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### SUSTAINABLE DEVELOPMENT OF WATER RESOURCES, WATER SUPPLY AND ENVIRONMENTAL SANITATION

## Community Based Small Town Water Supplies Case Study from Sri Lanka

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*The World Bank-funded Community Water Supply and Sanitation Project (CWSSP), implemented from 1992 to 1999, tested, for the first time in Sri Lanka, a community-based participatory development approach to implement small town water supply projects. Kirinda / Puhulwella is a good example of a community managed, self sustained small town scheme. It consists of about 1,000 service connections, all of which are metered. The scheme provides a 24 hour service to consumers. Operational data indicate the Community Based Organisation (CBO) that manages the scheme is doing so satisfactorily, especially when compared with similar schemes operated by the country's main water utility agency. This case study suggests that with proper guidance and technical assistance, small town water schemes can be operated successfully by CBOs.*

### Introduction

Typically, water supply systems in small towns in developing countries are considered too complex to be well managed by community groups, but too small and hence not financially viable as a commercially operated water utility. Historically, small town water supply schemes in Sri Lanka have been designed and constructed by the National Water Supply and Drainage Board (NWSDB), with operation and maintenance (O&M) carried out either by NWSDB or the relevant Local Authority (LA).

There is international debate over the definition of a small town. In Sri Lanka, a small town is defined as one with a population between 2000 and 6000. During the period from 1992 to 1998 the World Bank-funded Community Water Supply and Sanitation Project-I (CWSSP-I) implemented 12 small town water supply pilot projects (STWSP). This was the country's first attempt to adopt a community-based participatory development approach for the provision of small town water supplies. Under this project, beneficiary communities were actively involved in both project planning and construction. At the outset Community Based Organizations (CBOs) were established in all 12 small towns, both to implement the scheme and undertake subsequent scheme management responsibilities.

Since then, more than 50 community-managed STWSPs have been commissioned across Sri Lanka. Compared to a village water supply scheme, which normally serves a population of around 500 to 1,000, management of a small town water scheme serving around 4,000 people, is a significantly more complex task for a CBO.

Challenges faced by CBOs responsible for small town water supplies include: (i) ensuring reliable, safe, drinking water service to a relatively large, semi urbanized customer base,

(ii) managing a complement of full time staff, (iii) revenue collection from a large, diverse, consumer base and (iv) undertaking O&M of water treatment plants and distribution systems. The CBO's lack of a clear legal mandate for scheme management has added to these challenges. This paper attempts to analyze the performance of the Kirinda / Puhulwella STWSP. It also compares the scheme's performance to water systems operated by the NWSDB, Sri Lanka's national water supply operator.

### Scheme profile

The Kirinda/Puhulwella STWSP, commissioned in November 1998, is one of the oldest community-based STWSPs in the country. It is situated in Southern Sri Lanka, 20 km from the District Capital – Matara. Town population is approximately 4,000.

The Kirinda/Puhulwella water supply project was initiated in 1995 with implementation undertaken by NWSDB with guidance by the CWSSP. A local NGO was engaged as a Partner Organization (PO) to facilitate community involvement. The PO assisted NWSDB with community mobilization and guided establishment of a CBO to undertake project implementation responsibilities. As the key project partner, the CBO was involved in water source investigation and water supply scheme planning and construction. The small town community contributed 20 % of construction costs in line with CWSSP implementation requirements. This was made by way of unskilled labor and / or cash contributions. Water supply scheme details are given in Table 1.

The CBO Executive Committee has overall responsibility for scheme management. They in turn have recruited six full-time local staff and trained them to undertake day-to-day scheme operation and management.



**Figure 1. Main street running through Kirinda / Puhulwella town**

**Table 1. Details of Kirinda Puhulwella Water Scheme**

Subject	Description
Water Source	Two boreholes
Scheme Design Capacity	750 m <sup>3</sup> /day
Treatment Facility	Aeration, roughing sand filters
Storage Capacity	4 Nos 40 m <sup>3</sup> capacity ferrocement tanks
Distribution System	Approx. 15,000 m
Number of Domestic Connections	975
Number of Non Domestic Connections	30
Number of Full Time Staff	6
Average Production (2005)	350 m <sup>3</sup> /day

Staffing details are:

1. Management Assistants (2 Nos): Main tasks are: preparation of water bills; collection of water rates from consumers; material stock management; purchasing; consumer relations; and account and record maintenance.
2. Field Staff (2 Nos): Main tasks are: meter reading; distribution of bills; repair works; house connections; and general maintenance of the distribution system.
3. Caretakers at Head Works (2 Nos): Main tasks are pump and water treatment plant O&M.

