

NEW APPROACH FOR THE MANAGEMENT OF SUSTAINABLE RURAL WATER SUPPLY SCHEMES

by

K.S.K. Ranasinghe

1.0 Introduction

Approximately 70% of the population of Sri Lanka live in the rural areas and a larger population of which without adequate and safe drinking water and sanitation facilities. This has drastically effected their quality of life. Most of the rural population are vulnerable to many communicable diseases and as such provision of "Safe Drinking Water" and "adequate sanitation" to them has become a priority.

Poor water supply and sanitation services continue to be critical problems in rural areas despite considerable effort to improve and expand access. Mounting evidence indicates that centrally managed schemes, among others, are difficult to implement and operate when the communities served are dispersed, remote and relatively small and lack the financial resources and physical and social infrastructure needed to support development or to maintain new systems. In contrast, locally managed systems appear to function reasonably well and to be sustainable. Although such schemes are obviously difficult to standardize for all communities, water and sanitation experts agree that they have numerous advantages over other approaches and that the question is no longer whether community management should be promoted, but how. As this paper points out, an effort should now be made to identify programs that work and determine which types can be adapted to specific sites. The time is ripe to explore the practical details of applying community management or the management at lowest appropriate level.

During the International Drinking Water Supply and Sanitation Decade, IDWSSD, 1980-90, considerable development programmes in this sphere were instituted. Investments poured in from many donor agencies and affluent countries. However, these developments were in vogue with international trends at that time and had not really addressed the basic needs and aspirations of the rural masses.

2.0 Identification of Rural Communities

According to the present definition, "Rural" is referred to all areas outside urban and municipal councils. However, the following redefinition has recently been agreed with many sector organisations;

- Greater Colombo
- Urban (Urban Councils & Municipal Council Areas)
- Rural Towns and Rural Areas
- Plantations
- Settlements

With this redefinition, the areas after excluding Greater Colombo, all Urban and Municipal Councils will be considered as rural and including plantations and irrigation settlements.

Rural areas would be further defined the areas outside the UC/MC boundaries, within the Pradeshiya Sabha Divisions excluding large and medium towns in which the population is more than 6000.

3.0 Existing Status & Ongoing Programmes

3.1 Present Position of Rural Water Supply & Sanitation Sector

Although a substantial investment had been made in the Water Supply & Sanitation Sector, the effectiveness is yet to be measured. Traditionally concentrated investments are made irrespective of the real need in order to implement projects within the selected boundaries. The existing investment systems are, in order of priority ;

Eng. K.S.K. Ranasinghe, MIE (SL), Senior Engineer, Rural Water Supply Division, National Water Supply and Drainage Board

- Major Donors of District Development
- Integrated Development Programmes
- Investment through Line National Agencies
- Public Investments, Decentralized Budget, Provincial Council Funds etc.
- Institutions
- NGOs
- Private Individuals

The National Budget provides about 3.0 to 3.5 Billion Rupees annually, in addition to the expenditure of the Ministry of Health. The user contribution for capital investment varies for different projects, but there is no firm policy on same. There is no proper system for directing the finance. There is no equitable distribution between urban and rural and even among rural areas. All the delivery systems have not been effective, as the overheads have been very high.

3.2 Ongoing Programmes

However, the Rural Water Supply and Sanitation Sector in Sri Lanka had considerable development in the recent past. Major development in the sector started in the eighties with the implementation of donor assisted Rural Water Supply and Sanitation Programmes by the National Water Supply & Drainage Board (NWS&DB) in selected districts; in Matale, Polonnaruwa and Anuradhapura districts with DANIDA assistance, in Kandy district with FINNIDA assistance, and in Kurunegala with GTZ assistance. These projects developed implementation strategies for both water supply and sanitation, with the goal of establishing sustainable operation and maintenance systems involving the beneficiary communities and the local authorities. The focus was on low cost technologies such as; boreholes with hand pumps and piped water supply schemes. These projects have also made great achievements in developing low cost sanitation programmes and appropriate technologies for water treatment in rural areas. Capacity development of sector institutions and influence on policy development has been a more important achievement.

