INSTITUTIONAL OPTIONS IN THE MANAGEMENT OF URBAN WATER SUPPLY UTILITIES

By

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Abstract

Five million people or over a quarter of the population lack access to safe drinking water in Sri Lanka today. Translating the target of universal coverage into an implementable reality demands an increased access to services which does not necessarily require direct provision of services by the state. Current water supply sub-sector reform needs to focus on alternatives to public financing as a way to minimize the inefficiencies of public sector management and to discontinue the need for external borrowing. The development of a highly capital intensive water related infrastructure requires the promotion of public-private partnerships to finance and operate water utilities to meet the overall demand for water for domestic use.

Reviewing the worldwide experience, this paper provides an overview of the main features of the diverse institutional options for the management of urban water utilities. They are grouped into five broad categories. Can these experiences be replicated in the Sri Lankan context? The evidence rejects any exemplary model or standard option as perfectly reproducible. This paper argues that Government can develop successful public- private partnership arrangements only if capable institutions, effective policy frameworks and clear operating systems are in place to manage the transition and by downsizing its role as owner and operator of facilities.

Sector Setting

Sri Lanka is rapidly moving away from an inward-looking, highly regulated, public sector led approach to development. The water supply sector is no exception to this trend. Indeed, the institutional reform process which strives to reduce governmental involvement in favour of greater public-private partnership arrangements for the development of water related infrastructure will be the focus of attention of policy makers in the new millennium.

Access to safe drinking water is currently limited to 71% of Sri Lanka's total population (Table 1)[1]. An estimated one third of the population or 5.4 million people do not have access to adequate drinking water. The time-bound goal to provide "safe drinking water for all by the year 2010" declared in the late 1990s has now been postponed to 2025.

Table 2 gives the forecast of population and safe water coverage made in the year 2003. The given forecast is to be achieved through pipe borne water supply projects to be implemented by the National Water Supply and Drainage Board (NWSDB), 3rd and 4th ADB projects in the rural sector, and by other sector agencies and NGOs including individuals.

[1] Safe water is defined as water extracts from a safe drinking source. It includes treated surface water and untreated but uncontaminated water such as from springs, protected dug wells and protected boreholes.

Table 1: Safe Drinking Water: Percentage Coverage (2005)

Pipe borne water supply	28.4
Hand Pump/ Tube wells	7.7
Protected dug wells	34.1
Other means (eg. Rain water harvesting)	1.3
	71.5

Source : *Based on unpublished data, Corporate Planning Division, National Water Supply and Drainage Board*

Table 2: Forecast of population and safe water supply coverage

Year	Population (in millions)		Safe water coverage			
	Urban	Rural	Urban (million)	%	Rural (million)	%
2001	3.2	15.2	2.24	70	8.66	57
2004	4.7	14.2	3.78	80	9.36	66
2005	5.4	13.8	4.50	84	9.64	70
2010	6.9	13.3	6.9	100	10.00	75
2015	9.6	11.7	9.6	100	9.97	85
2025	15.5	8.3	15.5	100	8.33	100

Source: *NWSDB, 2003 (unpublished)*

Within two decades, most inhabitants in the island will live in urban areas. The share of Sri Lanka's urban population which stood at 30% in the year 2000 is expected to reach 45% by 2015 and 65% by 2030[2]. This increased urbanization will contribute to an exponential growth in the demand for water in urban areas with depletion, wastage and pollution of water resources threatening the sustainability of socio-economic development. One of the most daunting issues of the 21st century will be the question - how to finance a higher level of water infrastructure - in terms of service provision to a backlog of five million un-served people, rehabilitate and maintain existing structures to improve service provision to the currently under-served 13 million and to extend new service to an additional 4 million people - the population increment by the year 2020?

Cost Recovery and Investment Requirements

Drinking water sector as a natural monopoly, has some special characteristics. It is highly capital intensive and most of its assets are below ground, making O&M a difficult task. As it is not economical to have two suppliers running a line in the same street, competition in the traditional sense amongst operators is difficult. The water supply and waste water sectors are the most difficult for private operators because the ratio between the capital stock in these systems and the annual level of tariffs is much higher than for telecommunications and electricity. Nonetheless, infrastructure development in drinking water is an emerging area of interest, representing a growing opportunity for partnership in public and private sector investment and management.

[2] Government of Sri Lanka, Ministry of Housing and Urban Development, Report of the Presidential Task Force on Housing and Urban Development , 15 May 1998, p 4 (Mimeographed)

The direct provision of drinking water involves the abstraction and purification of supplies from surface or underground sources; its conveyance, storage, pumping and delivery through transmission mains and finally the distribution through a piped network for connecting the supply to the consumers. The cost of providing these activities falls into the following categories:

I. Capital Cost
   - A. Cost of Construction
   - B. Rehabilitation and Replacement Cost: to ensure that the existing facilities are well maintained, rehabilitated and renewed.

