Sustainable Water Management focused RWS Models in Sri Lanka

1. Abstract

Several participatory models for RWS implementation and management were adopted in Sri-Lanka during the last few decades. These models focused on participatory approach, which provide opportunities for beneficiaries to involved in decision making at all stages of implementation. Community involvement for selecting, sharing, protecting, conserving and extracting of water from potential water sources are prerequisite key elements in these models in order to ensure the sustainable management of completed facilities. Total O&M costs are recovered with the introduction of scheme specific tariff for each RWS system, which are in some instances twice as much as urban community pay for water. RWS systems are metered to reduce waste and to promote using alternative water sources for bathing, washing and other purposes. Target communities are mobilized intensively to create sense of ownership on facilities constructed and to manage them with their own rules, procedures and norms, which leads to a long-term sustainability of RWS facilities. With the assistance of sector stakeholders, an appropriate and practical back-up support system has been established to ensure continues assistance to CBOs for the RWS systems management in a sustainable manner.

2. Key wards

Sense of ownership

Back-up support for Operation and maintenance

Community involvement

3. Background

Eighty percent of Sri Lanka's total population (of approximately 19 million) lives in rural areas. In spite of the efforts of successive governments to provide water and sanitation to the rural sector, over forty percent of the rural population or over six million rural people do not have access to safe drinking water and adequate sanitation. In other words, 27% of the Sri Lanka's population still suffers due to lack of safe drinking water supply facilities and 30% does not have access to adequate sanitation facilities

During the last few decades, many rural water supply projects launched under international donor assistance have provided water supply facilities to a large number of rural communities in Sri Lanka. However, the majority of these projects have concentrated in providing the facilities, with less emphasis on sustainability. There was no clear policy about the management responsibility of water supply facilities constructed. Also, no clear ideas to formulate an appropriate implementing process to achieve the sustainability of RWS facilities and to establish a mechanism to deal with the management issues during operation. This saw a substantial number of the facilities provided becoming dilapidated or abandoned, making them ineffective in achieving ultimate objectives. It was also evident that when the communities served are dispersed, remote and relatively small, management by a central body is difficult.

In order to address these issues, emphasis has lately been given to sustainability aspects, such as adopting demand driven approaches, and making beneficiary communities responsible for management of facilities etc. Two major water supply projects implemented in Sri Lanka with the financial assistance of Asian Development Bank and the World Bank have taken several initiatives to address this generic issue and to ensure the long-term sustainability of rural water supply systems in their project villages. The World Bank assisted Community Water Supply and Sanitation Project (CWSSP) which was implemented by the Community Water Supply and Sanitation Project Unit/ Rural Water Supply and Sanitation Division (CWSPU/RWSSD) under the then Ministry of Urban Development provided safe drinking water and sanitation facilities to rural communities in Badulla, Rathnapura and Matara districts (first stage 1993-1999) and Kandy, Matale and Numwaraeliya in Central Province and Kurunegala in North Western Province (second stage 2004-2009).

Historical achievement of the CWSSP was the turning point of the RWSS Sector in promoting "People Centered" and "Demand Driven" approach. Success of the participatory development approach is attributed to voluntary contribution valued over 30% of the capital cost by the beneficiaries over and above the mandatory requirement of 20% beneficiary contribution under CWSSP. A unique feature of the CWSSP was that the entire cycle of activity leading to the completion of the water supply systems commenced after a thorough awareness program. In this sense, CWSSP became a trend setter for the World Bank and the other donors including the Asian Development Bank, JBIC, INGOS and NGOs as well. The decentralized approach has been more emphasized under the 2nd stage of the CWSSP implemented under the World Bank grant. The new approach transferred total implementation responsibilities including financial responsibility to Provincial Councils and Local Authorities (Pradeshiya Sabhas-(PSs)). Community Based Organization (CBO) is the implementing body at village level to which the technical assistance is provided by PC, PS and POs and also is the sole decision making authority on all events in implementation including the procurements of goods and services.

