sustainable water service provision improved performance measurement and management by municipalities was identified as crucial. In response, the South African Local Government Association (SALGA) and Water Research Commission (WRC) launched the National Municipal Benchmarking Initiative (MBI) in South Africa in April 2011.

A key outcome of the MBI was to stimulate local government improvement through the development of appropriate South African benchmarking modules and associated Performance Indicators (PIs). By considering essential areas of good services delivery in the South African context, six initial water services modules were selected, namely: (i) water and waste water quality, (ii) service delivery and backlogs, (iii) operations and maintenance, (iv) human resources management and skills development, (v) water loss and demand management and (vi) financial performance.

The MBI is structured on a modular, tier based approach to benchmarking in order to encourage and enable all municipalities to participate, at a level aligned with their current capabilities and future aspirations. Essentially municipalities can the level they would like to participate at (basic, intermediate or advanced).



**Figure 1** Initial water services related performance measurement modules and consideration of different levels of complexity within modules

The MBI utilizes water services benchmarking as a mechanism with which to strive for continual performance improvement, while building on the experience of their municipal peers, in order to make the most efficient use of available human and financial resources and improve service delivery and service quality. Benchmarking is as a municipal management tool that will assist municipalities to strengthen/improve their performance measurement and monitoring systems, identify their key challenges and formulate response strategies. Strong performers are able to be flagged as potential sources of learning, knowledge transfer, and information sharing.

The MBI is a “bottom-up” focus on the performance measurement ability of municipalities that strengthens municipal performance reporting systems, leading to improved management decision-making and oversight. By spurring improved internal performance improvement (within the distinctiveness of each municipality’s challenges) substantial improvements in service delivery efficiencies and associated economic benefits will be achieved.

## **PROGRESS AND RESULTS**

Key progress has been made in the following main areas of MBI:

- **Module and Material Development** (e.g. development of South African appropriate, internationally aligned Performance Indicators (PIs)).
- **Municipal Engagement, Support and Events/Forums** (e.g. establishment of Water Services Master Classes, formation of Cities Working Groups, and national MBI workshop).
- **Database and Web tool** (e.g. design, development and implementation of Munibench web tool, [www.munibench.co.za](http://www.munibench.co.za).)
- **Business Analysis and Intelligence** (e.g. design of data and strategic analysis, alignment and agreement with the Department of Water Affairs (DWA) to secure and exchange municipal data for use in MBI, data gathering from municipalities)
- **Business Management and Leadership** (e.g. alignment with and input to appropriate sector forums, and associated profiling).

### **Water Services Master Class (WSMC)**

Establishment of peer groups and networks within the MBI have been facilitated through the establishment of Water Services Master Classes (WSMCs) and associated Cities Working Groups. The WSMCs comprise a series of municipal peer-learning interactions that focussed on key water services business areas. The WSMCs drew from local case studies and best practices that emphasized a “practitioner to

practitioner” approach, with the target audience being Senior Water Services Technical and Management Staff. To-date, two sets of two-day Master Classes have taken place in three locations in South Africa, which included focussed discussion on Water Conservation and Demand Management. Each WSMC has attracted 30 – 60 municipal delegates.



**Figure 2** Typical Water Services Master Class including case study presentations, discussions of challenges and site visits of good practice

### **Establishment of Peer Working Groups**

Of the three peer group categories that were established (i.e. (i) Cities Working Group (CWG) (i.e. metros), (ii) District Municipalities Working Group, and (iii) Local Municipalities Working Group), the CWG has proven to be the most successful. A CWG has been established for each of the six MBI modules. Currently CWGs are attended by directly involved officials. The CWGs meet twice a year to discuss performance and share knowledge and best practice. The meetings are hosted on a rotational basis and catering and venue costs are covered by the host municipality. Attendance at the CWGs is free (delegates only need to cover their own travel and subsistence costs). The MBI team continues to receive very positive feedback from delegates attending CWGs. Delegates have indicated that in many cases this is the only opportunity that they have had to meet others working directly in the same area of work. Delegates have exchanged telephone numbers, taken notes of best practices and lessons learned, and have continued offline discussions and debates. Metros have also been encouraged to share learnings from their attendance of conferences, workshops, seminars, etc. The general feeling after each meeting is one of great energy. It appears that these meetings are indeed establishing networks between municipalities. It is hoped that similar peer groups can be established in both District and Local Municipalities in the near future.



