

CHALLENGES OF SUSTAINABLE WATER SUPPLY FOR CITIES LESSONS LEARNT IN REDUCTION OF NON REVENUE WATER IN COLOMBO, SRI LANKA

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ABSTRACT

A major challenge for the sustainability of any water supply system in the world is the non revenue water (NRW). The situation in many Asian cities is highly alarming. Except for few numbers of cities, many urban water supply systems in Asia encounter high NRW [1]. Water supply to Colombo, the commercial capital of Sri Lanka has been fully operated and maintained by National Water Supply and Drainage (NWSDB) since 2001 after taking over it from Colombo Municipal Council. NRW in Colombo was about 54 % in year 2001 [4]. This simply implies out of 64 million gallons of water supplied everyday to the city, 34 million gallons of water did not generate any revenue for the NWSDB. While high NRW reduces the income, it causes many other adverse effects. It reduces the level of service and creates the necessity for additional supplies which again generates a need for high capital investment [2]. Furthermore this is a well accepted performance indicator in the water sector. As a developing nation, the country has to rely on foreign loans and grants for new water supply developments. High NRW has become a negative factor for obtaining funds through international lending institutions like World Bank, ADB and JBIC etc.

There are various factors which contribute for high NRW in Colombo. About 100 years old distribution system causing a large number of leaks everyday is the major cause. Large amount of water consumed by the people living in underserved settlements (commonly known as slums) through about 6000 common water outlets (Stand posts, Common bath taps and common toilet taps) was another major contributory factor. It was expected that there were large number of illegal connections and bypasses in the city which also causes NRW. The other factor for NRW was administrative losses which include metering errors, meter reading errors, processing errors and billing errors.

Having understood the gravity of this problem, NWSDB has taken many steps to reduce the NRW during the last few years. However it was a very challengeable task. Even finding the composition of NRW was a difficult task due to the very old distribution system laid in a haphazard manner. Replacing of old distribution lines, strengthening of raiding and prosecution of illegal connections, provision of water to the people in slums on concessionary basis and disconnection of stand posts, establishment of consumer societies for common water outlets which cannot be removed due to social and technical reasons, regularizing of metering, billing and collection procedure are some of steps taken to address this situation. Another innovative step taken was the restructuring of the administrative system for the city so that an officer would be responsible for all activities within a small area consisting about 5000 service connections.

Continuous efforts taken during the last few years have yielded encouraging results. About 23000 service connections have been provided to people living in underserved settlements and around 4000 common water outlets have been removed. In order to reduce the remaining common water outlets numbering around 2300, which mainly include common toilet taps and bathing taps and cannot be removed due to humanitarian reasons, consumer societies have been established. They will be responsible for reducing water wastages and pay monthly bills issued on a nominal tariff. While public awareness has been increased about taking water illegally, house to house survey has been carried out in the city to detect illegal water users. Metering and billing activities have also been strengthened to reduce NRW due to administrative errors. However the major contributory factor for NRW, losses due to water leaks still remains high. Strengthening of leak repairs using own staff and outsource contractors and operating a 24 hour call center to receive details on water leaks were some steps taken. Above activities have tremendously contributed to reduce NRW from 54% to 46%. However it is seriously felt that further NRW reduction needs a massive pipe replacement programme. Out of total of 860 km of pipe network in the city about 600km are very old and need immediate replacement. While about replacing of about 85 km has been already underway with JICA assistance, a large scale project costing around 400 m US \$ has been commenced with ADB assistance to replace the rest of old pipe network. The NWSDB target is to reduce NRW to 18% by year 2020 with the implementation of this project.

All the above measures have various challenges and limitations. The high investment for NRW reduction has also necessary to be compared with the final output. Usually there is certain limit beyond which

investing on reduction of NRW does not yield any economic benefits [3]. Although it seems to be very simple, NRW reduction is an area which needs very careful consideration before investment are made (SWAN, 2011). The paper will elaborate on these issues and provide a comprehensive account of this subject which will be a good lesson for any Asian city.

Keywords: Sustainability, Water Supply, Non Revenue Water, Challenges, Lessons Learnt

REFERENCES

- [1].ADB, “*Water Utilities*”, *Data Book*, Manila: Asian development Bank, 2010.
- [2].Bill Kingdom, Roland Liemberger, Philippe Marin , “*The Challenges in reducing Non- Revenue Water (NRW) in Developing Countries*”, World Bank, 2006.
- [3].Farley M and Liemberger R, “*Developing a non-revenue water reduction strategy and implementing the strategy*”, *Water Science and Technology: Water Supply* Vol. 5 No 1 pp41-50, 2005.
- [4].NWDSB *Annual Report*, NWSDB, Sri Lanka, 2010.
- [5].SWAN, “*Stated NRW (Non-Revenue Water) Rates in Urban Network*”s, SWAN Research, 2011.