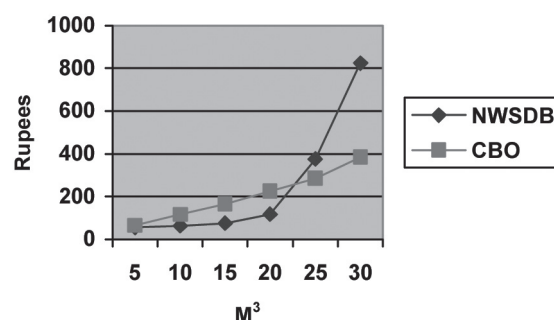
The CBO purchased an office building in the town centre providing easy access for all consumers to pay their monthly water bill.

### Water tariff and revenue collection

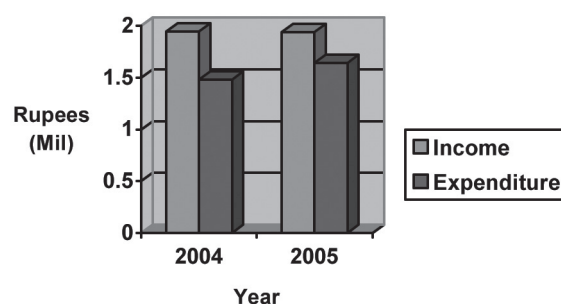
The CBO receives no subsidies from the LA or the Government. The CBO is therefore responsible for setting tariffs at

a level sufficient to cover O&M and scheme replacement costs. Figure 2 compares the CBO tariff with the NWSDB national tariff structure.

It can be seen from Figure 2, that for consumption up to 20m<sup>3</sup> per month the CBO tariff is higher than that of NWSDB. The national tariff structure of NWSDB is based on complex cross subsidy arrangements between domestic and industrial /commercial water charges and between large and small systems. This is possible as NWSDB runs urban water supply systems across the country. However, the CBO has no such flexibility and must recover all its O&M expenses plus replacement costs through a scheme serving predominantly domestic consumers. Yet, even with its higher tariff structure for domestic consumers, the CBO achieved bill collection efficiencies of 97%, 94% and 96 % for years 2003, 2004 and 2005 respectively. This is higher than NWSDB's average bill collection efficiency which is thought to be around 90%.



**Figure 2. Comparison of CBO tariff with the NWSDB national tariff**



Note – 1 US \$ = Approximately Rs. 103

**Figure 3. Income and Expenditure Kirinda/Puhulwella Water Supply Scheme**

Income and expenditure for the last 2 years on the Kirinda / Puhulwella Scheme is given in Figure 3.

With their accrued funds the CBO has purchased a range of fixed assets including an office building, hand tractor, photocopier and a computer. The CBO also maintains ad-

equate stocks of pipes, fittings and spare parts required for scheme maintenance.

### Scheme operation

All water connections are metered, and the scheme provides a 24 hour service to consumers. The caretaker stationed at the treatment plant has been provided with on-site family accommodation. A bulk water meter has been installed on the water distribution main. The CBO monitors the amount of water billed against the water supplied to the distribution system by recording bulk meter readings. In year 2005, non revenue water (NRW) was reported to be 16 %, which both commendable and substantially lower than that attainable under NWSDB and LA small town water schemes, which is commonly around 35 %.



**Figure 4. Water Treatment plant**

Approximately 40 % of annual expenditure is allocated to electricity charges. Staff salaries represent 25 % of the expenditure while repair and maintenance activities represent 12 %. The balance of expenditure accounts for welfare activities, maintenance of assets etc.

The CBO obtains technical assistance from NWSDB for major repair and maintenance works such as flushing of tube wells and repair of submersible pumps. The NWSDB regional office located at Matara provides these services at a cost. It was reported that although the NWSDB provides a good technical service, they tend not to respond to CBO needs in a timely manner. However, NWSDB is the only technical support agency available. Nevertheless, it is interesting to note that the CBO has itself started to undertake some technical services using local level technology. For example, the CBO now uses a locally available compressor, to flush boreholes both to save money and to avoid the delays experienced when using NWSDB. CBO members have also successfully fabricated needed accessories.

The CBO has received a number of consumer complaints when their toilet tiles became discolored due to the high iron content in the water. To address this issue the CBO, using financial and technical assistance from NWSDB, constructed a water treatment facility. The quality of water has since improved, but the CBO intends to install additional treatment to further reduce iron concentration when adequate funds are available.

