SUSTAINABLE WATER SERVICE DELIVERY AND MANAGEMENT APPROACH IN RURAL BANGLADESH

A.K.M. Kamruzzaman
Universiti Sains Malaysia, Malaysia
E-mail: kmasud1991buet@yahoo.com

Ilias Said
Universiti Sains Malaysia, Malaysia
E-mail: ilias@usm.my

Omar Osman
Universiti Sains Malaysia, Malaysia
E-mail: omar_o@usm.my

Abstract

Provide Sustainability of rural water supply all over the developing world is in a stake. Most of the water supply services are provided by Government organization through community management approach which proves unsustainable for long term. Government of Bangladesh completed a pilot project funded by the World Bank adopting an innovative approach of engaging private sponsors in planning, implementing and operating of their schemes commercially. 21 schemes has been implemented in rural villages of the country, which provides various level of services such as, multi tap connection, single tap connection, shared tap or stand post connection. Schemes implemented through the partnership approach among private entity and government agency in which 70% of the scheme capital cost borne by Govt. through project and remaining 30% by the community and private sponsor jointly. Private sponsors have to recover their investment through collecting monthly tariff from the connection holders within their 20 years operation period. Initial operation information shows most of the schemes have been achieved the targeted connection within very short period of operation. Revenue collected from the connection holders is able to meet the operational expenses which are the most critical sustainability factor for financially viable scheme. In depth investigation of the schemes will disclose the key success factors which led this model as a promising sustainable model for rural piped water supply in rural Bangladesh.

Keywords: Sustainability, Public Private Partnership, Rural Piped Water Supply

1. Introduction

Water service providers serving in number of institutional modes, either privately or publicly owned, operating at a local, regional or national level in developed countries (Foxon et al., 2002). However, in Least Developed Countries (LDC) like Bangladesh, providing rural water supply through private entity is relatively new. Recently Government of Bangladesh started to implement rural piped water systems in rural villages which require higher investment costs, and alternative institutional management, operations and maintenance model. A limited number of pilot piped water schemes have been put in place, mainly through Government agencies with Government or donor funding. But too expand the RPWS in the huge number of villages is not possible for Government due to lack of funding. But over the last decade due to Public insufficient funds for infrastructure development many countries invite private sector entities enter into long-term contractual agreements for invest, construct and operate utility service projects (Grimsey & Lewis, 2002). Private sector participation in service varies from simple service management contracts to Build, Operate and Transfer (BOT) contracts (Tayler, 2007). However, Public Private Partnership (PPP) in rural water supply is a new concept in Bangladesh. A few rural piped water supply schemes are implemented through PPP, which creates an avenue for channelling private fund to produce public goods and commercial management to ensure sustainable water supply. Therefore, to scale up implementing of any model seek prudent evaluation to find out the appropriate approach which is socially acceptable, technically feasible, environmentally sound and financially viable for long term sustainability of the scheme (Ibrahim, 2004). Additionally, a few empirical evidence of private sector success in managing piped water supplies in rural areas chess commercial prospects of RPWS (Kleemeier, 2010).

This paper draws on the information collected for evaluation of Bangladesh Water Supply Project (BWSPP) by external monitoring and evaluation team. It intends to evaluate the performance of sponsors in the niche sector like rural piped water with this new modality and state of sustainability of rural water supply in rural Bangladesh.

2. Background

Bangladesh is a country in which over 1000 people lives per square kilometer, ranked one of the highest population densities in the world. The rural population of Bangladesh was estimated in 2009 at 117.4 million. This corresponds to 72% of the total country population. The rural population plays a key role in economic growth of the country notably through rural urban migration where the migrants provide much needed labor to manufacturing, services and other sectors.

The national rural water supply coverage in Bangladesh is estimated as 97.4% according to the Multiple Indicator Cluster Survey (MICS) conducted by Bangladesh Bureau of Statistics and UNICEF (BBS & UNICEF, 2009)). However water quality issues, Arsenic contamination in

particular, have significantly lowered this figure to an estimated 83% (total 97.4 million people) according to MICS 2009.Whilst the total population exposed to Arsenic is about 82 million, emerged arsenic as the single largest threat to safe water service provision.

2.1 Institutional Context

The Ministry of Local Government, Rural Development and Cooperatives lead the water supply and sanitation sector in Bangladesh. It delegates its functional responsibility for the provision and maintenance of rural water supply to Union Parishads, the lowest level of elected rural local councils. This is in line with the Government of Bangladesh policy to decentralize service delivery to the local-level in keeping with its broader strategy to ensure a more demand-driven, cost-effective and sustainable approach in the water sector.