II. Recurrent Cost
   - A. Cost of Operation :
     Recurrent outlays in supply, treatment and distribution : staff, electricity, chemicals etc.
   - B. Cost of Maintenance :
     To ensure that the works are efficiently managed throughout their life

Investment requirements are sizable and exceed the combined financing capacity of the government and the external support agencies. Current capital investment for new schemes and rehabilitation is provided by Government either from its own resources, i.e. the General Treasury's Domestic Fund or from donor provided and on-lent funds, i.e., the General Treasury's Foreign Aid. The cost of this capital will increase as Sri Lanka has moved away from low income status to lower-middle income, disqualifying the country for concessionary loan financing. In 1997, a rough estimate of the total investment requirement for the provision of safe water to achieve universal coverage was placed at around Rs. 85 billion upto the year 2010. Thus, the annual funding requirement for capital investment in the sector was around Rs. 9 billion. As Table 3 reveals, during the period 1994 to 2000, the government has maintained an investment of around Rs. 3 billion, which is a third of the funding requirement. This means trebling the level of funding for capital investment. Table 3 shows the actual investment by the NWSDB during the period 1990 to 2005. Can such a large amount of public and private capital be mobilized? Will this target of safe water for all be realized by 2020 or do we have to realistically look to a more distant horizon?

Traditionally, state has been the sole provider and sole investor in the water supply and sewerage sector. Despite a mounting debt service commitment, the government's capital investments in the water supply infrastructure development had been unprecedented during the past few years. However, is it viable or desirable for the government to continue to be the sole investor and direct service provider without any cost recovery from the consumer clients? It is our view that the present levels of government grants, loans and subsidies to these sectors should be progressively reduced making way for contributions from the user communities. This underlines the need for evolving suitable cost sharing/recovery policies which will help in reducing wasteful use of resources. The users should undertake increasing responsibilities for the sustainable management of the infrastructure facilities by way of meeting the cost of operation, maintenance and finally replacement of facilities at the end of their useful life span.

Increasingly, the subject of private funding of water supply operations and management and the capital investment in system expansion has assumed great importance around the world. In Sri Lanka too, the necessity has arisen to explore the possibility of involving the private sector in the management and operations of water supply systems to expand system coverage, improve service levels and increase

operating efficiencies. Such partnership arrangements between the public and private sectors herald a promising new approach to attract the much needed capital investment, while at the same time reducing the burden on the public budget.

A first step towards meeting universal access to water would be to workout the necessary institutional, economic and management strategies necessary for meeting them. Private financing of water utilities is a controversial issue with many political groups and trade unions advocating that there should be a detailed examination of public sector alternatives. Key issues and sensitivities in this debate include whether private finance is either necessary or economically preferable to public financing, relative operating efficiencies of potential public and private operators and the question of clear transparent processes for transaction negotiation.

The context described above has many implications for reform of the water supply sector. The role of government (both central and local) needs to change from that of service provision towards policy direction and regulation. Yet, there is always resistance to change. Those at the centre are reluctant to give up what they see as their territory or the birthright. The privileges of giving new connections and hiring staff are lost once the systems fade out of the public domain.

Table 3: Capital Investment (1990 – 2005) NWSDB

Year	Pipe-borne system only (Rs. Million)
1990	1,209
1991	1,522
1992	2,619
1993	2,352
1994	2,888
1995	3,767
1996	2,810
1997	2,370
1998	2,509
1999	4,193
2000	3,393
2001	4,494
2002	8,159
2003	10,271
2004	12,747
2005	12,647

Source : *National Water Supply and Drainage Board (NWSDB), Unpublished data*

What accounts for optimum performance requires an understanding of the institutional arrangements for providing urban water supplies and the incentives governing their delivery. The institutional approaches for water utility management around the world have tended to take five broad forms. An examination of these diverse approaches would help advance the policy dialogue and mobilize public and political support for a fundamental policy change for evolving and structuring a private sector participation approach suitable for Sri Lanka. The prevalent institutional modes vary in a continuum from utilities that are totally within the public domain in direct public management to a totally privately owned and managed system in the divestiture model. The five broad institutional categories are as follows:

1. Direct Public Management (Local Government Model)
2. Public Corporation (Water Board Model)
3. Public Water PLCs (The Dutch Model)
4. Public Private Partnership (The French Model)
5. Direct Private Management (The British Model)

In the remainder of this article, the salient features of each institutional model are briefly explained to stimulate thought on their appropriateness to Sri Lanka and derive lessons for restructuring of water utilities.

1. Direct Public Management (Local Government Model)

Traditionally, direct state provision had been the norm for drinking water. Its supply had been relegated to local government as one of its core services. A public sector model, widely acclaimed is Stockholm Water which is municipally owned. It covers a population of 1.5 million with a comprehensive water and sewerage service.

In direct public/local government management, the water utility is owned and operated by the local government body. In Sri Lanka, by virtue of the statutory provisions in the Municipal Councils Ordinance, the Urban Councils Ordinance and the Pradeshiya Sabha Act, the Local Authorities are empowered to provide local water supply services for the benefit of persons residing within their areas of jurisdiction. This includes the responsibility to recover cost through user charges to fund service provision. The financial budget of the utility is part and parcel of the municipal or local fund and does not enjoy any autonomous status with respect to the water utility activities.