ADB assisted Rural Water Supply and Sanitation Project commenced in 1999 and implemented for six years covering six project districts namely, Anuradhapura, Monagarala, Puttalam, Hambantota, Kegalle and Kalutara. Unlike previous projects and the first stage of CWSSP, the RWSSP has recognized the responsibility of LAs (PSs) in RWSS implementation and established a RWSS cell at PSs. With the intention of establishing the back-up support by PSs to CBOs for future O&M of the facilities created, capacity development program for PSs was implemented by the RWSSP. The purpose of this initiative is to ensure the sustainability of facilities created.

This paper discusses the key features of approaches adopted by the above two RWSS projects to ensure the sustainability of the rural water supply systems operated and maintained by local communities through their organizations (CBOs)

4. Principles and Salient Features of CWSSP & RWSSP Approaches

The approaches of CWSSP and RWSSP are governed by three main principles viz: (i) make beneficiary communities aware on prevailing water supply situation in their communities and increase and develop their capacity to analyze the situation and participate in decision making process in water supply and sanitation development, (ii) institutionalize project beneficiaries (form community based organizations) with their own norms and procedures agreed upon by whole community to undertake the total responsibility of project implementation such as planning, design, construction and management etc. and (iii) establish an appropriate and practical back-up support system of which CBO has easy access, for the sustainable management of RWS facilities constructed.

The salient features of these approaches are:

- create sense of ownership on RWS facilities through continues social mobilization
- community decision making and participatory planning
- institutionalization of target communities
- optimum community participation and mandatory contribution
- backup support systems for RWS management
- structural changes in RWS sector towards sustainability

5. Create Sense of Ownership on RWS Facilities through Continues Social Mobilization

The CWSSP and RWSSP has identified that mobilizing of target communities to involved in project activities is prerequisite for the sustainability of water supply facilities created. Also, it encourages each and every beneficiary household to participate in decision making at all stages of project implementation and contribute towards the water supply development activities. Overall, social mobilization is focused on creating well-informed beneficiaries on project objectives, sustainability aspects of RWS systems constructed, implementation procedures/norms, and enhancing their sense of ownership on RWS facilities crated. Initially, extensive discussions with target communities on water supply and associated social issues they face due to inadequate water supply are conducted. These dialogues are action oriented and also take place at several levels, individual, small groups

and cluster and village levels, and lead to sensitize beneficiaries. Eventually beneficiaries are motivated to take collective actions to solve their health and social issues connected to unavailability of water.

The major outcomes of the social mobilization are (i) well-informed community (ii) strong Community Based Organization (iii) set of village data for decision making during WS system planning.

6. Community Decision Making on Water Supply Facilities and Participatory Planning

It is the fact that the chances of achieving sustainability of community based development programs is increased if, among others, opportunities for participation and direct involvement can be provided to the beneficiary communities in the decision making at all stages of the project process.

After the initial community mobilisation phase respective communities will have decided to either abandon further co-operation with the project or to continue towards identification of improvements, planning, design and implementation of WS facilities. Also, if the communities are not complied with the project process and achieve outputs in time and high quality as stipulated, these projects (CWSSP & RWSSP) have the right to reject communities. For those communities which have decided to continue the cooperation with the project the time has then come to enter the Community Decision Making Phase.

Decisions taken during the community decision making phase are of overriding importance for the future sustainability that the communities eventually make an informed choice when it comes to technologies, costs and management of the future facilities. For that purpose the project has designed a process which ensures that the communities will be brought in a position where they thoroughly understand the issues involved and solution needed. The technical, social and environmental feasibility of the proposed water supply solutions will be discussed at length and select the best appropriate water supply solution for the community. The projects, with the assistance of NGOs who work as partner organizations (POs), provides guidance, data and technical assistance to the respective communities in this regard. Communities prepare proposals for the WS development in their villages, which are forwarded, along with the POs' recommendations, to the Project. The process is extremely people oriented and relies on participatory principles and it is called Village Participatory Planning (VPP).

