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Public Private Partnerships for Water Supply to Urban Poor

Dehin Dharmapala & Malik Ranasinghe

Abstract: Development and expansion of infrastructure, providing social services efficiently and effectively, and better targeting of services to those in most need, are critical to alleviate poverty and provide economic opportunities for the less fortunate. Reforms using "quasi- public" contracts, commercializing public agencies, contracting out specific services to the private sector, and transferring responsibility for providing services to the private sector would be better alternatives to leverage with private financing. Small-scale entrepreneurs and urban poor communities are the focus of this paper in developing a model for a feasible strategy of private sector financing of development and operation of water services for improved efficiency and reduced wastage. The data obtained from various pilot studies of the NWSDB in the recent past are used to develop a case study of *Halgahakumbura* urban low-income settlement. The analysis shows that further subsidy is required to make the project viable. It is clear that in order to reap the maximum benefit to the economy as well as attracting competitive private service providers, the users should pay the full cost of service. If the social affordability level is inadequate, then the Government should complement user fees with carefully targeted subsidy payment, ensuring the subsidy to those in most need.

Keywords: Water Supply, Urban poor, Public Private Partnership, Social Acceptable Tariff, Breakeven Tariff, Subsidy

1.0 Introduction

Access to reliable public services is essential for reduction of poverty in developing countries. Safe water and sanitation, access to energy sources and communication, quality of education and health services are essential if developing countries are to rise out of poverty.

Sri Lanka has committed herself to achieve Millennium Development Goals (MDG) of the United Nations to reduce poverty. The goals include safe drinking water coverage that to reach at least half of her population by 2015. Accordingly, the Government of Sri Lanka (GOSL) aims to ensure access to safe water for 85% of her population by 2010, and 100% by 2025. The current coverage is only 70% and out of that, only 29% have piped water provision to their homes [8].

The investment requirements to achieve this objective of the government up to the year 2010 are Rs. 140 billion. However, public borrowing constraints are expected to limit the government contribution to around Rs. 75 billion, including donor funding [8]. Therefore, to bridge the shortfall in investment, as well as to meet the need of improved performance and increased efficiency in the sector, private sector participation in the water sector is being considered [8].

In the City of Colombo, the National Water Supply & Drainage Board (NWSDB) serves 64,700 families out of which 50% is in the category of Low Income Settlements (LIS) and is provided with free treated water for consumption with no income to the NWSDB. These settlements in Colombo City which have been provided with approximately 1600 stand posts, 1450 common bath taps and 276 toilet taps cause huge wastages of water. The total outflow of water from these outlets has been estimated as 27,000 m^3 per day, which is 12% of the City Supply and approximately twice the requirement of these settlers if they had individual water connections [9]. The NWSDB

***Eng. Dehin Dharmapala**, B.Sc. Eng., C Eng. MIE (SL), is presently a Chief Engineer in National Water Supply & Drainage Board.*

***Eng. (Prof.) Malik Ranasinghe**, B.Sc. Eng.(Hons.), M,A.Sc., Ph.D., C Eng. FIE (SL), is a Professor of Civil Engineering and presently the Vice Chancellor of University of Moratuwa*

faces heavy losses in revenue through these public water outlets annually.
The challenge therefore to NWSDB is to provide individual water connections to the urban LIS and thus reducing the huge non-revenue water (NRW) to NWSDB.

The objectives of this paper are therefore to: (1) explore the present public private partnership (PPP) concepts; (2) analyse results of the pilot projects carried out with NWSDB participation; and (3) develop an appropriate PPP strategy for Sri Lanka to provide individual water service connections to LIS in the Colombo City.

2.0 Literature Review

2.1 Public Private Partnership Contracts

Generally, a Public Private Partnership (PPP) entails contractual arrangements between a pubic sector and one or more private sector partners. Under these arrangements, the pubic sector may retain ownership of the public facility or system, but the private party generally invests its own capital to design and develop the properties. The private partner may be a nonprofit organization or a for-profit business [5].

Mihm [5] identified three general categories of partnerships with different public and private sector responsibilities and benefits associated. They are, (1) Lease/Develop/Operate (LDO); (2) Lease/Purchase (LP); and (3) Contract Services (CS).

