

# SIGNIFICANT FACTORS AFFECTING EFFECTIVENESS OF COMMUNITY-BASED ORGANISATIONS IN RURAL WATER SUPPLY SECTOR OF SRI LANKA

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## ABSTRACT

*Water as a basic need of all humans, their ultimate expectation is to have health and well-being life fulfilled with social and economic development through getting access to use of safe drinking water. Subsequently, providing adequate drinking water to all poor living areas has become a major challenge in developing countries like Sri Lanka. Community engagement in rural water supply (RWS) projects should become essential as the client and end-users are not involved in the project management process during a typical project. Therefore, the aim of the research is to investigate the factors which are significantly affect for effectiveness of Community Based Organisation (CBO) management in both client's perspective and community perspective.*

*A mixed approach was utilized for the study. A comprehensive literature review was intended to explore factors which are affecting for effectiveness of CBO management. Significant factors were observed through semi structured interviews based on Delphi technique to collect data on client's perspective. Questionnaire survey was carried out based on close ended questionnaires to collect CBO perspective data. Data was analysed via content analysis to generate qualitative outcome while RII technique was utilised to analyse statistical data.*

*Effective revenue, effective billing to collection ratio, effective CBOs' managerial level, effective stakeholder relationship and monitoring quality of water were identified as both perspectives agreed factors. The most significant factor on CBO perspective was considered as effective CBOs' managerial level while client perspective factors such as effective CBO involvement in operation and maintenance phase, development of CBO performance and relationship between National Water Supply and Drainage Board (NWS&DB) and CBOs was considered as most significant. Outcome of the study can be recommended to use as a tool before commencing the water supply project for aware about which factors are mostly assist to increase the effectiveness of CBO management.*

**Keywords:** *Community Based Organisation; Rural Water Supply; Significant Factors.*

## 1. INTRODUCTION

Vagrants in rural areas are focusing on rural water supply (RWS), sanitation, and hygiene while achieving Millennium Development Goals (MDGs) (World Bank, 2004). Among such needs, providing adequate drinking water to such rural areas has become a major challenge in developing countries (Bethany and Deaton, 2015). Meanwhile, many challenges are met by Sri Lanka due to being a developing country in the course of achieving environmentally sustainable economic development for giving greater equity and opportunity to all its population (Teare *et al.*, 2013), while environmentally sustainable economic development means simultaneous reinforcement of environmental conservation and economic development goals. Community Based Organisations (CBOs) represent the community to deliver service at the local level from contributing labour, material and financial support to attain the aim of social services (Salles and Geyer, 2006). However,

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backstopping agency in developing countries, who is an external partner to the CBO, should encourage the community by giving suitable advice on effective project implementation to achieve good and high quality outcome (Ademiluyi and Odugbesan, 2008). Further Gbadegesin and Olorunfemi (2011) stated that it is still pending to find exact solution on getting maximum of CBOs involvement in construction stage of the project. Therefore, the study focused to investigate significant factors for the effectiveness of community based organisation (CBO) management in both client's perspective and community perspective during the lifecycle of rural water supply projects.

## **2. COMMUNITY MANAGEMENT APPROACH IN RURAL WATER SUPPLY SECTOR**

Community management consists for serving humans while representing the responsibility of the government or the donor agency (Bolt and Fonseca, 2001). Community management approaches were begun from a long history of trial and error in the RWS sector (Schouten and Moriarty, 2003). Further, stipulate that the history of concept of RWS had really started in the early 1960s. Yalagama *et al.* (2016) stated that the community based development approach is most suitable to developing countries such as Sri Lanka since this provides higher community engagement and measurable project management outcomes.

Community Management approach did not develop spontaneously from Water Decade (Schouten and Moriarty, 2003). This approach depends on the strengths of user communities and therefore it focused on getting the communities involvement in the management of RWS facilities (Rob *et al.*, 2016). Moreover, the capacities and willingness of the community was strengthened to take the ownership and responsibility of managing their water supply systems once the implementing agency leave the community (Schouten and Moriarty, 2003). Furthermore, community based development concludes that the community participation is an essential phenomenon and a very fundamental factor in RWS in Sri Lanka (Batuwitage, 2014).

The level of community involvement in RWS sector is changed by policy makers to suit the donors' requirements and also from the lessons learned from field experiences (Nwankwoala, 2011). Before 1977, the majority of the people living in the poor countries did not have proper and protected water and sanitation facilities (International Resource Centre [IRC], 2001). However, the community themselves constructed small scale water supply schemes like common wells and small piped systems before the international recognition (IRC, 2001). Brikke (2000) explained that, in early 1980s there were three main drivers to community participation-based approaches.