To make this process as people centered, the strategy would be to give assignments such as conducting household survey, taking flow measurement of water sources available, searching the availability of local materials and the prices etc. to beneficiary communities through the elected CBOs.

7. Optimum Community Participation and Mandatory Contribution

In the CWSSP and RWSSP, beneficiary participation of a minimum of 75% of beneficiary households is mandatory in all project activities and decision making events in order to avoid the elite dominant decisions. To ensure the stipulated level of participation, a list of participants is required to attach with each and every major decision made by the communities and forwarded to the Projects. If the beneficiary participation is continuously inadequate as stipulated, the project ceases its assistance to the community. This policy has influenced the momentum of beneficiary participation and ensures the participation of all segment beneficiaries in decision making process.

Wide-ranging community participation is encouraged during the village participatory planning (VPP) process where the community takes the leading role in water source identification, technology selection, service area and service level selection and construction planning etc. Once the project approves the community proposal, the Project signs a construction contract with the Community Based Organization and releases funds accordingly.

CBOs are trained to manage the accounts and the Projects monitor their financial accountability throughout the constructions stage. Several training programs in financial management are conducted by Projects to improve the skills of book keeping and accounting of respective CBOs. The main ideas of this skill development are to minimize the errors in book keeping during contractions and maintain

accurate financial records during the Operation and maintenance, which is the main factor for the sustainability.

The participation beneficiary communities and their CBOs in planning, designing, construction of water supply facilities and eventually own the water supply schemes were compulsory. Also, the beneficiaries and the respective CBOs are responsible for overall construction activities including construction management, financial management, procurement and quality control etc. with the assistance of the Project.

Project funding allocation is limited to a maximum of 80 percent of scheme construction cost, or a specified per capita technology-based cost ceiling (whichever is less). The community contributes the balance (20% or more) by way of cash and labor. However, this cost is applied only in the provision of minimum level of services and if community decides to go for higher level of services cash contribution from beneficiary households are mandatory in addition to the provision of total unskilled labour requirements for construction. Table 1 provides the details of community contribution of CWSSP and RWSS projects.

Table 1: Community contribution

CWSSP (LKR Mil.)					
District	**CWSSP**	**PC**	**PS- (LA)**	**Community**	**Total**
Matale	786.2	52.0	52.0	621.7	1,511.9
Nuwara Eliya	281.7	19.0	19.0	202.3	521.9
Kandy	692.5	46.2	46.2	484.3	1,269.3
Kurunegala	877	48.7	48.7	386.6	1,361.1
Ampara	197.7	14.1	14.1	110.5	336.5
Trincomallee	112.5	8.3	8.3	57.1	186.3
Total	2,947.6	188.4	188.4	1,862.5	5,187.0
% of Contributions	**57%**	**4%**	**4%**	**36%**	**100%**

RWSSP (LKR Mil.)	
Total cost of the sub projects /Facilities in all 6 districts	1,812.1
Unskilled labour contribution by communities	387.1
Cash contribution by communities for common and individual WS facilities	195.5
Project contribution	1,370.5
Community contribution (labour + cash) as a percentage of total cost	**32%**

8. Institutionalization of Beneficiary Households

It is the fact that the long term sustainability of RWS systems depends on the organized beneficiary community and the management capacity and the financial strength of Community Based Organizations. This has been realized by both CWSSP and RWSSP and has taken several initiatives for the capacity development of CBOs. In both projects CBOs is the sole link between community and them and CBOs work hand in hand with them while motivating and encouraging beneficiary households to participate and contribute towards the implementation.

The CBOs established under the CWSSP and RWSSP posses with several important characteristics viz: (i) well represented, (ii) totally committed, (iii) socially accepted, (iv) financially sound and (v) adequately skilled. These CBOs may be community institution already in existence or new ones formed by these Projects. If existing CBOs are suitable to work with, their structure is reshaped to

embrace the above characteristics. However, the beneficiary communities are not forced to form CBO but guide them in a systematic manner to come to the logical conclusion that formation of a community based institutions is an important aspect in sustainability. A strong and well-structured CBO is final outcome of the institutionalization.

