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# BENCHMARKING PERFORMANCE OF PIPE BORNE DRINKING WATER SUPPLY INDUSTRY IN SRI LANKA

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Department of Civil Engineering

University of Moratuwa

August 2008

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DRINKING WATER SUPPLY INDUSTRY IN SRI  
LANKA**

By  
**O.V.T.S.P. Ovitigala**

Supervised by  
**Prof. Rohan Samarajiva**



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This dissertation was submitted to the Department of Civil Engineering of the University of Moratuwa in partial fulfillment of the requirement for the Degree of Master of Business Administration.

Department of Civil Engineering

University of Moratuwa

August 2008

## Declaration

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## Abstract

Most of the economic and social infrastructure services in Sri Lanka provided by the government are in poor condition due to lack of financing for development. This is evident from the statement “Investment is expected to increase significantly utilizing improved savings by the private sector, external resources and funds saved through the gradually reducing budget deficit” (Central Bank of Sri Lanka, 2006). However, the government policy is to keep infrastructure services government owned and people also accept it as they have had bad experiences with the privatization of infrastructure services, mainly because of corruption. Due to this people do not appreciate better practices prevalent in developed countries (competition wherever possible, regulation where necessary is applied by the most of the developed countries. ex: European countries). The previous government took actions to improve the infrastructure provisions through establishing multi sector regulator Public Utilities Commission of Sri Lanka (PUCSL) in 2002; however it was not implemented due to government change.



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The National Water Supply and Drainage Board (NWSDB) has failed to achieve most of the goals and objectives (Coverage, NRW, Supply continuity, Human resource etc.) set out in the corporate plan for the period 2003-2007, thus indicating that the targets were not realistic and/or that effective action had not been taken by the board to review and set goals to match with the present situation as per the NWSDB Annual Report 2005. However, it is difficult to understand whether performance of the monopoly supplier is good or bad without comparing similar companies in other countries. If decision makers do not identify where they have been or where they are, it seems to be unfeasible to set targets for future performance. Information on operations, investments and outputs is essential for good management and oversight. Hence, this study was undertaken to identify and benchmark the performance and make recommendations to fill the gaps in performance of the NWSDB. The performance of Sri Lanka's Pipe Borne Drinking Water Supply Service is studied by using NWSDB's Regional Support Centers' (RSCs) data for selected Performance Indicators (PIs). Then external benchmarking and internal benchmarking are carried out by using international data and RSCs' own data respectively. This study utilizes

the performance benchmarking or metric benchmarking method. Many factors such as population density, ability to pay (income levels), topography, and distance from bulk water sources affect specific indices or performance indicators. In this benchmarking study, all the above factors are considered except distance from bulk water supply as these data are not available.

South East Asian Water Utilities Network (SEAWUN) benchmarking survey data are used for comparison, because it focuses only on Drinking Water Supply, the population density figures and questionnaires of the survey are available in their web site. The SEAWUN countries have socio economic conditions not dissimilar to those in Sri Lanka. In the SEAWUN study, the companies were ranked by calculating the Overall Performance Indicators (OPIs) without considering the population densities. Therefore, this research is not based on their performance calculation, but uses their data. Even though they have considered 12 Performance Indicators (PI), 8 PIs are considered in this study due to lack of data available in the NWSDB. However, 7 PIs are used to calculate OPI as PI of Average Cost of Employment/Staff (% of per Capita GNI) seems to be problematic when it takes high values as good performance. The performance data of SEAWUN study, which were available only for 2003, were compared with the 2003 data of NWSDB. The same questionnaire of the SEAWUN with some modifications has been used for collecting data from NWSDB.

The RSC of the North and East provinces are not considered for this benchmarking study, because developments have been hindered due to the civil war for more than two decades in this area. Multi Criteria Analysis (MCA) is used for calculating OPI giving identical weights for all the PIs. External benchmarks are set based on the averages of the PIs in companies while internal benchmarks differ according to the situation. Though external and internal benchmarking is done, external benchmarking is the more illuminating as it compares population density which is one of the most important influencing factors.

In this benchmarking of performance, it was found that service coverage is very poor in all the RSCs mainly due to lack of investments and inefficiencies. This should be addressed immediately by effectively utilizing the available funds. New investments are to be encouraged through greater accountability and improving efficiency. Only

the Greater Colombo (GC) region is recovering their operational and maintenance costs mainly due to high cross subsidization from commercial and industrial activities. However, this is not sustainable; hence cross subsidies should be minimized, subsidized quantity of water reduced and proper tariff policy to be established at least to recover the cost.

Non Revenue Water (NRW) is very high in GC and it is the worst in Colombo City. The main constraints are the investments and the practical difficulties. It is recommended to attend to Colombo city first due to high opportunity cost from high demand and high rates of commercial activities which are mainly present in this region.

It is clear that staff allocations are very high in all the RSCs except in GC. No actions have been taken by management to follow their own corporate plan of reducing staff; instead additional carder vacancies were kept. A clear policy should be established and implemented based on number of connections, population density etc.



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The unit water cost is very satisfactory in GC because of economies of scale and lower pumping costs due to the topography in the region. However, it is unreasonably high in the Western RSC. The unit water cost increases when increasing the coverage because present coverage is mostly restricted to areas near the water source. It is recommended that studies and research be focused on finding appropriate technology and methods to minimize unit cost by NWSDB Research and Development section.

Comparing the latest situation from NWSDB corporate plans of 2003-2007 and 2007-2011, it was found that almost all of the targets set in 2003-2007 had not been met and some of the targets ( hours of supply, NRW) were lowered compared to those of 2003. So, it is questionable if the existing organization structure helps to achieve even their forecasted new smaller targets. It is strongly recommended to regulate the sector to improve the performance even if it is without private participation. This can be done by empowering the existing multi sector regulator PUCSL which will be the most convenient and the best solution to achieve the performance targets.

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## Abbreviations

CBO	- Community Based Organization
DGM	- Deputy General Manager
GC	- Greater Colombo
GDP	- Gross Domestic Product
GNI	- Gross Net Income
ILI	- Infrastructure Leakage Index
MCA	- Multi Criterion Analysis
NC/NW	- North Central/ North Western
NRW	- Non Revenue Water
NWSDB	- National Water Supply and Drainage Board
OECD	- Organization for Economic Co-operation and Development
OPI	- Overall Performance Indicator
PI	- Performance indicators
PP	- Private Partnerships
PPP	- Public Private Partnerships
PUCSL	- Public Utilities Commission in Sri Lanka
RSC	- Regional Support Center
SEAWUN	- South East Asian Water Utilities Network
UK	- United Kingdom
UFW	- Unaccounted for Water
USA	- United States America



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