Under a LDO partnership, the private party leases a facility from a public agency, invests its own capital to renovate, modernize, and/or expand the facility, and then operates it under a contract with the public agency [5].

The LP partnership is typically used for new construction where the private sector finances and builds a facility that it then leases from the public agency. At the end of the lease term, the public agency owns the facility or purchases it at the cost of any remaining unpaid balance in the lease [5].

The third category, CS partnership consists of two subtypes, they are; (1) Operations and Maintenance; and (2) Operations, Maintenance, and Management. Under both of these categories, the public partner retains ownership of the public facility. Under the first category, the public partner contracts with a private partner to provide and/or maintain a specific public service or system. In the second category, a public agency contracts with a private partner to operate, maintain, and manage a facility or system providing a public service and may invest its own capital in the facility or system [5].

2.2 Provision of Water Supply

The water user draws water from the distribution system for his various needs and discharge as wastewater, that part which is not lost during use. The term 'consumer' gives the impression that the higher the consumption, the better the performance of the water user. Although this may be the case for the consumer of manufactured goods to a manufacturer, it is clearly not the case for water usage [6]. This is particularly so where the demand for water exceeds the available resources or where the introduction of an additional resource to an area to augment local sources would be so costly as to be unaffordable. Therefore, service organizations throughout the world are encouraging water users to reduce their consumption to the minimum consistent with good hygiene and domestic needs. This process is called demand management. [6]

The potable water services share three basic characteristics with other utilities that make it difficult to provide them through perfectly competitive markets; large sunk cost, economics of density/scale, and massive consumption [3]. The combination of these characteristics leads to significant politicization of the sector's pricing and operations.

Water is a typical massively consumed product, and access to water is generally perceived to be more of a social and basic service rather than a utility service. Factors that increase water costs include compliance with drinking water standard, replacing and improving the water delivery infrastructure, and meeting demand growth [3]. Cost associated with meeting demand growth should be recovered through a fair capacity charge plan, under which users benefiting from increased capacity pay for it. The concept of marginal costing needs to be adopted. Recognition of water's dual role as a critical natural resource and an economic good has been growing steadily in the recent past [3].

In Sri Lanka, the water utility, NWSDB own and run all aspects of producing and selling water to the water user, except a few rural and town supply services. The GOSL controls the utility's energy suppliers and the utility itself. Now power utilities like Ceylon Electricity Board (CEB) are required to outsource, specially to buy inputs from others who can produce it more economically than the power utility itself. Policy makers now believe that effective competition protects the public against exploitation than regulation [4]. They advocate breaking up utility into components, keeping the parts that are natural monopolies under regulation and let the others operate in a competitive market. The government may wish to retain control of the utility, but not all of the utility's functions. So it can split off the non-strategic functions and sell them. Potential bidders may not have the interest in or potential to run the entire business and prefer those parts that they can run the best in size.

2.3 Expansion of Water Supply to Urban Poor

Supply of water to urban poor community requires considering different viewpoints of conventional profit making responsibilities and social welfare and small urban community oriented social development responsibilities [14]. The key issue is to find out the right balance between being a monopoly supplier of basic needs and business leadership of a customer oriented supplier of a convenience service whilst utilizing private sector participation to maximize operational efficiency.

The expansion of utility services is associated with economic development. The expansion of utility infrastructure will need certain amount of capital. Outside investors expect a return on capital. The utilities have to charge the customers a price which includes not only the operating cost but also the cost of capital. If the customers do not have the income to pay that price, then some governmental body subsidizes the service, paying to investors what the customers cannot afford to pay. Therefore, expansion of the utility infrastructure must provide enough value to the society and enough impetus to the country's development to produce income needed to pay for the expansion [4].

3.0 Theoretical Framework

3.1 General

The key decision criteria for capital investment in a project at the feasibility stage are its economic, technical, financial and the environmental feasibility. The technical feasibility is a pre-requisite for build-ability. The economic analysis is to explore whether the project can create more benefits than any other alternative including the option of not doing it. The financial analysis relies on cash flow techniques to compare and analyze the estimated benefits and costs, in terms of prevailing market prices. The market prices of an output would signal the level at which the consumer's marginal willingness to pay for an item just equals to the 'marginal cost' of producing that item. Ranasinghe [16] states that subsidies influence market price to diverge from 'economic price'.