Various options have been considered for Arsenic safe water sources. Deeper tubewells connected to piped water supply systems are considered to be a safe and viable mitigation option especially in high density villages. Although the present population covered by piped water supply is relatively insignificant (SDP,2005), it is anticipated that a substantial percentage of population will use piped water supply in the near future.

While the majority of the pilot rural piped water supply schemes are developed by government agencies and operated by communities i.e. water and sanitation committees (SDP,2005), a few of the schemes are developed and operated by private sponsors/operators. Such models draw largely on the success of small scale private operators in mobilizing resources. They promote private sponsors to plan, implement and manage rural piped water schemes with a capital grant[1] to ensure access to the poor households.

The Bangladesh Water Supply Program Project (BWSPP) has piloted innovative service delivery models including rural piped water supply schemes with private sponsor involvement and demonstrated significant sector advancement. The project demonstrated rural piped water supply schemes in PPP mode involving partnerships between community and local private sponsors, private part financing and risk taking, and long term operations by local operators. A nascent small-scale private industry has emerged in rural piped water supply system.

BWSPP implemented 21 innovative PPP village piped water schemes are serving about 0.106 million people with demonstrating the successful development of innovative water services delivery models and arrangements (DPC, 2010). The project had also provided some valuable lessons for consideration in future interventions in rural water service delivery.

1.2 Project life cycles

Life cycle phases of the scheme follow the four distinct steps. These are scheme develop and plan, design, construct and operate. BWSPP is guided by a pre approved operating manual titled “Guidelines to Sponsors” which described all the steps of scheme planning to

implementation and operation. It covers the site selection criteria, sponsor selection method, scheme preparation steps, service types, financing methods, implementation modality and responsibility of different stakeholders involved.

2.2.1 Sponsor selection

NGOs, private consulting firms, or construction companies or registered co-operatives are considered as Potential sponsor for Rural Piped Water Supply scheme implementation. BWSPP invite for Expression of Interest (EOI) through publication in national dailies for selection of sponsors. After evaluation of EOI sponsor is selected for participate in project proposal preparation.

2.2.2 Scheme Preparation

Scheme preparation steps are completed by selected sponsors. It includes preparation of three reports namely; Inception reports (Pre feasibility study report), Scheme proposal part-I (Feasibility study report) and Scheme proposal part-II(Project proposal cum business plan). Sponsors are solely responsible for preparing all the reports with engaging qualified personnel.

2.2.3 Inception Report

Inception Report contains particulars of selected village/s or growth center/s, preliminary information of the scheme like description of the village/s, growth center/s, approximate number of households, socio-economic condition of the community, community interest in piped water supply, availability of power supply, preliminary base map, availability of land, approximate scheme cost, justification for selecting the village, water quality test report, CV of key personnel (emphasizing on qualification and experience in the relevant field) proposed for preparation of the scheme.

2.2.4 Scheme proposal part-I (Feasibility study report)

Preparation of scheme proposal part-I includes some field activities. It furnishes water source selection based on secondary and primary data collected through field investigation; Preparation of base map marking roads, institutions, public places, housing zones, cluster of houses, proposed pumping station on the available land, nearest power supply availability of the scheme sites. An extensive Household survey was conducted on all the household of the scheme areas to assess the socio-economic and demographic characteristics of the community which was the key factors for scheme sustainability. This social survey also measured the willingness of the community peoples regarding their attitude towards pay for services including affordability. Identification of poor and vulnerable members was recorded through survey. Assessment of water demand, identification of service levels, preliminary scheme cost were drawn. It also outlined proposed institutional framework such as Community Based Organization (CBO)/WUA) structure as per Guideline which is the representative of the community. This report formed the foundation for scheme proposal part-II.

2.2.5 Scheme proposal part-II (Project Proposal cum business plan)

The sponsor is to prepare Scheme Proposal Part - II which includes technical description of the water supply unit; detailed engineering design including cost estimate, construction program, financial plan with O & M cost and tariff projection; environmental and social impact mitigation program ; scheme management plan and institutional arrangements. In addition to the above, it also include Number of households agreed to take connections, plan for serving poor and vulnerable members, customer agreement, upfront contribution, CBO formation and service agreement. This project proposal part- II treated as a business plan for sponsor which guides the long term operation of the scheme. Financial aspects of the business plan cover cost analysis of construction and operation phases, financing plan for construction and operation phase, tariff assessment and setting , fixed assets schedule and charge depreciation thereof ,Projected income statement, Projected cash flow statement and net present value, Internal rate of return, Cost benefit analysis, projected balance sheet, breakeven analysis, sensitivity analysis. Tariff affordability analysis as vital tool for Social assessment was included in the business plan. Scheme management plan and other contractual obligations pre-fixed in the business plan. Scheme implementation to operation and maintenance all things are clearly defined in the proposal.