All water supply schemes owned and operated by Local Authorities suffer from poor cost recovery and do not generate adequate financial resources for capital investment. Further, they are generally in arrears in collecting their legitimate revenues such as water rates and assessment rates for capital investment. This necessitated the establishment of a water supply and drainage sub department under the Public Works department. It functioned as a division under the Ministry of Local Government in 1965. It gained a full departmental status in 1970 under the Ministry of Irrigation, Power and Highways and remained so until 1975. Until the establishment of the NWSDB in 1975, local government bodies were the sole authorities for providing water supply through municipal undertakings. Yet, most local authorities do not have the resources to engage in infrastructure development, operation and maintenance and hence require external support. Capital investment for the infrastructure for these services, particularly, in urban areas has largely come from the central government budget.

For some time, a central tendency undermining local government assumed several forms. One form is straightforward transfer of functions from local authorities to Government Departments. Another form consisted of transfer of undertakings to *ad hoc* bodies, subject to varying degrees of central control[3]. This transfer of functions has arisen due to several defects in the structure of local government. One is that there are many local government bodies, both urban and rural, which are too small in terms of area, rateable value or population to provide an adequate base for existing local government services. Secondly, the present structure does not provide for effective performance of services requiring large areas of planning. Consequently,

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3 In 1966, Prof. Robson described the profound malaise affecting the system of Local Government in UK. He showed how successive Governments have weakened local government by transferring functions to Central Departments or to Public Corporations. See William A. Robson, **Local Government in Crisis** London: George Allen and Unwin Ltd. 1966.

functions requiring planning on more extensive areas, involving the area of authority of several local bodies have been entrusted to corporate bodies.

Let us consider the case of the four municipalities around the commercial and administrative capital cities in the country. With regard to the Municipalities of Colombo, Kotte, Dehiwala-Mt. Lavinia and Moratuwa – each unit is far too small to provide the range of facilities, water supply, electricity and solid waste disposal required by the electors. The result had been the creation of statutory boards precisely because the local authorities were not capable of continuing with an efficient service – operate treatment plants, reticulation systems, billing and cost recovery.

2. Public Corporation (Water Board Model)

This is a management mode where a water utility operates as a corporate body, an organization with a public dimension and an enterprise dimension. Some of the diverse terms used to describe such a utility are water board, corporation, authority or parastatal. Established at the behest of external agencies, such as the World Bank, the National Governments grudgingly complied with donor covenants by changing the legal status of the local government water utility. It enjoys an autonomous corporate status conferred on it by a legislative enactment. In the 1970s and 80s water supply services under central and local government jurisdiction and operation were corporatised, mainly in Asia and Africa.

Sri Lanka's National Water Supply and Drainage Board (NWSDB) was established in 1975 as a public authority to develop, plan, design and manage larger water supply systems which extend beyond the jurisdiction of a single local authority. The NWSDB operates on a nation wide scale. As the lead agency for planning, designing and implementing of urban and rural water supply schemes, providing technical assistance and service to local authorities, the board is empowered to take over existing systems from local authorities under voluntary or compulsory transfer order. The general policy, however had been for the Board to own and manage the larger schemes, whereas in certain instances the production of water remains with the NWSDB, the local authorities purchase treated water in bulk and perform the retail sales.

In Sri Lanka, consumers were metered for their supply for the first time during the early eighties followed by billing in 1983. The NWSDB covers about 75% of the more than 500 piped water supply schemes while the total number of connections stand at nearly 500,000.[4] Currently, it operates 275 water supply schemes and covers 26.5% of the total population with pipe borne water supply systems and 11.7% of the population with hand pump tube wells.[5] Proceeds of systems in surplus (metropolitan) are used to cross-subsidise systems in deficit (rural). Thus, all systems are trapped in a vicious cycle of poor service provision.

Service indicators for ten selected Asian cities are given in Table 4. Accordingly, Colombo Water Supply System covers only 58% of the service area and has around 50% non revenue water. The selected service indicators for ten Asian Cities in Table 4 show clearly the management deficiencies in high non-revenue water and unaccounted for water (physical water losses). Although the water availability for the Colombo city is given as 22 hours a day this figure masks enormous disparities.

[4] National Water Supply and Drainage Board, Corporate Planning Division, Management Information Report, Septembr 1999, p.1.

[5] NWSDB, Corporate Plan, 2003-2007, p.7.