### Diversification of CBO activities

During last 10 years the CBO has diversified only marginally into some small community development and economic activities including: a community saving and credit program; hiring out of furniture, tents and other equipment for festivals and domestic functions; providing financial assistance to members to cover funeral expenses; photo-copying and communication services. They have deliberately not expanded much beyond their core business as the CBO is of the opinion that they should concentrate on water supply scheme and that any extensive diversification beyond this may jeopardize their successful enterprise.

Since the scheme was commissioned, participation by the general membership in decision-making has been very low. This is probably mainly because of the relatively large CBO membership of around 1,000 households and the consequent difficulty of organizing general meetings. This is a common problem for small town CBOs. The last annual general meeting was conducted more than two years ago. However, the CBO does occasionally conduct meetings for small groups to discuss important matters such as water tariff revision. Those CBO officials appointed during project inception have continued to run the CBO over the past 8 years. These officials have strong drive and leadership skills and as the members are generally satisfied with their performance, they have given them an “unofficial mandate” to run the water supply scheme.

### Future plans and challenges

As noted, the CBO has no plans to significantly diversify their activities although there has been some pressure from people living in adjoining areas of small town, politicians, and government officers to expand the distribution system irrespective of technical feasibility. While the CBO has successfully resisted these pressures, nevertheless it has made periodic extensions to the distribution system, but only after: (i) obtaining technical advice from the NWSDB regarding technical feasibility, and (ii) confirming there was a genuine water need in the proposed extension areas.

In Sri Lanka there is no clear legal mandate for CBOs to manage water supply schemes. Over the past five years the Local Authority (LA) in the Kirinda / Puhulwella area has made several attempts to gain control of the water supply scheme. The reasons for this probably relate to the political attractiveness of the scheme's profitability and its efficient operation. However, the CBO has managed to resist this threat through collective town opposition. Interestingly, even

though the CBO opposed the LA's hostile takeover, the six scheme staff members actually supported the LA as they anticipated more secure, long-term employment prospects and recognition under a government institution.

## Discussion

Past experience in Sri Lanka clearly shows that those small town water supplies managed by LAs generally are not performing satisfactorily. This is considered to be mainly because LAs are controlled by elected members whose driving imperative is to carry political favour by minimizing consumer water costs, rather than providing a safe, reliable water supply. Consequently, there is a general reluctance by LAs to impose adequate water tariffs or to efficiently collect water bills through fear of becoming unpopular and risking their election prospects. For its part, the NWSDB has taken a policy decision to hand over to LAs or CBOs all small town schemes they presently managed in order to focus on urban scheme management.

This assessment suggests that, with certain provisos, CBOs probably have better prospects of effectively and efficiently managing and operating small town water supplies in Sri Lanka.

Kirinda / Puhulwella is a good example of a community managed, self sustained small town water supply scheme. Operational data indicate that the CBO is managing the scheme as well, if not better, than similar schemes managed by the country's national professional water utility agency. The main factors identified for Kirinda / Puhulwella's success are: (i) strong community demand for improved water service, (ii) involvement of community from the inception of the project, (iii) strong, CBO leadership, and (iv) technical support provided by the CWSSP Unit and NWSDB during project design, construction and O&M phases.

Major drawbacks identified which have an impact on sustainable scheme management are: (i) lack of a clear legal mandate for CBO scheme management, and (ii) lack of ongoing adequate technical assistance and capacity building services to support the CBO.

## Conclusions

The CBO has managed to successfully run the Kirinda / Puhulwella water supply scheme for last 8 years by providing reliable water services to consumers. The main conclusions drawn from this case study are:

1. Although small town water schemes are far more complex than village water schemes, they can still be operated successfully by a CBO providing the community is fully involved in the decision making process from the project's inception.
2. If they receive a satisfactory service, consumers are willing to pay a water tariff higher than the national tariff charged by NWSDB
3. Policy makers could help CBO-run water supplies by taking the initiative and providing a legal mandate for CBOs to officially manage their own schemes.

4. Small town water supplies have a significantly larger consumer base than village schemes, making active involvement of the members difficult. Establishment of a "Water Committee" to undertake total responsibility for scheme management may be worthy of consideration.
5. Much of Kirinda / Puhulwella's success can be attributed to the principled, strong, leadership of the CBO. As for most development initiatives, the presence of strong CBO leadership may be an essential precondition to small town water supply scheme success.

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