**Figure 3** Typical Cities Working Group Meeting

### **Water Conservation and Demand Management (WCDM) Cities Working Group**

The WCDM CWG has been particularly active and has made significant progress in understanding the status of WCDM and associated initiatives in the metros. Initially, the WCDM CWG agreed upon general technical standards (e.g. all calculations would be based on the International Water Association (IWA) standard water balance model,

modified slightly for South African conditions, in order to accommodate the “free basic water” allowance) and clarified various definitions (e.g. How to estimate number of service connections and how to measure average service connection length). During these discussions discrepancies in metro calculation approaches have been noted. The WCDM CWG aims to standardise approaches, so that meaningful comparisons of performance and best practice can be made.

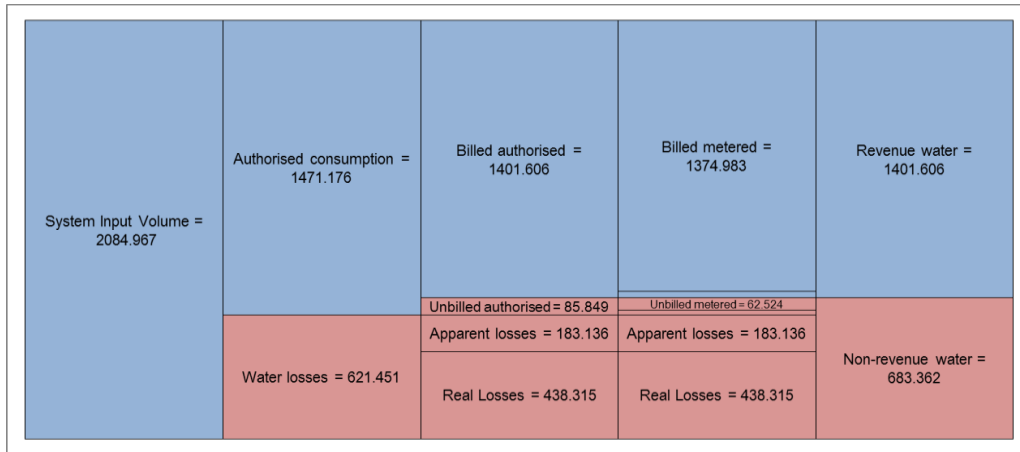
Of particular importance is that the availability and widespread acceptance of the “standard” Water Conservation and Demand Management Pls has rapidly facilitated progress in this module.

### **Assessment of Metropolitan Municipality Non-Revenue Water: Co-operation between the Department of Water Affairs (DWA) and the WCDM CWG**