In respect of all the water supply schemes operated by the Water Board, only one third has the capacity of providing a 24 hour supply.[6]

Table 4 : Selected Asian Cities
Service Indicators for Water Supply, 1995

City	Service Coverage	Water Availability (h/d)	Per Capita Consumption (1/c/d)	Average Tariff (US$/m³)
Colombo	58%	22 hrs	165	0.144
Singapore	100%	24 hrs	183	0.553
Kuala Lumpur	100%	24 hrs	200	0.342
Manila	67%	17 hrs	202	0.232
Karachchi	70%	1-4 hrs	157	0.091
Kathmandu	81%	6 hrs	91	0.141
Delhi	86%	3.5 hrs	209	0.034
Dhaka	60%	15 hrs	139	1.119
Bangkok	82%	24 hrs	265	0.313
Male	100%	24 hrs	16	4.860

Source : *Mcintosh, Arthur C. and Yniguez, Cesar E. (eds.)* ***Second Water Utilities Data Book, Asian and Pacific Region,*** *Manila: Asian Development Bank, 1997*

Notes: 1. 1/c/d = litres per capita per day
2. Average Tariff (US $/m) = $\frac{\text{total annual billing (US\$)}}{\text{total annual consumption (m}^3\text{)}}$

Table 5 shows the number of hours of water service per day for all the Water Board's schemes. It tells the story that half the schemes provide only less than 12 hours of service. This is the result of a policy of appeasement by extending service beyond the original design capacity of a scheme which only adds to the frustrations of the newly added as well as the originally connected consumers. Moreover, this exposes the consumers to a high health risk from contamination entering the piped network during vacuum conditions of no flow.

Table 6 compares a few efficiency indicators of ten Asian cities. Given the low coverage and water availability, a high NRW and UFW for the Colombo city shows a lack of disciplined management. Low investments in operation and maintenance of the systems have led to severe deterioration of these assets. Because of this overdue maintenance, around 30 percent of the drinking water is currently leaking away. System leakage form a major part of the high, unaccounted for water figure-a wastage we can ill afford. Operating costs are high with low staff productivity at 7.3 employees per thousand.

6 Report of the Presidential Task Force on Housing and Urban Development, 1988, p.19.

Table 5: Level of Service in terms of duration of supply (Hours of Supply – Pipe borne schemes)

System	Target 2006 (hrs)	Status as at end 2nd Quarter2006 (hrs)
Colombo	8-24	8-24
Jayawardenapura	24	12-18
Kandy	24	18-24
Matale	24	24
Dehiwala	18-24	18
Moratuwa	18	12-18
Gampaha	24	18-24
Matara	18-24	18-24
Kalmunai	18-24	6-24
Anuradhapura	24 in center area, but 18-24 in outer areas	18-24
Ratnapura	24	24
Galle	18-24	18-24
Kurunegala	12-18	12-18
Bandarawela	6-12	6-12
Batticaloa	0-6	2 (Batticaloa) 4 (Kattankudi)
Negombo	10	24
Bope-Poddala	24	24
Killinochchi	18-24	18-24

Source: National Water Supply and Drainage Board (NWSDB)

People expected significant performance improvements from water boards. But generally, the achievements were disappointing. The defined social objectives of water boards conflict with commercial objectives. A public corporation is managed by a Board of Directors appointed by a government minister. The divergent orientations of the kind of people who get appointed to public enterprise boards sharpen the cleavages in regard to questions of managerial autonomy, commercial efficiency and public interest.

Service as a Board member is often seen as a way of rewarding people for political favours rendered or of ensuring that the enterprise will not act independently of partisan interests. The degree of autonomy enjoyed by a Water Board could be ascertained by the manner of decision making-whether important decisions on pricing, borrowing, procurement, recruitment and wages are made by the enterprise or subject to concurrence by governmental authorities. Ultimately most public enterprises are autonomous in paper only and not in reality.

Water supply systems have been severely degraded in both types of these public sector institutional arrangements, namely, the Local Authority and the Corporate Body (Water Board). They suffer from the common problems such as inadequate operation and maintenance, low service standards, excessive water loss through leakage, unreliable flow, low tariff structure, poor revenue collection and the lack of any incentive for efficiency, arising out of a water utility's natural monopoly status. Overall, the performance of the local government sector and the Water Board in the delivery of adequate, safe and affordable drinking water to the citizens has been dismal. In urban areas, residents in under served settlements wage a daily battle for water having to wait in queues at public stand posts. Government will pay any losses

that accrue to the Board out of its inefficiency. Consumers receive what they are given. Market responsiveness is poor and political interference is rife. Because of their public character, Water Boards do not display a business orientation in their actual operations. These are typical state enterprises dependent upon public funds and government subsidies or the taxpayer for their investment needs. Further, the regulatory and operational roles are vested in the same body further complicating the lack of clarity of roles. Like most state owned enterprises, Water Board is prone to under investment, overstaffing, corruption and political interference.