These programmes have also identified the need for institutional strengthening of the local authorities to participate in the sustainable maintenance of rural systems.

NWS&DB implemented additional programmes for providing tube wells to rural areas throughout Sri Lanka with funding from UNICEF and the Government. IRDPs in 15 districts also had water and sanitation components.

The local authorities have made contributions in these areas. The Ministry of Health has an Ongoing Programme to improve sanitation.

NGOs mainly; Sarvodaya, implemented many rural water supply and sanitation projects in the past. Management of most of these schemes are carried out by beneficiaries themselves.

Other projects such as IRDPs, the Mahaweli Project, Social Welfare Programmes in the Plantations, National Development Trust Fund (NDTF) and Local Authorities have also made major contributions.

The Community Water Supply and Sanitation Project (CWSSP), established in the Ministry of Housing, Construction & Public Utilities (now Housing & Urban Development) is making important sector contributions in Badulla, Ratnapura and Matara Districts with World Bank funding and part of Monaragala District, as a pilot project assisted by the Asian Development Bank. In all these projects, attempts were made to a greater extent to involve the user communities in managing the water and sanitation facilities.

3.3 Equitable Distribution of Investments and Participatory Approach

The participatory development programmes have been instrumental in the equitable distribution of development investments and this delivery mechanisms arouse the need for such systems among the beneficiary populations. The concept that community needs can be achieved through collaborative action has now taken root in the rural communities generating considerable enthusiasm. While these systems show very encouraging development possibilities, some disadvantageous influences too have emerged alongside.

It has to be considered that participatory development effort is the most appropriate action plan for achieving sustainable development. Planning and decision-making by the beneficiary community form the vital component provided that the purpose of development is proved worthy and satisfactory.

4.0 Involvement of Communities for Sustainability

In assessing the capacity of communities to manage development in water supply sector, it is important to distinguish between the way they manage their daily affairs and the way they handle developmental change. All social groups devise mechanisms for handling routine affairs and managing their resources - in some cases, these mechanisms have evolved over thousands of years. Perhaps the most important of these resources, because health and economic survival depend on it, is water. Rural communities have always managed their traditional sources of water. When a community is provided with new water

resources, it may have to change its existing management practices and even lose control of water rights. It may also be forced to enter new types of external relationships. How a community reacts to such changes can be influenced by external institutions, through regulatory control, technical assistance and a variety of incentives. There is no specific set of actions that an external institution can take in all instances to ensure a smooth change, since each community's response depends on its needs, which vary from one region to another. Institutions charged with fostering economic and social change have a responsibility to determine the potential for development in a given community, and then to work within that limit or attempt to increase the potential.

4.1 Community Participation

Community participation has become a favoured development strategy because it involves people in decisions and actions affecting their welfare. The concept originated about 40 years ago in the community development movement of the late colonial era in parts of Africa and Asia. To the colonial administrations, community development was a means of improving local welfare, training people in local administration, and extending government control through local self-help activities.

At present, the concept of community participation is taken to mean that the community plays an active role in its own affairs by sharing and exercising political and economic power. World Bank experience with community participation has given rise to the following definition: "an active process whereby beneficiaries influence the direction and execution of development projects rather than merely receive a share of project benefits" (Paul 1986). This definition places participation in the context of a development project or program, emphasizes participation by beneficiaries rather than external personnel, stresses the involvement of beneficiaries in groups, and refers to a process rather than a product. Recent reports of the World Bank, the United States Agency for International Development (USAID) and the Water and Sanitation for Health Project (WASH) point out that the concept of community participation may have considerable potential for improving development planning and sustainability.