2.2.6 Scheme Implementation

After approval of the Scheme Proposal Part - II, BWSPP and sponsor is to sign a construction agreement defining mainly the (i) rights and responsibilities of parties, (ii) completion time, (iii) construction and supervision requirements, (iv) scheme cost, (v) grant condition and (vi) disbursement criteria. The scheme implementation is guided by the Grant agreement which set forth the long term operation and maintenance also.

2.2.7 Scheme operation and maintenance

Sponsor (NGO/Firm) are sole authority to long term operation and maintenance of the scheme. In the scheme implementation sponsors are also financial partner. The Government through project BWSPP provide 70% of the scheme cost whereas, sponsor with community manage remaining 30%of the scheme cost. In the scheme level each sponsors set up a Community Based Organization (CBO) and a scheme management team in general which includes scheme manager, pump operator. Scheme manager and pump operators are salaried employees who are employed by the sponsor. Sponsor has to meet up the operating expenses like salary of the management team, electricity bill, routine maintenance and service charge or profit of the sponsor from collecting the water tariff.

3.0 Data collection and analysis

A field survey was carried out on Sponsors of 21 schemes to find out water quality data, technical data, financial including expenditure & income data, operational and management data. In addition 21 participatory FGDs in 21 schemes were conducted to collect social and environmental information. Descriptive statistics is used to analysis of collected data.

4.0 Results and discussion

4.1 Sponsors performance

4.1.1 Proposal preparation

Project management point of view performance usually measured in consideration to time, cost and quality of the project which is implemented. Study results shows Sponsors take abnormally long period for completing the project proposals. It varies from lowest 9 months to highest 38 months with an average of 22 months. It includes project proposal preparation, submission and approval process. Data unveiled incompetency of sponsors in preparing project proposal. It is may be due to unavailability of technically skilled personnel or inadequate guidance from monitoring authority.

4.1.2 Scheme implementation

Sponsors are found vary active in scheme implementation. As per project guideline sponsors have to complete the construction works within 8 months. Sponsors completed the construction ranging minimum of 7 months to maximum of 19 months with an average of 9 months. 19% (4nos.) of sponsors completed construction earlier than planned completion period (8 months) whereas 29% (6 nos.) completed within stipulated time. Remaining 52% (11 nos.) completed the construction with little delay.

4.1.3 Scheme cost control

Sponsors controlled the scheme cost vey effectively. Among the 21 schemes 29% (6 nos.) of schemes implemented below the estimated budget. On the other hand 29% (6 nos.) sponsors completed the construction exactly within the approved budget. Only 5% (1nos.) sponsors exceeded the approved estimate which is 8% above of the estimated budget. This excellent performance of cost control is due to Output Based Aid (OBA) disbursement of 70% grant amount which ensures keen financial monitoring from project authority. More over financial participation of sponsor in scheme construction make them very conscious about financial matters and meticulously control the expenses which in turn reduce their financial burden.

4.1.3 Target achievement

Sponsors showed remarkable achievement in connecting the beneficiary house connection. With in short period of commercial operation 5% (1 nos.) scheme achieved 100% of planned

connection. 10% (2 nos.) sponsor connected more than 60% connection, 25% (5 nos.) sponsors obtained above 50% target connections, 15% (3 nos.) sponsors connected above 40% of target connections. Remaining all the sponsors are increasing their connections day by day.

4.1.4 Financial features of the schemes

Financial viability of the scheme depends on the number of house connections and corresponding revenue collections. Data collected on monthly revenue and expenses for each scheme on the month of September2010 shows 35% (7nos.) of sponsors running their scheme with profit. This is really an encouraging feature for new approach of water service delivery model in rural Bangladesh.

5.0 Conclusions

Sustainability of rural water supply is over urging issue in water supply sector. Specially in developing countries a number of different approaches are applying for obtain it. Application of PPP in the rural piped water supply is recent one. Involvement of NGO in rural water supply in scheme planning, designing, implementing and long term operation and management is in pilot phase in Bangladesh. Preliminary results showed sponsors are weak in preparing technical proposal whereas effective in scheme implementation. It is early to comments on management capacity of the sponsor as operation and management activities have to do for a long period by the sponsors. But starting achievement of their house connection target and corresponding revenue earning is note worthy. Capacity building of the sponsors and relevant stakeholders is recommended for further improving the performance of all party concerned. Success story of PPP management model for rural piped water supply may emerge it as a potential social business model in rural areas of developing countries like Bangladesh. So, well planned research is required for elaboration of knowledge in this infant sector.

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