Table 6: Selected Asian Countries Efficiency Indicators for Water Supply, 1995

City	UFW	NRW	Unit Production CostUS $-m3	Operating Ratio	Staff/1000 Connections
Colombo	35%	51%	0.050	0.53	7.3
Singapore	6%	7%	0.309	0.6	2.0
Kuala Lumpur	36%	36%	0.131	0.6	1.12
Manila	44%	58%	0.063/m^3	0.65	9.8
Karachchi	30%	40%	0.042/m^3	0.77	8.4
Kathmandu	40%	40%	0.061	0.72	15.0
Delhi	26%	44%	0.037	1.48	21.4
Dhaka	51%	51%	0.045	1.01	18.5
Bangkok	38%	38%	0.173	0.89	4.6
Male	10%	10%	2.646	0.6	7.6

Source : *Mcintosh, Arthur C. and Yniguez, Cesar E. (eds.)* ***Second Water Utilities Data Book, Asian and Pacific Region****, Manila: Asian Development Bank, 1997*

Notes :UFW – Unaccounted for water

$$UFW(\%) = \frac{\text{total annual production } (m^3) - \text{Total annual consumption } (m^3)}{\text{Total annual production } (m^3)} X100$$

Activities to reduce UFW include : repair of visible leaks identify and repair of Invisible leaks, accurate measurement of consumption, identification of illegal Connections

NRW – Non-revenue water

$$NRW = \frac{\text{Total production volume (extreatment plant) – total consumption billed}}{\text{Total annual production}} X 100$$

Unit Production Cost [US$ /(m^3)] = $\frac{\text{annual O \& M cost (US \$)}}{\text{Total annual production}}$

Operating Ratio (OR) = [annual O & M cost] / [annual billing]
Operating Ratio (OR) measures the ratio of operating costs to operating revenues,where operating costs include depreciation and interest payments, but exclude debt service payments. An OR of less than 0.75 is generally considered necessary in order to provide the sufficient surplus required for future investment.

Staff/1000 connections = [number of staff]/ [number of connections/1000]

3. Public Limited Company (PLC): (The Dutch Model)

The Public Water PLCs or the government owned public limited company is the dominant institution for water supply in the Netherlands and hence the term, the Dutch model. It involves government shareholding of water utilities, but private management as a limited company under the Company Law. Its stocks are held by national, provincial or local government and not publicly traded in any stock exchange. Its essence is to use company law as a buffer, shielding water services business from burdensome public sector rules and regulations.

The public limited company in the water sector has enabled Netherlands to expand service coverage rapidly to smaller towns and rural areas. In the Netherlands, at present, nearly all water supply companies that number twenty two are public companies under civil law (limited liability companies) with shares held by provinces and municipalities. As a rule, shareholders get only a moderate interest rate on the nominal value of their shares and possible returns are invested in the company. There is one water supply company operated directly by a municipality (Amsterdam) and one small water supply company in private hands.

In the PLC model, water supply companies work on a not-for-profit and full cost recovery basis. All costs including depreciation and interest on loans are covered by income from drinking water charges. To fund capital expenditure programmes, money is borrowed in the capital market. The water price is proposed every year by the director of the company and approved by the shareholders (municipalities and/or province) or the Board representing the shareholders, or in case of a municipal service by the Municipal Council. This dominant institutional mode, common in Western Europe is described as "Municipal Stock Corporation" in the US, as "Water Districts" in Philippines and as "Public Stock Corporations" in Chile.

Johannesberg Water (JW) Corporation in South Africa offers a model that is neither public nor private. It was established in 2001 as the water service provider through a utility company that was mandated to provide water and sanitation services to the residents of Johannesberg. It is an institutional model that promises efficiency gains comparable to those of privatization of service delivery while permitting government intervention as the owner of the utility. A contract management unit oversees the service delivery standards of JW. Yet, the autonomy of JW is limited by its shared services with the city government, such as billing and credit control. The autonomy, authority and capacity issues of the regulator have created a different situation for the city to develop enforcement mechanism for the utility. Further, the governance difficulties are compounded by the lack of specialized knowledge within the city.

The Dutch Model offers a mode of organization which combines the best of both worlds- often described as a marriage between public ownership and commercial operation. Deployment of Company Law insulates the PLC against political interference. Consequently, the managers of PLCs are more autonomous than their public counterparts in national Water Boards. Though insisting on full cost recovery from the users, PLC shows no interest in profit maximization. Yet, as a public limited company its accounts are open to public scrutiny. Clearly, the Dutch Model illustrates that privatization is not the only way to make enterprises perform better and alleviate

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7 A study conducted by the International Institute for Infrastructural, Hydraulic and Environmental Engineering (IHE), Delft, Netherlands and sponsored and published by the Dutch Ministry of Housing, Spatial Planning and the Environment and the Water Supply and Sanitation Collaborative Council titled **"Private Business, Public Owners"** 1999 (eds. Maarten Blockland, Okke Braadbaart and Klaas Schwartz) describes fully the current four principal modes of water utility management that comprise the spectrum of institutional options and provides invaluable insights into the missing mode, the public water PLC or the Dutch Model as the fifth mode.

fiscal distress. As the teething problems associated with "Johannesberg Water" clearly show, this institutional model can succeed only where expertise on the part of the shareholders is adequate and the possible capture of utility management by political interests can be prevented.