3.2 Economic Feasibility

Economic appraisal evaluates the direct benefits and costs of the project from the society or economy's perspective. The benefit cost analysis will determine whether the project can be expected to create more benefits than option of not doing it [16].

Without the project option
There is a cost of capital for consumption (in LIS) and wastage at stand posts, operational cost of producing and distributing water, as well as maintenance of system network with no revenue generation. The net present value (NPV) equation for without project option is as follows.

$$NPV_{without} = PV (R_{without}) - PV (C_{without}) \ldots\ldots (1)$$

$PV (R_{without})$ and $PV (C_{without})$ are present value of revenue and costs for this option.

With the project option
There is an additional cost for system expansion but the cost of consumption (in LIS) and wastage is reduced due to individual connections. However additional operational cost for (water) metering is incurred. Revenue generation is estimated at the existing (subsidized) tariff. The net present value equation for with project option is as follows.

$$NPV_{with} = PV (R_{with}) - PV (C_{with}) \ldots\ldots\ldots\ldots (2)$$

$PV (R_{with})$ and $PV (C_{with})$ are present value of revenue and costs for this option.

Decision criteria
The decision criteria in performance measure for difference between with project option and without project option given as NPV_{prefer}

$NPV_{prefer} = NPV_{with} - NPV_{without}$……(3)

The recommended accept or reject criteria is to accept the option, if NPV_{prefer} is greater than or equal to zero and to reject the option if NPV_{prefer} is less than zero.

3.3 Financial Feasibility

The economically best alternative is not always financially feasible at Minimum Acceptable Rate of Return (MARR). MARR is the lowest limit for investment, and designed to make best possible use of limited funds [16]. Therefore, financial feasibility is not the important criterion for the public sector utility in the decision to invest in an infrastructure.

In the process of financial planning, appropriate financial planning procedures and financial assessment methods should be developed in order to evaluate the viability of a project and come up with the best scenario. Parameters are usually kept constant in the financial feasibility analysis. Unlike parameters, variables vary with different scenarios. Through trial and error, the best variable mix that comes up with the best result can be determined [2].

In practice GOSL subsidize the water supply sector to offset the loss of revenue mainly due to low domestic tariff. Ranasinghe [16] stated 'Value–for-Money' perspective could be used to determine what public sector expenditures have to be recaptured through when a user pay approach is used.

Methods for evaluation of financial feasibility are as follows.

Internal Rate of Return (IRR)
The procedure in IRR Method is to find out a rate of discount that will make the present value of cash inflows for an investment equal to the present value of the cash outflows required by the investor. The IRR represent the highest rate of interest that an investor could afford to pay without loosing money if the entire fund to finance the investment were borrowed and the loan was repaid by application of the cash inflows from the investment as they were earned.

Debt Service Coverage Ratio
The Debt Service Coverage Ratio (DSCR) is used to evaluate the scenarios. The DSCR is defined as follows.

(DSCR) = Earnings (Money available to pay Debt)/Debt (principal & interest payment)

DSCR shows the private operator's ability to pay debts. In order for cash generation to cover the debt service, this ratio should be greater than 1. Higher the DSCR, the better is the ability of the private operator to pay the debt. DSCR influences the willingness of bank to loan money to the private operator.

Subsidy Percentage and Subsidy in Terms of Tariff
For any alternative, public or private sector, that will procure an infrastructure project on the basis of value-for-money perspective, the government will have to pay a subsidy, which is estimated as an equal annual amount that is necessary to break even.

$NPV = PV(R) - PV(C) + PV(S) \geq 0$…….(4)

$PV(R)$, $PV(C)$ and $PV(S)$ are present values of revenue, costs and subsidies for this option.

Even though the present value of the future revenue stream will change with the different discount rates, and as the present value of annual cost and subsidies will also change with the corresponding discount rate, the percentage of the subsidy required to break even will always remain the same for a set of values, irrespective of the discount rate [16].

$$\text{Subsidy } \% = \sum PV(S) / \sum (PV(R) - PV(C)) \quad \ldots\ldots(5)$$

4.0 Case Study

4.1 Background

The case study on urban water supply is developed using base data of various pilot studies of the NWSDB in the recent past. Data for providing a distribution system with an individual water supply connection are obtained from the Pro-poor Public-Private Community Partnership (PPPCP) [10, 11]. Data for operational data are obtained from the

Study on the Project for Reduction of NRW in Greater Colombo Area (SAP) [9, 12] and water production data are obtained from the study of Special Assistance for Project Formation (SAPROF) on Kalu Ganga Water Supply Scheme (KGWSS) [13].