The objectives of community participation in the context of development programmes may include :

- (a) sharing project costs (beneficiaries contribute money or labour)
- (b) increasing project efficiency (beneficiaries assist in project planning and implementation)

- (c) increasing project effectiveness (beneficiaries have a say in project design and implementation)
- (d) building beneficiary capacity (beneficiaries share in management tasks or operational responsibilities) and,
- (e) increasing community empowerment (beneficiaries share power and increase their political awareness and influence over development outcomes).

In contrast, community-supported Rural Water Supply & Sanitation Projects emphasize capacity building and organisation. They are designed to improve the problem-solving capacity of the community as measured by behavioral change. With this approach, project preparation takes considerably longer, as it involves community orientation and the training of key persons. high priority is given to developing human resources, with the result that the beneficiaries are given a sense of responsibility and commitment towards the project. In reality, development projects require both external and internal support, so that in essence community participation is a question of the relative emphasis given to each source of support and the steps taken to integrate them in a complementary fashion. Although the community-based approach is expensive at the outset, its effectiveness appears to increase and its costs to decline over the long term since local commitment helps to keep maintenance costs down.

WASH experience indicates that the following community participation activities are associated with most successful rural water and sanitation projects (Yacoob and Warner 1988) :

- * **Community mobilization and organization:** Community participation means involving as many community members as possible by providing an institutional vehicle through which they can act.
- * **Project negotiations:** Communities need to communicate their preferences and have a say in the type of projects to be considered. Their input may be given in consultations between community leaders and agency officials or in public discussions within committee meetings. It may consist of formal bargaining on issues such as; project design, community contributions, and external assistance.
- * **Committee operation:** Community organizations are usually elected or appointed committees. Their potential operating effectiveness depends on the degree to which they are allowed to function in project development.

- * **Training :** Training is necessary for system managers, committee members, and all other involved in project implementation. Although some training may be required from external sources, community members themselves should be trained to pass on their skills to others.
- * **Hygiene and user education :** Hygiene and user education help to instill responsibility for the system and a feeling of control over the environment in the minds of the participants. Training should be participatory and practical, rather than didactic and theoretical, and it should encourage behavioral changes in order to maximize health benefits.
- * **Community contributions :** Communities must contribute to the development and operation of their projects if they are to feel that they own the resulting system. Contributions include monetary investments, materials, equipment and labour, as well as committee membership and general participation in project-related meetings.
- * **Cost recovery :** The community should interpret cost recovery as an obligation to meet its share of the costs of the project. In particular, the community must meet any obligations to external agencies.
- * **Operation and maintenance :** To the extent possible, communities should accept and exercise responsibility for operations and maintenance. Caretakers and repair crews should be well trained and responsible to a community-based institution.

Since 1980, the function of external agencies has expanded greatly. Today, they not only provide technical and financial resources for communities, but they also promote self-sustaining community participation within communities. Project field staff play an important role in this relationship, as they form a link between the project and the community. Their promotional activities can be divided into three types: organizing, training and facilitating (Isely and Yohalem 1988).

They work with the community to accomplish the development tasks that the communities themselves have chosen to undertake.

4.2 Community Management

Until recently, community management as applied to rural water supply and sanitation systems has generally been concerned with questions of maintenance, the participation of women, and in-kind contributions, all of which involve community participation and therefore were said to promote sustainability. Yet field experiences has shown that

sustainability depends on more than community participation alone, although community participation does appear to provide the environment required for successful community management, which has come to be known as the enabling environment. Therefore, general community participation in significant decision making may be seen as one precondition for community management. Furthermore, if community participation occurs at different levels of intensity, then the potential for community management will depend on the level of community participation that has been achieved.

As noted earlier, the concept of community participation implies that the beneficiaries are involved in developmental activities, whereas community management refers to the capabilities and willingness of beneficiaries to take charge and determine the nature of the development affecting them. In water supply and sanitation systems, community management means that the community exercises responsibility for decision-making and control over the subsequent execution of these decisions during project development.