4. Public Private Partnership (Delegated Private Management-French Model)

Delegated Private Management is widely known as the French Model[8]. French law does not allow municipalities to sell utility assets to the private sector. A variety of institutional options can be identified within the Delegated Private Management Model. The first situation is where outsourcing or contracting out of strictly defined activities such as metre reading, pipeline maintenance and construction takes place where the private sector operator works with the equipment supplied by the public authority.

Secondly, we can witness the broad category of "Management Contracts" or limited delegation where a company is granted rights over a short period, say 3 to 5 years to manage day-to-day operation and routine maintenance of water services. Investment is undertaken by the public agency, but the responsibility for clearly specified services rests with the private operator who will collect the revenue on behalf of the government and will in turn be paid an agreed fee. The company does not assume any risk. Cost is compensated directly by the public authority by means of either a fixed fee or an incentive payment. The public authority retains the commercial side of customer relations while the employees are usually seconded to contractor who has executive authority. The company operates on behalf of the authority. This arrangement would meet the need for management expertise.

Thirdly, we see a situation of partial delegation in lease contracts where the responsibility for operating a water supply system is transferred to the private sector whilst retaining control over investment and expansion of the system. The contractor assumes responsibility for all system operations from water treatment, bulk and retail distribution functions to billing and revenue collection and provides working capital. Such operating contracts would provide management expertise, transfer operation risks to the private sector but not the investment risks. The burden of new investment rests with the government. The public authority retains ownership of all assets which are handed over upon expiry of the contract period.

An alternative approach is provided by Build-Operate-Transfer (BOT) or Build-Own-Operate (BOO) arrangements where a contractor carries full responsibility for the service provided by a major production facility. This includes finance, design, construction, commissioning, operation and maintenance of an installation which shifts the responsibility for operating and also for financing to the private sector. Operating the network, tariff policy and collection remain with the public authority. Installation is transferred to the public authority at the end of the contract period, which usually spans 20 to 30 years. BOO-BOT contracts are efficient mechanisms to organize private capital and management without effecting the system wide improvements necessary for the utility sector organization.

Finally, in the total delegation scenario, the resulting institutional arrangement is a concession contract where a company is committed for a longer period usually ranging from 25 to 30 years to provide complete services on a monopoly basis in a geographical area. In the case of a public service concession, a private company enters into an

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8 For an excellent overview of the French experience - its essential characteristics, the regulatory environment and the major contract types see - Dominique Lorrain (ed.) Urban Water Management: French Experience Around the World, Hydrocom Editions, 1997.

agreement with the government to have the exclusive right to operate, maintain and carry out the required capital investment. Concessionaire is remunerated by directly charging the consumers. Prices of water are controlled under the contract. Public authority retains ownership of the assets which are handed over at the end of the contract period in case of non-renewal. The concession contract operations transfer operating and investment risks to the private operator.

There is no divestment of assets to the private sector. Instead, the stewardship of the assets and delivery of services are entrusted to a concession contractor who invariably may be selected from one of the few qualified potential utility operators often based in Europe. The spread of the concession contract under the French Model has been limited to a well defined niche. It serves affluent consumer populations clustered in large metropolitan areas. The profitable niche markets and higher middle income countries where concessions operate are Argentina, Philippines, Malaysia, Turkey and Mexico.

Public-private partnership is supposed to bring the economic benefits of competition between utility operators. Yet, in concession contracts, there is more evidence of collusion between a very small number of companies worldwide than of any real competition. Three private French conglomerates dominate the global market as operators of concessionaires – Vivendi, Suez-lyonnaise des Eaux and SAUR/Bouygues. The industry is characterized by "organized competition" and the avoidance of competition through the "repeated use of negotiated procedure". They also routinely form joint ventures when bidding for concessions in the rest of the world.

In 1993, a 30 year concession contract was awarded to a company called Aguas Argentinas – a consortium of Suez Lyonnaise and Vivendi to operate the water and sanitation system in Buenos Aires that caused considerable controversy in Argentina. The reform generated major improvements including wider coverage, better quality and reliability of service. Within six months, Aguas Argentinas reduced the number of outstanding repair jobs of leaks and breakdowns from 1600 to 700. The response time for complaints was reduced from 80 to 48 hours. From 1993 to 1994 Agua Argentinas increased its water supply by 22 percent.

However, affordability for the poor has been a serious concern, and it appears that the benefits have accrued largely to the middleman consumers already connected at the time of contract award. An unpopular decision to pass the cost of system expansion on to new consumers in the form of an infrastructure charge was one of the issues leading to early contract re-negotiations. Weak and ineffective regulation has led to erosion of public confidence in the process. The Buenos Aires concession demonstrates how transparent, rule based decision-making is required to maintain public trust in regulated infrastructure.

In Bolivia, a 30 year concession contract was awarded to the consortium AISA, in which Suez Lyonnaise des Eaux, a French Corporation holds 54% of shares for supplying water to La Paz and El Alto cities. This PSP arrangement met with protests in Bolivia, particularly over higher service fees. The government terminated the contract in 2005 in the face of vague rules as to how to calculate tariffs or protect consumers. While the regulatory body, SISAB approved higher connection charges, this pricing policy which excessively burdened the poor cast an unfavourable light in the private-sector consortium, bemoaning the "sale of Bolivian interests to multinational companies (Kramer, 2006). The conflict in La Paz and El Alto reinforces the position that competent institutions and viable plans are necessary for managing the infrastructure in concession contracts.