Provision of legal status to the CBO is one of the important aspects for the sustainable management of RWS systems. Lack of legal status in CBOs undermines their authority in managing RWS systems effectively and efficiently and during the dealing with the short-sighted political and other external pressures, especially for the expansion of service area and service connections free of charge for their clients etc. without considering the technical feasibility of RWS systems. The level of registration of CBOs are determined by these Projects according to the scale and the nature of water supply facilities, the CBOs who undertake the responsibility of O&M of the pipe borne water supply schemes are registered under society ordinance of company registration act. If the water supply technology were simple and basically limited to individual facilities, registration of CBO under social service act would be adequate.

Once the CBO funds are built-up and other social development activities are undertaken, there is a chance of malpractices. Registration of CBOs with the Company Registrar ensures the submission of annual audited accounts as it is a legal requirement. Such precautionary measures prevent CBO Executive Committees from abusing public funds and malpractices.

9. Scheme Management, Operation & Maintenance (O&M) and Tariffs

For centuries rural communities have managed simple “point source” common and individual water supply facilities. The common or shared piped water supply facilities are new to the rural communities and for the management of these piped systems require a fair amount of courage and determination. Unlike the planning and construction activities, the O&M is a long-term exercise requiring continued community commitment. The CWSSP and RWSSP approaches are predicated on the assumption that the community will continue to manage the schemes in a sustainable manner throughout. For common piped systems management requires a long-term voluntary input, particularly by CBO leaders. Despite the theory of the community participatory approach, one cannot help but think that such an ongoing commitment might be too heavy burden for volunteer service provided by the executive Committees of CBOs. Several employees are hired by CBOs for the O&M of the systems, pump operators, bill clarks and meter readers etc. CBOs monitor their performance regularly.

Unlike previous RWS projects user vigilance for safety of common services and assets was promoted under these Projects to reduce the O&M costs. This has done through the user awareness on their obligation and personal responsibility towards the society and creation of ownership on facilities created. Illegal connections, organized vandalism and damages due to negligence by outside parties such as other service supplies and motorist were not reported due to community vigilance.

Monthly water tariffs for rural piped schemes are decided by water users. The tariff has been decided through the Community Action Plan (CAP) conducted by the Project in each village at the time of commissioning the system. To build up a reserve fund to support scheme sustainability, a 25% surcharge is added to the monthly tariff. To address lower revenue due to lower water consumption, a substantial amount has been decided by consumers and CBOs as service charges in the monthly tariff. Generally, the service charge was between Rs. 25 and 75 in gravity and pumping schemes respectively in both CWSSP and RWSSP. CBOs in these communities were trained on principles and factors applied for the preparation of a tariff structure and encourage them to revise the tariff based on these principles and factors. However, any revision on water tariff is approved by the whole community.

In rural schemes total cost of O&M are recovered through scheme-specific tariff. It is evident that scheme-specific tariffs in rural schemes are higher than the national tariff for urban schemes. This means that pricing of drinking water in rural schemes are more realistic and sustainable. Also it is indicated that in many rural pumping water supply schemes service charges are between Rs.75 and 100, which is more than two times or closer to the service charges in the national tariff.

10. Backup Support Arrangement

The policy adopted in RWS systems constructed by the first CWSSP and the other NGOs is that the management of completed WS systems should be at the technically competent and appropriate level closest to the beneficiaries, i.e.:

- individual facilities (dug wells, rain water harvesting tanks) by individual consumer households;
- simple common facilities such as common shallow wells and tube wells with hand pumps by group of households;
- simple pipe borne water supply systems by Community Based Organisations (CBOs) or CBO hired private sector; and
- more complex pipe borne water supply systems by Local Authorities (LAs) or private sector.