Both KGWSS and PPPCP are on going projects and therefore sample data for this study were selected appropriately.

The Preferred Concept

Treated water would be sold to the private entity at one central point which in turn would be distributed among the beneficiaries in LIS thus recovering the income lost at the stand post to the NWSDB while improving the efficiency of services at individual household level.

Small operators working with the informal sector may be suitable for running the parts it is best suited for. Nevertheless, a user paid sustainable system with better-coordinated stakeholders is the most important challenge to the success of the project.

The private party suggested in this proposal is not the community-based organization which is interested in community development but the small-scale entrepreneur who may be profit oriented.

Bulk Water Supply

The base data from Kalu Ganga Water Supply Project for production of water, actual operational and maintenance costs of Ambatale Treatment Plant and costs of the entire Greater Colombo regional operations are analysed to assess the bulk supply costs.

Distribution Area

The pilot project covering *Halgahakumbura* non-upgraded shanty settlement in District 4 – *Borella* of CMC was selected for the case study. It is located in *Wanathamulla* within CB-2 area of Colombo City Operational Unit of Regional Support Center of Greater Colombo.

Assumptions based on previous studies, comparing with current operational performance used in the case study are given in Table 1.

Table 1 - Basic Assumptions for the Case Study

Consumption Pattern of Households Outside LIS &Households Within LIS - 2004

Average Consumption Outside LIS	18 m^3/month
Average Consumption Within LIS	16 m^3/month

Operational Details & Performance Indicators - 2004

Unit Operational Cost	5.86 Rs./ m^3
Unit Revenue	5.66 Rs./ m^3
Debt age (with Private Sector Efficiencies)	3 month

NRW Composition - Prediction Based on Past Projects

NRW for Bulk Supply (System Leakage)	28.94 %
NRW for Distribution within LIS	7.74 %

Cost of water analysed in three scenarios and results are given in Table 2a and 2b.

Case 1- Full cost recovery at 12% discount rate

Case 2 - Subsidy loan (35% only) recovery

Case 3 - Full cost recovery at Weighted Average Cost of Capital (WACC) at 4.2%.

The Scope of Capital Work

The procuring of pipes and fittings for a distribution network and laying of a pipe network are expected to be of three months duration each and connections will be completed in 10 months thereafter. Renovation of roads will be completed within the first year. All existing minor distribution has to be abandoned or incorporated in to the new system after transferring the existing water connection to the new distribution network. One stand post out of 6 will be allowed for catering to the poorest of the poor and the balance stand posts shall be removed proportionate to the connections provided.

Table 2a - Water Cost at Consumer, on completion of stage I work

(Unit Rs./m^3)

	Case 1	Case 2	Case 3
Cost for infrastructure	36.21	12.67	18.87
Rate for bulk supply with 11% NRW*	40.56	14.2	21.14
Rate for distribution with 18.76% NRW*	43.37	15.18	22.60
Rate for Operation & Maintenance	5.86	5.86	5.86
Rate for additional meter reading cost	0.53	0.53	0.53
Total cost at consumer	49.76	21.57	28.99

Stage I, with producing 120,000 m^3/day in 2006
* for bulk supply only leakage and pipe cleaning were included; for distribution stand post, meter defects, estimated billing & illegal connections were included

Table 2b - Water Cost at Consumer, on completion of both stage I & stage II work

(Unit Rs./m^3)

	Case 1	Case 2	Case 3
Cost for infrastructure	28.92	10.12	15.07
Rate for bulk supply with 11% NRW*	32.4	11.34	16.88
Rate for distribution with 18.76% NRW*	34.63	12.12	18.05
Rate for Operation & Maintenance	5.86	5.86	5.86
Rate for additional meter reading cost	0.53	0.53	0.53
Total cost at consumer	41.02	18.51	24.44

Stage II, with producing another 120,000 m^3/day in 2010

Social Affordable Tariff (SAT) Level
The water tariff should be structured to recover the full, reasonable costs of service and ability of different economic categories of the community to pay, ensuring that no person is precluded from benefiting from service by their economic circumstance [6].