1. A new model for the development should come from the origins of a society rather than from the top.
2. There should be abroad awareness, because many traditional water supply policies and programmes were failing to achieve their goals.
3. Vision of the community participation concept could find a solution to the loss of the state's implementation capacity.

According to Brikke (2000), above mentioned factors should essential for existence of the community based organisations.

### **2.1. REQUIREMENT OF EFFECTIVE MANAGEMENT OF CBOs**

Effectiveness is goal of increasing total output whereas efficiency consists of increasing output per unit (Laycock *et al.*, 2009). Further, World Bank (2004) stipulated that increasing of effectiveness of all infrastructure projects may highly affect for human development. Moreover, Kulinkina *et al.* (2016) highlighted that effective and efficient practices lead to improve health, social and economic benefits to communities. Furthermore, community based management can effectively supply water to humans as the involvement of large number of communities with functioning systems and satisfied users (Bakalian and Wakeman, 2009). Meanwhile, Amer (2004) stated that most of the financial, technical, institutional, social and environmental challenges are arisen while implementing the water supply project. In contrast, technological factor during construction period become a critical factor for effective management of CBOs during past decades (Taylor and Mudge, 1996).

## **2.2. DEVELOPMENT OF RURAL WATER SUPPLY SECTOR IN SRI LANKA**

The concept of water for all by 2025 was established after 1980 (Schouten and Moriarty, 2003). Subsequently, NWS&DB has taken necessary arrangements for efficient and effective involvement with community participation and external stakeholders in Sri Lanka (Rural Water & Sanitation Section [RWSS], 2016). Annual report of National Water Supply and Drainage Board (NWS&DB, 2007) reported that the government has implemented more rural water supply projects with the involvement of CBOs to achieve MDGs throughout the year. Accordingly, RWS division expect to provide access to drinking water facility for further 500,000 dwellers in near future (Fan, 2015).

Community based organisations have become a solution for rural water supply sector, because of arising difficulties due to increasing urban population in Sri Lanka (Mimrose *et al.*, 2011). In line with that, the national policy for the rural water supply and sanitation sector has recognized the value of water, and the need for institutional arrangement for the efficient and effective management of facilities with community participation and the stakeholders (Rural Water Supply and Sanitation Division [RWSSD], 2001). Moreover, RWSSD (2001) principles in national policy stated that, CBO and NGO involvement, user management, women participation and private sector involvement should be required for overall project success. Therefore, RWS projects were forced to follow the concepts even though some concepts are not matching with Sri Lankan context (James, 2011).

There is a strong interrelationship between quality construction of water supply schemes during implementation, quality of community mobilization from planning and establishment of support service mechanism during operation and maintenance with the existence of CBOs (Taylor and Mudge, 1996). Further, Wijesundara (2008) found that additional support service mechanism will be needed to enhance the effectiveness of CBO contract system during operation and maintenance phase.

## **2.3. REVEALS THROUGH PAST EXPERIENCES IN RURAL WATER SUPPLY PROJECTS IN SRI LANKA**

The First community water supply and sanitation project was implemented in 1993-1997 with the aid of World Bank as CWSSP-1 (Minnatullah *et al.*, 1998). Meanwhile, Fang (1999) discussed additional training on mobilization strategy, effective CBO involvement in operation and maintenance phase, effective CBO involvement in design phase, additional technical knowledge, additional managerial knowledge and additional focus on institutional arrangements should be developed. Past Asian Development Bank (ADB) projects and World Bank projects revealed those facts.

NWS&DB (2012) revealed that ADB's 4<sup>th</sup> project aimed to provide access to safe drinking water facility about 330, 293 rural people. According to the Ministry of Finance and Planning (MF&P, 2014), the ADB 4<sup>th</sup> project implemented by 2003-2013. Moreover, the report concluded that follow-up actions should be developed further to enhance effectiveness of the overall management with the use of effective financial assistance to enhance quality of water, continuous managerial assistance from NWS&DB, effective performance of CBOs and effective relationship between NWS&DB and CBOs. Asian Development Bank (ADB, 2010) project administration manual revealed that NWS&DB and RWS focused on minimizing the challenges in ADB third and fourth projects. Moreover, ADB (2010) identified that management committee has been suggested to take strategies in community participation and community mobilization stages. In addition to aforementioned factors, Muthunayake (2010) found that economic factors, skills of CBOs, motivation factors and external factors are also significantly affect towards the effectiveness of CBOs.