However, experience show that the majority of CBOs and LAs who are identified to carry out the O&M of the schemes lack the capacity and resources to ensure the sustainability of the facilities provided by the projects once the project support is withdrawn. As a result, central agencies, especially National Water Supply & Drainage Board (NWSDB), which is the national authority on drinking water supply, face the situation where political and social obligations compel them to take over such scheme and manage. Similarly, LAs are compelled to manage small schemes, which are intended to be managed by the CBOs. This situation not only creates extra financial commitments by these organizations and strains their capacities, but also leads to expensive and less effective management systems involving high overheads. Furthermore, this leads to overloading of the resource-scared LAs beyond the capacity.

The issues in management of RWS systems at village levels has been studied by the RWSSP and the second stage of CWSSP and taken several initiatives and drastic measures to address field level scheme management issues. It is evident that CBOs, as well as LAs need continual backup support, especially in solving critical technical issues, certain management issues and in expanding the facilities to cover other beneficiaries or to cover newly developing areas. Further, it shows that back up support needs to be institutionalized in order to ensure sustainability of arrangement.

The second stage of CWSSP and RWSSP have taken policy decisions to hand over all management responsibility of newly constructed RWS schemes to CBOs and to established an appropriate system to ensures the back-up support by the LAs (PSs). Also, the existing water supply schemes, which have less than 1,000 service connections, managed by the NWSDB were handed over to the CBOs/ LAs. The RWS units originally established at NWSDB Regional Support Centers have been further decentralized to the district level with the assistance of these Projects and renamed as RWS Resource Centers/help desks. CBOs will be able to contact these Resource Centers directly for the services mentioned above. A full-time engineer and a Community Development Officer (CDO) are attached to these Resource Centers to assist CBOs.

The support from WS Cells in LAs (PSs) is more relevant in conflict resolution, planning, expansion and regulatory matters. These Cells provide required backup support to CBOs on simple technical matters in scheme expansion, source identifications and tariff settings etc. The RWS Resources Centers/help desks will provide assistance to both LAs (PSs) and CBOs on macro level WS planning, complicated technical matters, major maintenance of tube wells, monitoring and planning services free of charge. This will also provide water quality testing facilities, training, attending to major repairs, supply of water meters, etc., at cost.

Also, in-order to make the RWS Cells at (PSs) LAs stronger and to attend the O&M promptly and efficiently they were provided with transport facilities (three-wheelers, motor bicycles, hand tractors etc) and also with comprehensive technical training under the capacity development by the CWSSP/ RWSSP.

11. Changes made to the Implementation Structure an funding

One of the main fundamental issues in the RWS sector in the country was that the PCs and LAs are reluctant to undertake the responsibility of RWSS development in their jurisdiction areas and provision of post project assistance to CBO managed water supply systems even though the water supply is in their mandate. The reasons may link with the lack of technical capacity, lack of experience in implementing participatory development projects and lack of funds etc.

No similarity between CWSSP and RWSSP on working arrangements made with the PCs and PSs (LAs) for the delivery of water supply services to the beneficiary communities. Although the project was based on participatory approach, the first stage of CWSSP was managed centrally by the Ministry of Urban Development and PCs and LAs (PSs) were ignored during the implementation. The ground level approach adopted by RWSSP commenced in 1999 was more or less similar to CWSSP but it has emphasized more on the importance of involvement of Local Authorities (LA) in project implementation and RWS Cells has been established at LAs (PSs). The second stage of CWSSP commenced in 2005 has taken series of drastic measures in RWSS implementation in the country and decentralization of RWS implementation to the PCs and PSs (LAs) levels was significant. It was solely to make PC and LAs involve in RWS development and to explore some solutions to the prevailing issues in CBO managed RWS systems. Accordingly, the RWSS Units were established at PCs to undertake the responsibility of RWSS development, macro level planning and monitoring of RWS activities etc. Also, the RWS cell established at the LAs (PSs) were strengthened and their capacities in assisting the implementation of RWSS project were developed. Further, the PCs and PSs were guided to introduce separate item in their annual budget allocations for RWSS development.