5. Direct Private Management (Divestiture- The British Model)

This is full and complete privatization which occurred in the UK in the 1980s. In this instance, the water utilities are both privately owned (shares traded in the Stock Exchange) and privately managed.

In the case of service privatization through the sale of assets, exemplified by the British Model, the public authority transfers ownership of all property and facilities to a private firm which acquires near perpetual rights. The company's responsibilities are universal, since it oversees the complete cycle-abstraction, conveyance, use of drinking water, disposal of waste water-throughout its monopolistic territory. According to the Water Act of 1988, Britain's Regional Water Companies were awarded operating licences for re-negotiable periods of 25 years.

With privatization and the new price cap form of regulation which had earlier proved successful in telecom and gas, all companies had incentives to maximize efficiency and had open access to the markets to fund the investment needed to reach the newly legislated EU standards.

The British experience stands out for 3 reasons:

a. It offers a unique experiment in full divestiture
b. The independent regulator relies on a novel instrument for price regulation, namely, the price cap
c. The experiment is well documented.

To prevent any abuse of the monopoly powers of the private operations, Office of Water Services (Ofwat) is charged with the task of economic (tariff) regulation. Captive customers have seen their water bills soaring (real tariff up by 40% in the 1990s) as investments were financed predominantly from the cash flow. The main criticism arises from the following:

1. Price caps set maximum limits for all water companies, in five year cycles. It is a difficult learning process to get it right. Initial price caps were generous because of efficiency gains which depend on the quality of financial and technical information at the disposal of regulator.

2. Water companies know more about utility operations than regulators. Opportunities exist for transfer pricing such as procuring overpriced goods and services from unregulated divisions. For example, building new treatment capacity may be preferred to arresting leaks. The British Model achieved significant short term efficiency gains, but vexing problems of monopoly regulation persist. The vision of complete privatization (divestiture of assets) in water supply systems for efficient management and increased returns to the State appears unrealistic for developing countries with weak capital markets.

Required Action

Because of low revenues and spiralling costs of purifying water from sources increasingly polluted by agricultural and urban runoff, the Water Board and the local authorities often neglect the maintenance of their distribution systems and delay any extension of systems into unserved areas.

Market oriented solutions have been promoted as a means to overcome the apparent constraints posed by state provided services. In fact, the adoption of full cost recovery policy can seriously threaten the achievement of the Millennium Development Goals of halving the proportion of people without sustainable access to safe drinking water by 2015. Yet, if current trends continue, the achievement of MDG goals seem like a fading dream.

It is a myth that the current approaches in the public domain will solve the water problem of the urban poor with higher capital funds inflow. The way forward lies in dramatic changes with public/private partnership ideas being explored for innovative solutions.

Yet, Private Sector Participation (PSP) is not a magic formula to solve all the problems of water utilities. It promotes the transfer of responsibility for payment of the real costs of services from the taxpayer to the paying customer. Table 7 shows the main features of each option while identifying the key factors which influence a decision on the appropriateness of an option. Proponents of PSP in water supply schemes contend that it would lower the cost of production, increase output and eliminate bureaucratic inefficiencies. However, some critics counter that private sector transactions may remove the more viable, highly metropolitan systems from the national operator and leave the peripheral less urban systems with higher per capita production costs in the public domain. Hence, vital services will be denied to smaller relatively thinly populated communities. Yet, the counter argument seems even more convincing, it contends that the removal of the profitable urban systems from the burdensome rehabilitation funds of the national budget will leave a surplus for investment in the relatively backward areas.

While there had been increasing private sector participation in the water utilities during the last few decades, the cost of such service provision has declined under the pressure of competition in the industrialized countries. In contrast, in developing countries such costs have increased under the monopoly deals, which service providers have concluded with host governments.

What is needed for successful PSP? Firstly, it is a good information on the state of the utility that allows for the preparation of an unambiguous and transparent bid and complete and flexible contract resulting in a favourable transaction for both parties. Because of asymmetric information, unequal knowledge possessed by the parties to a market transaction, a subtle market failure occurs. The development of PSP strategy includes a review of the condition and serviceability of the assets, existing operational conditions and constraints, economic and financial practices, cost recovery factors, environmental considerations and management structure. A better informed approach in creating public-private partnerships through an analysis of the existing regulatory framework and the financial viability of alternative options will result in fairer deals to governments.

The success of public-private partnerships depends on the quality of contract design, contract enforcement, the quality of regulator, capacity for risk and conflict management. A failure to understand contract specifications has led to PSP transactions

unfavourable to host governments. Once agreed, such contracts are almost impossible to vary over their lifetime. This means any modifications in service and quality obligations can only be achieved on a cost plus basis. Generally, such transactions have been negotiated with inadequate institutions in place to supervise the performance and behaviour of the contractor.