## **3. RESEARCH METHODOLOGY**

The research initiated with a literature synthesis in order to identify significant factors for the effectiveness of CBOs in rural water supply sector in Sri Lanka. For the purpose of realizing the aim of the study, mixed approach was identified as the most suitable method with the intention of identifying most significant factors. As the data collection technique, semi structured interviews based on Delphi technique was carried out to gather the opinion of experts regarding most significant factors towards the effectiveness of CBO management. First round of interviews was carried out with three experts in National Water Supply and Drainage Board who are specialized on client's perspective in Sri Lankan rural water supply. After finishing first round of the interview session, qualitative results were analysed by using content analysis method and quantitative data was analysed with the use of relative importance index (RII) technique and average deviation statistical method.

Questionnaire survey was conducted among 30 respondents in the field of water supply to obtain CBOs' point of view regarding significant factors. Non probability convenience sampling was used in both data collection phases. Finally, gathered data through Delphi second round semi structured interviews and questionnaire survey results were analysed by using RII technique and average deviation statistical analysis technique. In average deviation method, the factors  $\geq 0$  was considered as significant factors.

#### 4. RESEARCH FINDINGS

Findings asserted 41 significant factors relating to effectiveness of CBO which was reviewed through literature based on past experiences and project completion reports. Two rounds of semi-structured interviews based on Delphi technique were conducted to filter most significant factors. 24 factors and facts on existence of CBOs were identified through first round interviews on client perspective. Further, 9 significant factors were finally found through second round interviews based on client perspective. Subsequently, questionnaire survey results were analysed to identify most significant factors on CBO perspective. Hence, 8 significant factors were filtered based on CBOs' perspective.

##### 4.1. EXISTENCE OF CBOs

According to the findings of literature review and first round expert interviews, collaboration of Quality Construction of water supply Schemes during implementation, Quality community mobilization from planning stage and Establishment of Support service mechanism during Operation and maintenance is paramount to the existence of effective CBO. Key factors which are affecting the existence of CBOs can be shown as in Figure 1.

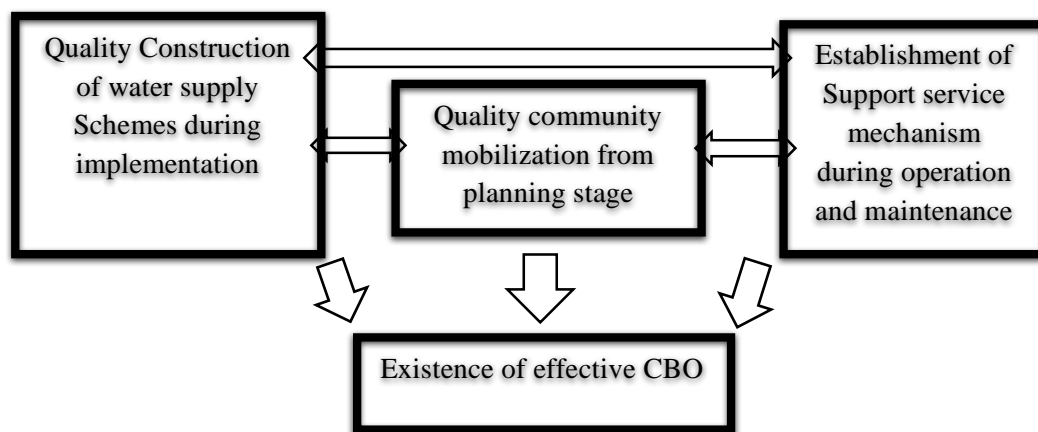


Figure 1: Relationship between Key Factors for Existence of Effective CBO Management

##### 4.2. ANALYSIS OF SIGNIFICANT FACTORS

Second round semi-structured interviews carried out with filtered 24 factors and analysed outcome can be shown as in Table 1. In specific, 22 factors were identified during the second round of semi-structured interviews. Alongside, those factors were taken for the questionnaire survey to cover the CBO opinions with the significance level which is also shown in Table 1.