In principal Social Affordable Tariff (SAT) is the limit beyond which tariff should not be raised. There is no international standard limit and commonly used measure is that the proportion of annual household cost of water and sanitation services should not exceed 5% of income [13]. Average consumption is 16 m^3 per month in Halgahakumbura. Therefore, SAT could be set at Rs. 12.50, considering an income level of Rs. 4000/-

Break Even Tariff (BET) Level
The Break Even Tariff (BET) is the tariff that enables investor to recover all costs and earn the rate of return expected.

If the BET is above the SAT, the GOSL will need to subsidizs since the tariff will be constrained by the SAT. The amount of subsidy that fully recovers the cost is quantified from the difference between BET and SAT.

Minimum Acceptable Rate of Return (MARR)
Ranasinghe [16] stated that the MARR or the required discount rate typically consists of a real rate of return, compensation for inflation or depreciation of money, a premium for a risk, a premium for loss of liquidity, and payment for administration cost. MARR is estimated as 20% in this study.

4.2 Evaluation of Project Viability

In GOSL / Utility Perspective
The option of doing the project compared with option of not doing it. The economic appraisal revealed that the project would create more benefit. The details are shown in table 3.

In Private Service Provider's Perspective
Six representative cases were modeled in this study with variables been kept constant while slightly changing the parameters. The capital cost recovery for bulk supply was considered on lending rate of GOSL of 12% for full cost recovery (not considering the 50% grant). Different user pay scenarios were analysed by changing the debt to equity ratio, discount rate and debt repayment period. Through trial and error, the best variable mix that comes up with the best result of subsidy in terms of tariff can be determined. The results are given in table 4. The financial appraisal revealed that private financing is not feasible unless the GOSL provide further subsidies to make the project viable.

Table 3 - Details of Economic Evaluation on Viability (unit Rs. '000)

Year	O&M Cost without Project	Cost for the Project	O&M Cost after Project	Revenue from Connections	Revenue from Operation	NPV at 20% MARR
2003	3734	2284	1788	1672	43	1377
2004	3977	220	3704	233	488	645
2005	4235		3941		552	588
2006	4510		4195		585	521
2007	4802		4467		620	461
2008	5115		4757		657	408
2009	5447		5065		697	361
2010	5801		5394		739	320
2011	6178		5743		783	283
2012	6578		6114		830	251
2013	7005		6510		880	222
2014	7459		6931			71
						5508

Table 4 - Summary of Parameters & Results of Financial Evaluation

	Case 1	**Case 2**	**Case 3**	**Case 4**	**Case 5**	**Case 6**
Para meters						
Debt to Equity Ratio	60/40	60/40	60/40	60/40	60/40	50/50
Debt arrangement						
Interest Rate	12%	12%	12%	12%	12%	12%
Grace Period (years)	2	2	2	2	2	2
Debt Repayment Period (years)	8	8	8	15	15	15
Return on Equity	10%	10%	10%	10%	10%	10%
Discount Rate	20%	20%	20%	20%	15%	15%
Concession Period (years)	12	12	12	20	20	20
Inflation Rate	6%	6%	6%	6%	6%	6%
User Pay Tariff	BET	Existing	SAT	SAT	SAT	SAT
Results						
Subsidy Percentage		53.28%	54.01%	53.18%	53.61%	53.69%
Govt. Subsidy (12 years) (Rs. '000)		79,945	66,308	69,974	68,961	68,850
Govt. Subsidy (20 years) (Rs. '000)				158,013	155,723	155,473
Subsidy in terms of Tariff (Rs.)	60.25	57.57	47.75	50.39	49.66	49.58
Debt Service Coverage Ratio	0.62	0.60	0.62	3.44	2.32	2.08

4.3 Limitations

The water which is non-producing consists not only the quantity wastes at stand posts but also the system leakages in distribution, illegal connections etc. Since GOSL subsidizes, non--revenue (producing) water that is wastes it would lead to a reduction of the cost as well as that subsidy for that waste. The reduction in cost to GOSL due to improved health and sanitary conditions, the effects on alleviation of poverty and economic development that would result in these LIS are not incorporated in this analysis.