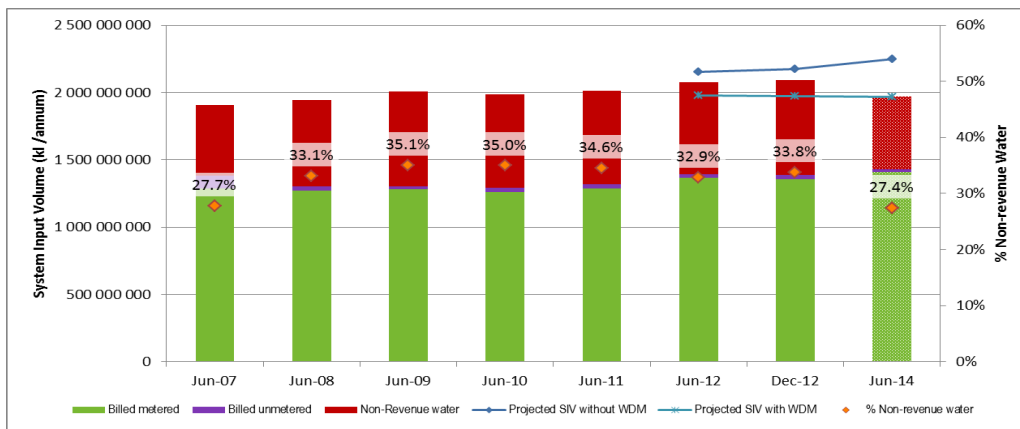
Since water conservation and demand management is a critical intervention, and, in order to monitor municipal performance on an on-going basis, the DWA is in the process of updating the Water Research Commission Study “The State of Non-Revenue Water in South Africa” (Mckenzie et al, 2012) (which was based on 2009/2010 data). DWA and SALGA/WRC also agreed upon principles of collaboration and data sharing. In light of this, DWA and the WCDM CWG have discussed key issues including Non-Revenue Water (NRW) targets, the methodology used and data inputs for the metro water balance calculations. The findings will be used to provide critical input into DWAs water resources reconciliation process within municipalities.. Following this collaboration, DWA is now in the process of generating similar performance reports for the “other large volume water users” and smaller local municipalities. The WCDM CWG has applauded the efforts of the MBI and DWA and explained that the process will not only drive performance improvement, but will also increase DWAs credibility in the municipalities. The key indicators of metro performance are summarized below:

- Water losses in Metros have reduced from 670 million m<sup>3</sup> per annum (June 2010) to 621 million m<sup>3</sup> per annum (December 2012), or by only 49 million m<sup>3</sup> per annum (or 7.7%). To achieve the Presidential target of halving water losses by 2014 an additional saving of approximately 335 million m<sup>3</sup> per annum is required, indicating that the Presidential target will not be met. **NOTE:** Unfortunately, this target was set at a political level without proper consultation with the municipalities and did not take cognisance of available resources, challenges and available funding.
- The December 2012 estimated cost of Metro NRW is R4 billion per annum (based on the purchase price of water).
- The average Metro Infrastructure Leakage Index (ILI), a good indicator of system performance, is 5.6, fair for a developing country but poor for a developed country. (An ILI of 4 is good for a developing country.)

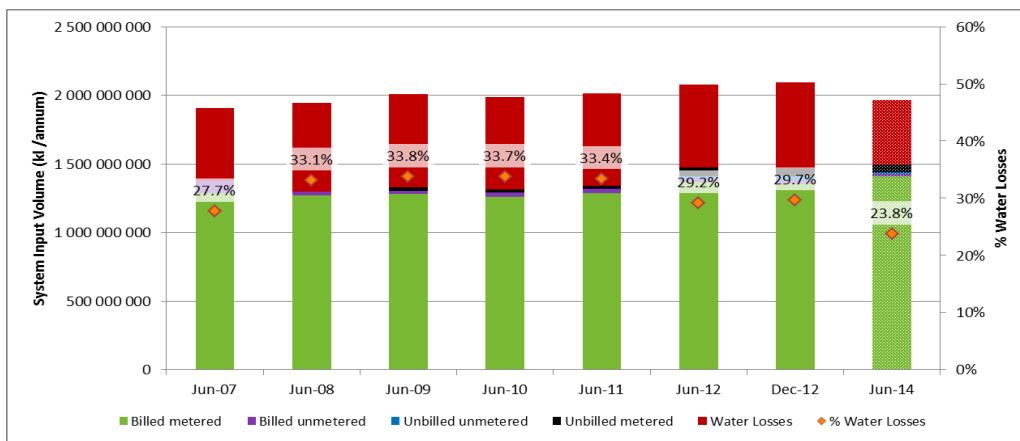
The water balance diagrams and non-revenue water trends for the eight metros are summarised below. **NOTE:** The final bar in the bar-chart for the 2014 financial year is the target figure as set by the DWA under the various reconciliation strategies.