The distinctive feature of community management is the nature of decision making and the locus of responsibility for executing those decisions. Community management refers to the capability of a community to control, or at least strongly influence, the development of its water and sanitation system. Community management consists of three basic components :

- * **Responsibility.** The community takes on the ownership of and attendant obligations to the system.
- * **Authority.** The community has the legitimate right to make decisions regarding the system on behalf of the users.
- * **Control.** The community is able to carry out and determine the outcome of its decisions.

Community management, as defined above, is concerned with all issues pertaining to responsibility (ownership), decision-making authority, and control over project development and systems operations. Community activities in this regard all help to ensure that Rural Water Supply & Sanitation improvements will be sustained.

Some distinctions also need to be made in the type of management required in rural water supply and sanitation systems. A great deal will depend on the nature of service being provided and the extent to which community management is pertinent. For example, piped rural water supply is usually a public

facility made available to individual consumers, and they can either utilize it or not without significantly affecting other users.

All users, however, are called upon to help meet recurrent costs and ensure that the systems are operated and maintained. Fees are collected for this purpose.

In this situation, users need to provide a degree of management (or pay someone) to ensure that the benefits as well as the burden of maintenance are shared equitably. In contrast, rural sanitation and water sources such as catchment systems or hand-dug wells are point services that are entirely the responsibility of the user, who must maintain the services if benefits are to be sustained.

The advantages of Community Management with regard to preservation of catchments are highly illustrated in rural water supply programmes implemented by NWSDB. In community managed Kirinda/Puhulwella Small Town Scheme, due to scarcity of water and to ensure the reliability of supply users have high regard in preservation of the catchment leading to the water source which is a borehole. On the request of the users NWSDB had to demarcate the boundary of the catchment and educate them on the scientific measures on source protection. Catchment preservation can improve the quality of water which in turn reduce the cost of treatments and guarantee the reliability of supply. In a survey conducted by the NWSDB, it was proved that quality of drinking water in Kirinda/Puhulwella area was very poor and there were very few dug wells available with reasonably good drinking water in which the reliability of availability could be guaranteed.

Under the same programme, in Koslanda Small Town, more emphasis has focused by the community on quality of water as they realized that water source could be polluted by the seepage from latrines of upstream. Source Protection/Pollution Prevention measures has proposed to overcome this problem in which the diversion of waste water away to the source is highlighted.

Catchment preservation is now being considered by the NWSDB as a compulsory tool in managing the quality of water and reliability of supply. As both reasons could be lead to the sustainability of rural schemes, involvement of users in preservation activities to be promoted in the new schemes.

Some useful ideas can be gained from information on the preconditions of successful Rural Water Supply & Sanitation planning, which are said to include attention to ;

- (1) the water and sanitation needs of the community
- (2) the social and economic conditions of the people
- (3) the technological choices suitable for the community
- (4) the supporting conditions (which consist of the available resources, complementary investments, and project-induced changes) and
- (5) the expected outcomes and benefits of the project (Warner 1981).

On the basis of this information, it seems reasonable to assume that the important preconditions for community management are likely to include the following :

- * There must be community demand for an improved system
- * The information required to make informed decisions must be available to the community.
- * Technologies and levels of service must be commensurate with the community's needs and capacity to finance, manage and maintain them
- * The community must understand its options and be willing to take responsibility for the system
- * The community must be willing to invest in capital and recurrent costs
- * The community must be empowered to make decisions to control the system
- * The community should have the institutional capacity to manage the development and operation of the system
- * The community should have the human resources to run these institutions
- * There should be a policy framework to permit and support community management.
- * Effective external support services must be available from governments, donors and the private sector (training, technical advice, credit, construction, contractors etc.)

Most of these preconditions will be present if an activist approach is taken to community participation. In other words, such an approach lays the groundwork for community management. Although the last two preconditions in the preceding list refer to attributes of external supporting agencies, they, too depend on an activist approach.

Unless the relationship between community participation and community management is recognized, it will be difficult to understand how a

community can develop the willingness and capacity to manage its own RWSS systems.