Also, new funding arrangements for the RWS development has been introduced by the second stage of CWSSP. According to the new policy CWSSP provide only 70% of the capital cost while 5% each contributed from the respective PCs and PSs. As usual, beneficiary communities are expected to contribute a minimum of 20% of the capital cost of water supply construction. All stakeholders are expected to comply with this cost sharing arrangements in order to achieve the overall project targets. Financial contributions borne by each stakeholder and actual contributions in 14 LAs (PSs) in Central and North Western Provincial Councils (CPC & NWP) under the second stage of CWSSP are shown in the Table below.

Table 2: Financial Commitment and Actual Contributions of PC and LAs (PSs)

PC/ District	LA/PS Name	Estimated Contributions (LKR mil.)				Actual Contributions (LKR mil.)			
		CWSSP	PC	PS	Total	CWSSP	PC	PS	Total
	Udadumbara	18.54	1.32	1.32	21.19	16.22	0.89	0.67	17.77
	Madadumbara	23.65	1.69	1.69	27.03	18.08	1.36	0.86	20.30
	Walapone	11.88	0.85	0.85	13.57	11.90	0.85	0.29	13.04
	Ambagamuwa	16.41	1.17	1.17	18.76	14.21	1.25	0.26	15.72
	Nuwara Eliya	22.50	1.61	1.61	25.71	18.68	1.17	0.73	20.58
	Galewela	50.98	3.64	3.64	58.26	43.84	2.91	1.49	48.24
	Dambulla	36.28	2.61	2.61	41.51	30.30	2.39	0.95	33.64
	Ukuwela	18.54	1.32	1.32	21.19	14.15	0.96	0.81	15.92
	Wilgamuwa	22.79	1.63	1.63	26.05	22.75	1.53	0.90	25.18
CPC -Total		**221.57**	**15.85**	**15.85**	**253.26**	**190.12**	**13.32**	**6.94**	**210.39**
	Rideegama	33.49	1.86	1.86	37.21	34.11	1.83	1.15	37.09
	Bingiriya	24.70	1.37	1.37	27.44	25.46	1.35	0.68	27.49
	Galgamuwa	33.15	1.84	1.84	36.84	29.68	1.73	1.55	32.96
	Polgahawela	29.88	1.66	1.66	33.21	29.66	1.54	0.85	32.04
	Ududaddawa	22.89	1.27	1.27	25.43	21.48	1.15	0.54	23.18
NWP-Total		**144.12**	**8.01**	**8.01**	**160.13**	**140.39**	**7.61**	**4.77**	**152.76**

Community unskilled labour and cash contributions are not shown in this table. The CPC and NWP have contributed 84% and 95% respectively of the stipulated 5% contributions from Provincial Councils.

It is evident that PS contribution was low which is 43% in CPC and 59% in NWP. However, this PS contribution has a greater importance in terms of RWS sector development aspects as it indicates their willingness to invest in RWSS development in their jurisdiction areas.

12. Conclusion

It is evident that Community Based Organizations face numerous technical, social and political issues during the management of RWS systems. Back-up supports provided by competent institutions are important for solving all unexpected technical and management issues, which CBOs are incapable to handle. The back-up support system established with the assistance of CWSSP and RWSSP is appropriate and practical as CBOs have easy access to the LAs (PSs), the lowest level assistance and to the NWSDB, the highest level of assistance for their issues. However, such services should be provided at costs except the exceptional cases. It is evident that approaches and strategies to ensure sustainability of CBOs managed RWSS systems has been emerged during last 20 years and they are still being refined to suit the ground situation. However, attempts made by the sector institutions and donor funded projects in this regards is commendable.

It is the fact that investments, contributions and participation in development activities create sense of ownership among the contributors/participants on final outputs. Hence, it is no doubt that the financial contributions of Provincial Councils and Local Authorities (PSs) leads to the sustainability of RWS systems as they are compel to provide necessary assistance to CBOs as and when required.

It is evident that the approaches of CWSSP and RWSSP are clearly focused on dealing with issues such as community contributions, cost-recovery, back-up support and finally resource conservation measures to depart from dependency syndrome and ensure sustainability of improved facilities