In drinking water supply systems, a natural monopoly exists when a single entity or agency can supply the entire market at lower unit cost than could a number of competing firms. Economies of scale in producing and distributing water are very large. Hence large scale operations are necessary if low unit costs are to be obtained. There are two possible alternatives for promoting socially acceptable behaviour on the part of a natural monopoly. One is public ownership and the other is public regulation. The public interest theory of regulation demands that such utility providers be regulated for the benefit of the public, so that users (consumers) may be assured quality service at reasonable rates. If competition is inappropriate, regulated monopolies should be established to avoid possible abuses of uncontrolled monopoly power. Regulator should guarantee that the captive clients benefit from the economies of scale- the lower per unit cost – which their natural monopoly position allows utility providers to achieve. In practice, a regulator seeks to establish tariffs which will cover production costs and fair reasonable return to the enterprise. Yet, the impediments to the creation of regulatory institutions are numerous in cultures not necessarily sympathetic to the concept of relatively independent agencies.

Hence the preparatory work for successful PSP necessitates:

- Commencing the sector reform process immediately, assessing sector needs, water resources and projected demands, assessing existing systems, current and planned operations, improvements and needs for expansion.
- Exploring the potential and benefit of unbundling integrated water supply systems both horizontally and vertically.
- Instituting an independent economic regulator to monitor the performance of the utility and setting tariffs regardless of public or private sector stewardship. The Central Environmental Authority should function as the environmental regulator.
- Performing technical and economic feasibility studies for the selected approach, in the identified service area.
- Requirements for additional rehabilitation, improvement and expansion work in order to firmly estimate investment needs.
- Scope and form of the transaction, including a draft of the contract.
- Government guarantees and incentives.
- The bidding procedures, evaluation criteria and award procedures with time frame.

Hence, skills need to be developed to analyze projects according to financial criteria and commercial viability with a thorough understanding of the role of commercial investment and financial analysis in the development of public service projects, practical strategies for selecting public services projects based on an analysis of legal economic and investment strengths and risks, skills to determine which mode of public private-partnership lease, concession or management contract is most appropriate for a given project or skills to perform financial sensitivity analysis to determine commercial viability of a project given fluctuations in market conditions, tariff rates, levels of demand, inflation and interest rates.

Building partnerships for water can mobilize the vast, yet largely untapped resources of communities, NGOs and the private sector in all spheres of water supply management, enhancing efficiency and accountability in the supply, use and protection of water.

As the foregoing inquiry demonstrates there has been considerable diversity in and experience with private sector participation in water utilities around the world. However, there is no conclusive evidence of a single superior, exemplary institutional mode which is perfectly reproducible in developing or developed countries. Ownership, competition and regulation are complex intertwined issues that need holistic assessment on a case by case basis rather than rushed through on a standard model.

Nonetheless, Sri Lanka's efforts at private sector participation in water utilities seem likely to revolve around the range of options offered by the French Model and the interesting Dutch Model. This would involve the private sector for the renewal, improvement, expansion, operation and maintenance while the government retains ownership of assets. An independent regulator and a strong political commitment to allow the regulator to function without political interference are required. What is, however, a constant in this reform process for maintaining public confidence is the need for openness and transparency and rule based decision making to eliminate the possibility of impropriety.

Table 7: Private Sector Participation Considerations

Feature	Contracts for Services	Management Contract	Lease Contract	Concession	Bot Contract	Full Privatization
Objective of PSP	Access to specific skills, and efficiency Improvements	Access to management skills and efficiency	Access to management skills and efficiency improvement	Efficiency improvement and access to private improvement	Access to private finance and technical skills finance	Efficiency improvement and access to private finance
Sector strategy required	No	Not essential	Desirable	Desirable	Desirable / Essential	Essential
Competition advisable	Yes, but could be benchmarked	Yes, but may be negotiated after ranking proposals	Yes, but may be negotiated after ranking proposals	Yes	Yes	Yes
Responsibility for customer tariffs	Government	Government	Government	Concessionaire, according to formula	Government	Company, subject to regulatory constraint
Responsibility for investment funding	Government	Government	Government	Concessionaire	Company	Company
Remuneration method	Agreed fee, could be volume based	Fee plus variable component	Tariff revenue	Rates as per bid tariff	Volume related fee	Tariff based
Breadth of management freedom	Low	Medium	Medium to high	High	High	High
Performance criteria needed	Yes	Yes	Yes	Yes	Yes	Yes
Complexity of supervision/ regulation	Low	Medium	Medium	Medium to high	Medium specific (according to size)	High
Concessionary finance available	Not applicable	Possible	Possible	Under specific circumstances only	Under specific circumstances only	No
Capacity building potential	Low	Medium	Medium	Medium	Low	Medium
Examples of successful initiatives	Santiago, Jakarta, Manila and others	Adelaide	Gdansk	Buenos Aires, Jakarta, Macau, Manila, Port, Vila	Johor	Northumbrian Water

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