However, the drainage problems would increase along with the increased supplies of water. Poor drainage systems may contribute to the emergence of breeding sites for mosquitoes and flies. With more water sanitary conditions may deteriorate and the anticipated health benefits might not materialize.

The ability of the utility to supply an un-interrupted 24 hour supply with adequate pressure could affect the ability of the concessionaire to achieve his revenue targets. Therefore, operations of water supply shall be adjusted to address such issues.

In considering the question of affordability a distinction need to be made between willingness and unwillingness to pay. It reflects consumer preference about purchasing a quantity of goods or service related to price. As prices rise, particularly for essential goods and services, consumers may demonstrate a reluctance or unwillingness to pay. A price responsive customer, whether rich or poor, might reduce water usage in response to the rate increase, when expected to pay full cost [3].

Some of the stand posts shall be maintained for poorest of the poor and the common toilet taps shall be kept until such time that the individual toilet system become affordable and implemented with new individual water supplies. Charging the concessionaire for 'Free Supply' will force him to encourage more connections to reduce his free supply and reduce the wastage, which is estimated at 15%.

The operational efficiency may be affected due to the nature of the LIS, specially the size, to utilize the meter reader effectively. Therefore, zones that consist of a few similar LIS are suggested to improve the effectiveness of operational staff of the concessionaire.

5.0 Discussion

5.1 Subsidy Requirement

In the Greater Colombo area, although the middle and high-income people who can generally afford to pay more, enjoy potable water supply to the door step at subsidized tariff, the urban poor living in low-income settlements depend on stand posts at the way side, but receive water free. The entire population of the country contributes to subsidize about 700,000 water connections. The Government has taken responsibility to ensure the public (most of who can afford) the benefits through its 50% capital subsidy for water supply. The NWSDB managed just to cover operational costs while service coverage for last 30 years was only 29%.

The utility shall generate an adequate and stable stream of revenue to cover operation & maintenance, depreciation, debt servicing and a regulated profit or surplus for future system expansion in view of increasing demand. The present tariff for bulk supply is set at Rs. 7.00 per m^3, while the estimated production cost is Rs. 21.14 per m^3 (with the 50% grant - stage I of case 3) and the operational cost worked out is Rs. 5.86 per m^3. The domestic tariff of NWSDB just covers the operational costs only. Artificially low prices would lead to inefficient water use and inaccurate public perceptions of about the cost of water. An average household in LIS consuming 16 units a month pays a water bill of Rs.83/50 where as the cost of 16 units to the NWSDB is a staggering figure of Rs. 464/=.

The Sri Lankan consumer generally pays far less for water services than for electricity and telecommunication services. In NWSDB tariff structure there is heavy 'cross subsidy'; commercial consumers pay more than the 'real' cost whilst domestic consumers pay less. However, for low-income communities, higher prices may strain household budgets. 'Subsidies should only be used to the extent that they actually benefit those who need them. Subsidies should have been designed to meet lifeline requirements of water for the target user group. As at today, with present pricing policy, the subsidies are appropriated by those who do not actually need them, in effect under-pricing the water and promoting excessive use. [3].

Ranasinghe, 1998 [15] developed a methodology based on 'financial risk analysis' to analyze viability of private sector participation (PSP) in infrastructure projects in Sri Lanka. He pointed out that maximum benefit could be reaped from private sector participation, when users pay the full cost of service by withdrawing the government subsidy completely. Therefore, government should review its policy on pricing of service (water in the case study) with reasonable increases in tariffs.

Wanigasundara, 1996 [18] analysed the production system and the distribution systems of urban water supply sector, estimating subsidy percentages of different procurement options at prevailing subsidized tariff at that time. He concluded that PSP is less viable on the production of water while PSP (using BOO/BOT arrangements) was suggested for the distribution of water. This seems to be due

to a heavy cross subsidy imbalance in domestic tariff and commercial tariff of the NWSDB tariff structure. Richard, 1997 [14] stated that average household consumers, who form the majority, have not had their tariff increased even in line with inflation for last three decades, irrespective of whether the initial tariff could be justified.