Community management should not be thought of as a simple choice between a top-down or bottom-up approach. Rather, it is the outcome of a collaborative partnership between the community and the government in which neither is dominant and each understands and accepts its role. This type of relationship places new demands on both parties; communities must become the focal point of decision-making and governments must help create or support conditions in which community-based actions can occur. External support agencies can also play a large role in bringing about such partnerships.

Community managed services foster a sense of ownership and willingness to pay, which in turn contribute to better overall performance. The idea of self-sustaining development may well open the door to long-term development in Rural Water Supply and Sanitation in the poorer countries of the world.

4.3 Application of Community Based Philosophy to existing Programmes

The recent innovative approaches used by the National Water Supply & Drainage Board (NWSDB) in its Rural Water Supply Programme under different funding sources such as DANIDA, FINNIDA and IDA have ensured complete participation of all the users and partners in the whole development process leading to sustainable system development. Over 200 rural village schemes have successfully been completed under this approach and another 700 are in progress. The experience of Community Water Supply and Sanitation Project (CWSSP) has already confirmed that the facilities provided to rural communities are more acceptable, more relevant, more sustainable and more cost-effective.

The main concept in the strategy of implemented programmes had been gradual empowerment of the beneficiaries and the other partners in the target small towns on planning, implementation and management of water systems with following basic elements on participatory development.

- (A) The entire programmes will be demand driven and people centred deviating from conventional supply driven programmes.
- (B) Involvement of all the partners such as users, line agencies, local authorities, NGOs and politicians and the private sector on the water system planning, implementation and management phases.
- (C) The beneficiary community with other partners jointly decides on appropriate management

model and the arrangements based on local capacity through planning workshops. This is a deviation from conventional top down approach on imposing pre-determined management mechanism on the communities.

- (D) The agency involvement will be limited to a facilitator with the provision of technology and management and execution of complex technology work and provision of part of funding.

The general policy in these programmes are adaption of scheme specific or localized tariff based on local level affordability and priority for water. In five small town water supply schemes in Kandy, the scheme specific tariffs were implemented which are in average three times higher than the national tariff. These accounts for recovery of full O&M cost and 15% of the investment cost. In the small town programme funded under IDA assisted CWSSP a tariff which recovers O&M was agreed, and a minimum of 20% of upfront contributions were made by the beneficiary community as labour or cash, during the construction.

4.3.1 Management Models, Issues and Bottlenecks

Three types of alternative management models had been identified and tested by the NWS&DB as accepted under legal and social framework within Sri Lanka. The roles & responsibilities are shared by the Community Base Organization (CBO), local authority and the NWS&DB in each model.

The responsible partner for operation & maintenance differs for each model as mentioned below and the other functions are shared between balance management partners.

- a. Model A - Community Based Organisations (CBO)
- b. Model B - Local Authority (LA)
- c. Model C - National Water Supply & Drainage Board (NWS&DB)

In the case of management Model A introduced to Kuruwita in Ratnapura District, legal issues arisen are transfer of assets to CBO and liability of the CBO as a legal entity towards the users; under the existing laws. A separate study on legal aspects was carried out in this direction.

The major drawback in Model B and C had been the possibility of neglecting of user involvement during O&M stage. In one case in Ampitiya, the LA has increased the service area and the service population deviating from the original design, resulting in complete deterioration of services despite very high user protests. Therefore, in all three models signing and effecting tripartite agreements will be very much

important. However, there are certain minor amendments required on the existing laws and act to make all the management models more sustainable and effective on operation.

4.3.2 Capacity Development

Capacity development is a gradual process which encompasses transfer of technology to the lowest appropriate level on continuous basis. The strengthening of the O&M partner was done with ;

- (A) Human resource development programme including the areas of technical, managerial, financial and stores management.
- (B) A logistic development programme to build up stores, mini-workshops and increase of mobility.
- (C) Procedure development to streamline procedure and standardize the formats to facilitate smooth O&M.