**Figure 4** Combined water balance for 2011/12 (DWA, 2013)



**Figure 5** Non-Revenue Water per Metro for 2011/12 (DWA, 2013)



**Figure 6** Non-Revenue Water trend for all metros (DWA, 2013)

Key issues identified in preventing metros from successfully implementing WCDM include: (1) Poor planning, (2) Budget constraints, (3) Supply Chain Management issues, (4) Inappropriate technical solutions, (5) Lack of community acceptance or support, (6) Poor levels of own revenue generation and limited expenditure capacity, (7) Poor metering and billing systems, and (8) Lack of skills, poorly trained and apathetic staff.

## **Benchmarking Performance Indicators (PIs) and Associated Data**

A key conclusion of the MBI is that benchmarking PIs will never truly be “finalised”. There is also an ongoing need to be flexible in order to accommodate required changes to PIs based on changing sector needs, or due to new thinking, emerging challenges, etc. The selected PIs must be relevant and useful to Municipalities (i.e. Begin with the end in mind – Why am I measuring this? What’s in it for me?). Although PIs might address metro/large municipality needs/aspirations, an on-going challenge remains to ensure that the chosen PIs are applicable and appropriate to the smaller, more rural municipalities. PIs also need to be challenging in order to push these municipalities out of their comfort zone so that they aspire to do better and deliver better services.

A key principle of the MBI is that Municipalities are encouraged to start at a basic level (*less is more*), obtain basic participation, and then expand participation. To encourage participation, the MBIs approach has focussed on the strategic importance of the MBI sourcing/obtaining/storing/utilising/and improving the existing municipal data sets and avoiding duplication of data. The MBI has utilised a two-pronged approach to data collection, namely:

1. Accessing municipal data already provided to existing processes (e.g. DWA), and
2. Allowing municipalities to capture water services data of importance/relevance to improve performance (and establish benchmarking/peer networks).

Data gathering through the CWGs has been very successful, where the peer group has agreed to measuring certain PIs and reporting against these. Similar structures and processes have not yet been set up for District and Local Municipalities, and data gathering has been haphazard. To facilitate involvement by all municipalities the MBI team have ensured a very low, or no barrier approach, to participation. The use of available municipal data from a variety of external sources (e.g. DWA Municipal Strategic Self-Assessment of Water Services (MuSSA) which includes Water Conservation and Demand Management aspects) has encouraged municipal involvement.

Although significant progress has been made in mobilising municipalities to start measuring, much work is still required. Currently increased focus has been placed on municipal data collection, and ensuring that municipalities understand the importance of data quality. At this stage no detailed data analysis/comparison has occurred or conclusions drawn regarding performance, rather the focus has been to try and understand why municipalities are participating and why they are not, and how to address any gaps.

## **CONCLUSION**

The MBI effort, and associated progress, has been substantial; but is still a fledgling process. It is now gathering momentum. . In order to overcome identified challenges and still make significant progress, the South African MBI has considered:

- The creation of peer networks with associated sharing of data/information/best practices/lessons learnt.
- A peer review via checking adherence to requirements (e.g. as specified via DWA).

- The calculation of benchmarking PIs via measurement of associated key variables to indicate performance in particular areas of interest/concern.
- Accessing and utilising existing municipal data (e.g. using MuSSA to identify and address noted fundamental water services gaps).

Finally, much work is still required to ensure that: (i) Municipalities are monitoring/measuring their performance, (ii) Municipalities are reporting and assessing their own performance with a view to improve, and (iii) Municipalities are engaging other municipalities and sharing experiences, challenges, issues of concern and through this process improving their performance. On-going reinforcement of these principles by the MBI team to municipalities (especially via peer group activities) is therefore of primary importance. With time and commitment the MBI can lead to substantial breakthrough improvements in water services delivery in South Africa.

### **ACKNOWLEDGEMENTS**

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