5.2 Out-put Based Consumption Subsidies in Chile [1]

In late 1990s, Chile privatized provisioning of urban water supply. Before reform, tariffs were well below the cost. After reform, despite substantial efficiency gains, concern remained about affordability of services. To guarantee adequate and affordable service for low-income households, they introduced individual means-tested water consumption subsidies, rather than geographic or universal subsidy. Although the public authorities determined how the subsidy is applied, mostly the private companies deliver the service under a scheme with built-in incentive to ensure cost-effective service delivery by the companies and low wastage by the customers.

To obtain a subsidy, a household must apply to its municipality, which determined its eligibility mainly based on a scoring system. It produces a score for each household on a personal interview at the individual's dwelling. The questionnaire includes 50 questions on general information, identification of household members, living conditions, crowding condition, health condition, comfort, occupation and income, ownership of durable goods and other socio economic indicators. The score is valid for a period of two years, and besides water subsidy family subsidy, free health subsidies etc. also use these scores.

The subsidy scheme has several incentive-based features. First, the subsidy is expressed as a percentage of the household's bill. It is therefore a price reduction per cubic meter consumed. Second, the household must pay the full tariff for consumption above the limit of 15 cubic meters a month. The fact that the households have to pay a fraction of the bill even when their consumption does not exceed the 15 cubic meters helps to maintain good payment habits among households. It also preserves private operator's incentive to improve commercial efficiency, since their income depends in part to the payment of this remaining charge. In addition, the additional eligibility requirement of not having payments arrears has led to an improvement in household's payment records.

The subsidies accrue to households, not to private operators, and the amount of resources distributed is independent of their operational efficiency. The private operators should be out-of-the-way with respect to the subsidy scheme and receive no financial benefit other than the reduction of payment arrears by poor households.

5.3 Cost–Covering Water Tariffs in Guinea [1]

Guinea entered into a lease contract for water services in its major towns and cities in 1989. The government was committed to cost recovery for the services, but wanted to avoid major tariff shock at the beginning of contract. The Government subsidized a declining share of the private operator's verified supply costs while the water tariff was raised until it covered the cost. This arrangement jump-started the move towards cost recovery and more sustainable water services giving credibility to reform in the region and during a time in which there was little experience with private provision of water services while also setting a time limit on subsidy commitments.

This subsidy was designed to achieve two objectives. First, the subsidy sought to preserve the operator's incentive to improve performance. Second, in the early stage of the contract the subsidy was meant to protect the private operator against the foreign exchange risk.

6.0 Conclusion and Recommendation

The aim of this study was to establish the viability of PPP as a procurement method to provide individual water service connections to urban poor communities in Colombo City, analysing the results of the pilot projects carried out in recent past and applying the identified PPP concepts. The prime objective of PPP Strategy for providing water supply to Urban Poor is to reduce water wastage and increase population coverage thus reducing public health hazards and better quality of service. The secondary objectives are to ensure higher operating efficiency and to finance the system without or with minimum public subsidies or guarantees.

PPP have the potential to achieve both commercial and social objectives in providing infrastructure for urban poor. Such partnership can offer government authorities access to

resources – investment and manpower in this case and government authorities can offer private sector access to new market as service providers. It was clear that provision of individual water service connection to urban poor in Colombo City could bring high economic benefits, even though the recovery of full capital cost from beneficiaries is particularly difficult.

Development of a strategy for full cost recovery while giving the benefits of public subsidies not universally but to the urban poor, those who need them is essential for water sector development. It will create a competitive environment for investment through private sector participation. Research in to this area is anticipated in the future focusing on the development of such a strategy.

Suggested Subsidy Structure

Abolish present universal tariff structure and introduce Out-put based tariff structure. The household shall apply to the Municipality and Municipality shall request and receive subsidy funds or coupons as required from the relevant Ministry. A score system shall be introduced and will be on a personal interview at the individuals' dwelling based on a well structured questionnaire. A subsidy shall apply up to 15 cubic meters expecting to reduce overuse. No arrears in payments shall be a pre-requisite and subsidy coupon shall be issued for amounts calculated after producing the payment receipt for the current month. Dry-rations are suggested to be issued through co-operative societies for these coupons. Sufficient fund shall be also allocated timely, to make available the goods at co-operative shops.

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