Table 1: Quantitative Data Analysis

	Factors	CBO perspective			Client perspective	
		RII%	Rank	Avg. Dev.	RII%	Rank
<b>1</b>	<b>Institutional</b>					
1.1	Effective relationship of CBOs with community	83.5%	7	4.3%	66.67%	20
1.2	Difficulty in obtaining expected support from institutions and organizations established to provide backup services	76.5%	13	-2.7%	80.00%	17
1.3	Turnover of trained and skilled staff	85.5%	4	6.3%	73.33%	18
1.4	Continuous managerial assistance to be needed from NWS&DB	71.5%	19	-7.7%	100.00%	1
1.5	Relationship between NWS&DB and CBOs should be developed	79.0%	9	-0.2%	100.00%	1
1.6	Uncertainty regarding the sustainability of voluntary services of scheme caretakers	76.5%	13	-2.7%	66.67%	20
<b>2</b>	<b>Financial</b>					
2.1	Effective revenue	86.5%	3	7.3%	100.00%	1
2.2	Effective billing to collection ratio	84.0%	6	4.8%	100.00%	1
2.3	Transparency of accounts	76.5%	13	-2.7%	86.67%	10
<b>3</b>	<b>Technical</b>					
3.1	Availability of skill labours	85.5%	4	6.3%	73.33%	18
3.2	Water quality standards	77.5%	11	-1.7%	53.33%	22
3.3	Effective CBO involvement in operation and maintenance phase	78.0%	10	-1.2%	100.00%	1
3.4	Communities' interest decreases over time and as a result, a particular group or a small number of individuals can dominate management and O&M activities	73.5%	18	-5.7%	86.67%	10
3.5	Performance of CBOs should be developed	71.5%	19	-7.7%	100.00%	1
3.6	CBOs' managerial level should be increased	92.0%	1	12.8%	100.00%	1
3.7	Qualified technical staff	76.5%	13	-2.7%	86.67%	10
3.8	Effective CBO involvement in design phase	76.5%	13	-2.7%	86.67%	10
3.9	Additional technical knowledge	71.5%	19	-7.7%	86.67%	10
<b>4</b>	<b>Social</b>					
4.1	Effective stakeholder relationship	88.0%	2	8.8%	100.00%	1
4.2	Female involvement & gender balance	71.5%	19	-7.7%	86.67%	10
4.3	Giving chance to poverty	77.5%	11	-1.7%	86.67%	10
<b>5</b>	<b>Environmental</b>					
5.1	Monitoring quality of water	83.5%	7	4.3%	100.00%	1

#### 4.2.1. SIGNIFICANT FACTORS IN COB PERSPECTIVE

Finding asserted that effective CBOs' managerial level, effective stakeholder relationship, effective revenue, turnover of trained and skilled staff, availability of skilled labourers, effective billing to collection ratio, monitoring quality of water and effective relationship of CBOs with community as the significant factors under CBO perspective. According to the respondents, if there is an effective CBO managerial level, CBO would be able to manage the organization, community and the water resource efficiently and effectively, after implementation of the project and there will not be any issues in the water supply system. Furthermore, effective support service mechanism leads to build up trustworthiness between the community and the CBOs when there is an effective relationship among the stakeholders. Therefore, that will ensure the community

mobilization. Moreover, effective relationship between CBO, community, local authority and other external supporters must be guided to increase the effectiveness of CBO management.

Most of the respondents highlighted that whole of the works during operation and maintenance phase including buying pipes, fittings, other spare parts, water pumps and water purification chemicals, paying salary for staff of the CBOs have to do with the revenue. Therefore, the level of revenue highly impacts towards the effectiveness of the CBO.

In CBOs, sometimes staff tends to turnover due to low salary and other personal matters. As a result, it will affect for the management of CBO since training have to be provided for the new staff at the time of recruitment. During that period CBO may be adversely impacted due to weak staff and management. Therefore, turnover of the staff has become a significant factor. Meanwhile, unavailability of skilled labours will affect to CBO as ordinary community has no experience on pipe laying. It will affect in decreasing the progress of the project and increasing the defects of the work. However, NWS & DB will be given technical assistance during planning to implementation stage. Therefore, CBO management believes that progress of the project will be increased due to the skilled labourers.

Monitoring the quality of water was considered as a paramount factor by all the respondents since CBOs have no authority to monitor the water quality. Therefore, water samples are handed over biennially to NWS & DB in order to check the quality. However, CBOs showed their willingness to monitor water quality if they have support from an agency. Assistance for continuous development are required to refresh the present knowledge and to acquire new techniques on assessment of water quality.

Relationship between CBOs and community was regarded as significant whereas CBOs have to get assistance from community for the implementation of the project and operation and maintenance phase of the project. The benefited areas should provide their fullest support for the project. Moreover, during implementation of the project the whole responsibility should be with CBOs and the client may not involve during that period of the project. Therefore, effective relationship with community facilitates in increasing the effectiveness of CBO management for long time.

#### 4.2.2. SIGNIFICANT FACTORS IN CLIENT PERSPECTIVE

As per the findings, 9 factors including continuous managerial assistance from NWS&DB, effective relationship between NWS&DB and CBOs, effective CBO involvement in operation and maintenance phase and performance of CBOs were determined as significant under the client perspective for effectiveness of CBO. Moreover, effective CBOs' managerial level, effective stakeholder relationship, effective revenue, effective billing to collection ratio and monitoring quality of water were also identified as significant factors under the client perspective and will be discussed in section 4.2.3 since those factors were determined as significant in both perspectives.