5.0 Operation & Maintenance

During design and construction, it is very important to keep in view of the needs on suitabilities of the provision in respect of Operation and Maintenance, to sustain and continue to effectively perform the completed project. However important each of the earlier stages of planning, design and construction are the ultimate end result of a successful project lie in its operation and maintenance and judged not on the earlier activities. It should be able to provide a supply on a cost/benefit basis and affordable by the people to whom it serves. It means that provision of types of equipment cheap in capital investment that require frequent repair and replacement or need a multitude of highly skilled personnel to run it may not achieve that goal. Further whatever personnel required that may be employed especially the key operators, technicians and mechanics need to be associated with the project at the inception stage, making them fully aware of the functions of the project, trained to follow through to achieve optimum level of operation and maintenance. It is often unfortunate to find this type of action is neglected relegated as less important to be attended to at the last stages of construction phase. In the planning stage, it is necessary to closely study the people's desires and usage patterns on a cultural background and the assistance they could provide in the operation and maintenance to the best of their ability to keep within their affordability of the service. Simplicity in operation and maintenance thus becomes a key factor.

The design should take into account the effects of what it is expecting to provide and what extent it will effect the operation on the completion of the project.

The failure to assimilate and utilize but design on the basis of best applicable without due care for operation and maintenance may end in rejection by the Society or become a source of hardship enforced on them that may not be readily accepted. Expensive equipment, require constant care and vigilance that increase operational costs if not properly attended to, deteriorate to low productive outputs and further increase costs in replacement at a very early stage before fully benefiting the people. Thus such equipment should not be considered unless it is extremely essential.

The effectiveness of operation and maintenance has become very important in ensuring long term sustainability of the rural water systems. With the major investments on water sector during the early part of the rural programmes the emphasis was mainly placed only on new construction. A low profile was given for capacity building at the lowest level with user participation; in the development process. The outcome had been under priced water services, resulting in continuous deterioration of the improved facilities. As a result the national agencies had to continue reinvesting on rehabilitation diverting its scarce resources meant for still unreached communities.

5.1 Proper Operation & Maintenance through Sense of Ownership

Under the community approach with involvement of the users in the rural water and sanitation programmes from planning stage to the O&M stage, complexity of O&M is greatly reduced. As user communities are contributing the fraction of the investment in terms of labour or money, they are particularly interested in building up something simple which can be easily handled and operated. Sense of ownership among users has played an important role when implementation and operation.

Under the O&M activities, maintaining the quality of water and ensuring reliability of service are main features for which the attention of user community are greatly focused. As the tendency is now for the users to carry out the operation and maintenance of their schemes, hopeful efforts on sustainability of rural water supply schemes through better O&M could be expected.

6.0 Lessons Learned and Recommendations for Future

These lessons learned in water supply system development for rural water supply programmes by the NWS&DB with greater emphasis on user participation and strategies focused on greater

utilization of local resources and capacity building and transfer of technology to the lowest possible level, will be valuable guiding tools for planning and implementation of future water supply systems in rural schemes. The lessons learned and recommendations could be concluded as :

- * The beneficiary community should be key players of the programme from the planning to maintenance even deciding on the management system for the future operation & maintenance.
- * The sustainability of the management models depends also on legal and social recognition and their inter-connections.
- * The water tariff increases could be effected with proper consultation with the community considering social and political context, prioritising water among user needs.
- * The technology and management should be transferred to lowest appropriate level towards the user for ensuring operational efficiency.
- * The National Agencies can achieve better results by encouraging greater participation of the small and medium scale private sector and the NGOs and other local agencies in the development of WSS, adding extra resources that could be manageable for predetermined outputs and performance indicators with added flexibility. This could reduce need for further expansions of agencies which will lead to efficient and flexible mechanism for project development and management.

Many communities in rural Sri Lanka aspire for improved water supply and sanitation facilities. Some 50% of rural households are still without accepted basic facilities. In addition, many households would like to move beyond the basic level of service and acquire such services as will allow them more water security and thus more freedom to participate in and contribute to economic, educational, social and cultural activities.

7.0 References

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