Most of the respondents highlighted that continuous managerial assistance should be required from NWS & DB for the effectiveness of CBO. However, CBOs as well as Local Authority do not consider continuous training and development as an important aspect which can be gained through the continuous managerial assistance. Moreover, CBO as well as the community needs external support to implement such training and development programmes. Therefore, the community can be mobilized easily for those programme if such support is available.

All the respondents emphasised that the effective relationship should be there between the NWS&DB and CBOs in order to develop support service mechanism. According to model constitution introduced by NWS&DB to CBOs, the respective CBO was informed to perform at least one audit per year from a reputed institution. However, the CBOs who were not performing well, faced with negative impacts. Similarly, changing of officers is also not happening annually as expected by the constitution. It is also not practical to expect from CBOs to change officers annually as it may affect the management systems and efficiencies.

Moreover, respondents depicted that CBO involvement in operation and maintenance phase can be regarded as a significant factor since CBOs have less capacity to implement the project at the implementation stage resulting poor construction practices during the construction. For instance, if a treatment plant is omitted during planning stage, it is too expensive for CBOs and Local Authority to rectify the impacts at the operation. This leads to managerial issues between community and management authority. Therefore, there must be a strong entrance to the project to enhance the effectiveness of CBO management.

Constructing water supply schemes to up to the standards will build confidence of CBOs during operation and maintenance. However, some construction failures resulted in hardship on community during operation and maintenance stage of schemes. Therefore, high performance will be required to enhance the effectiveness of CBOs.

#### 4.2.3. SIGNIFICANT FACTORS IN BOTH PERSPECTIVES

According to the findings, it was noted that 8 factors were significant under the CBO perspective while 9 factors were identified as significant under the client perspective. Accordingly, 5 factors can be highlighted as significant under both perspectives namely effective revenue, effective billing to collection ratio, effective CBOs' managerial level, monitoring quality of water and effective stakeholder relationship. Accordingly, revenue involves the income earned by the scheme which is a basic indicator of the sustainability and effectiveness whereas the income is essential for maintaining staff, purchase tools, purchasing spare parts, pumps, pipes and chemicals. The profit was being used for the development of the scheme. In client's perspective, they always trust better revenue retains the effectiveness and existence of CBOs.

Billing to collection ratio was considered as significant since CBOs are competitive with NWS&DB in the area of billing and collection. The importance of community involvement in managing resources proves highly successful result in this type of situations. Community has to pay monthly bill to the CBO as it provides the facility to them. If the value of billing to collection ratio is more than one, it will affect for the existence of effective CBO management.

All the respondents agreed with the managerial level of CBOs factor as it enhances the effectiveness of CBO. According to the respondents in managerial level of CBO, water cuts and other information are also displayed in the office. Further, respondents accepted that less complains means availability of more managerial capacity. Further, problems will not be arisen after implementation of the project if CBO leaders can manage the organization and community and the water resource accurately.

Meanwhile, it seems that except the NWS&DB, other implementing agencies have not considered the water quality monitoring as well as the maintenance of water quality standards as the important activities. As a result, CKD (chronicle kidney diseases) problems arose due to poor quality of water. Therefore, this issue mostly impacts for the effectiveness of CBO management. Furthermore, almost all the respondents agreed on maintaining effective stakeholder relationship in order to satisfy the end users as well as to sustain optimally functioning water supply systems.

## 5. CONCLUSIONS

The lack of access to proper drinking water directly relates to health, hygiene and income opportunities of rural community in developing countries including Sri Lanka. Community engagement in rural water supply project and project management should become essential and the clients should be actively involved. It was identified that, same factors were found as both perspectives agreed including effective revenue, effective billing to collection ratio, effective CBOs' managerial level, effective stakeholder relationship and monitoring quality of water. Other than that, based on client's perspective opinions, continuous managerial assistance to be needed from NWS&DB, relationship between NWS&DB and CBOs, effective CBO involvement in operation and maintenance phase and performance of CBOs should be developed identified as most significant factors. Moreover, in CBO's perspective it was identified effective relationship of CBOs with community, turnover of trained and skilled staff on water supply and availability of skilled labours as most significant factors. As a recommendation, before implementing the project both client and CBOs essential to be consider most significant factors affect to the effectiveness of CBOs to success the overall project and for existence of the CBOs in future.

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