Public-Private Partnership (PPP) in Urban Water Supply Sector: Some Issues

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Abstract:

Provision of good quality water supply in adequate quantity to households helps attacking poverty, especially in urban areas of developing countries. However, how to provide water supply to all population in an efficient, equitable and sustainable manner has become one of the major issues in development policy arena at present. To overcome the problem of 'institutional provision' of water supply, many governments and donor agencies promote 'public-private partnership' (PPP) in the urban water supply sector. Empirical evidence suggests that the experience with PPP arrangements in some of the developing countries is not satisfactory. The present article makes an attempt to highlight the theoretical and empirical issues involved in the PPP arrangement. Since many more developing countries are moving towards PPP in the urban water supply sector, this paper also provides some policy suggestions.

Introduction

The United Nations Organisation through its Millennium Development Goal (MDG) 7 aims at halving the proportion of people without sustainable access to safe drinking water by 2015[1]. Achieving this goal has its spillover effects on other MDGs such as poverty eradication, increased enrollment in primary education, reduced child mortality, women's empowerment and improved human health. As evident from many empirical studies, water scarcity at the household level increases the social opportunity cost in terms of income, output, employment, education of especially the girl children, quality of health and many other 'non-pecuniary benefits' foregone. The forward linkage between enhanced water supply and other social benefits leads to provide 'double-dividend' on many different social sectors in the economy. Contrary to the conventional notion that increased income leads to improved water supply (i.e. as suggested by the Environmental Kuznets Curve Hypothesis), it has been realized that making adequate amount of good quality water available to households reduces the hardship of poverty related issues such as child mortality and morbidity at micro level (Galiani et al. 2005; Jalan and Ravallion, 2001) and also stimulates overall economic growth at macro level (Barbier, 2004). This implies that rather than waiting for the rise in percapita income to resolve the problems related to water supply, it is recognized that an appropriate strategy to attack poverty at micro level would be to provide good quality water supply to the households. Though this kind of strategy is sound in principle and has been found to achieve the expected results in the social sector, the fundamental issue is 'how to act locally' by way of providing safe drinking water to 6.6 billion people, including the additional 1.7 billion people to be covered under new services in another 10 years (Chenoweth and Bird, 2005). The financial requirements for providing enhanced water and sanitation services to people in developing countries over next decade amount to a maximum of US$ 800 billion (Owen, 2005). It should be noted that at present the issues related to 'financing' of water supply services predominantly occupy the urban water supply literature. This literature is based on the premises that once these financial constraints are overcome, then the three major objectives of urban water supply namely, efficiency, equity and sustainability, could be easily achieved. But many of the water supply programmes in developing countries, which did not experience any financial problems due to funding from international donors, had also failed in achieving the desired goals in the urban areas. This

[1] See, www.who.int/mdg/en/

suggests that financing is only one among the constraining factors and there are other institutional and behavioral factors that potentially affect the 'rational expectations' of the donors and policy-makers in the urban water supply sector in the developing countries.

It should be noted that the complex web between the financial and other socio-economic-institutional factors makes the existing approach, namely, provision of water supply by the government sector, more ineffective. This 'government failure' in the water supply sector has not only resulted in increasing the 'social cost' of inadequate provision of water to households but also, casts a shadow on achieving the MDGs in the coming years. This government failure arises from many different sources. For example, corruption in the water supply sector, failure to incorporate the demand-side factors in the water supply policies, arbitrary pricing policies, lack of accountability, improper monitoring, etc lead to increase the probability of 'government failure' in the water sector. To tackle this government failure and its negative consequences, various alternative approaches are suggested, especially by academics and international donors dealing with the urban water supply sector. One such dominant approach is, 'reforming' the water supply sector in urban areas with more private sector participation in water supply programmes. This is popularly known as 'public-private partnership' (PPP). Some countries have already introduced these kinds of reform measures in this sector and others are waiting in the line to adopt this 'herd behavior'. A sizeable academic literature has documented the *pros* and *cons* of these reform measures and this literature suggests that in many countries, this dominant alternative approach has also failed - with the exception in very few countries. It is evident that in many cases, the herd behavior of the countries in relation to water reform measures led to pursue a 'uniform model', within the broader perspective of public-private partnership. This uniform model implemented across countries is mainly 'supply-side oriented' and has not fully taken into account the behavioral, political, economic, social and institutional factors prevailing at the regional and local levels. This being the case, the major objective of this article is to highlight some profound issues involved in PPP and to suggest some way-forward for making the PPP in water supply sector a viable institutional option.

Private Sector Participation

It should be noted that identifying appropriate alternative, efficient institutions for providing water supply in urban areas is not an easy task, though the literature on water

supply converges towards PPP as a viable institutional option. At the theoretical level, there are problems that reinforce this difficulty: (i) the existence of asymmetric information encountered by the government and other donor agencies which are supposed to identify the alternative, formal institutions prevents them from doing so optimally. This stems from the argument in a section of economics that the government cannot have full information about various functions of economic and institutional factors and therefore, its ability to identify appropriate institutions is completely restricted. Therefore, either the PPP identified or some of its components may be inappropriate in a particular context; (ii) sometimes, the alternative institutions identified may lead to increase the transaction costs of providing water supply because of information asymmetry and the associated 'bounded rationality' among the agents involved in the contract, contrary to what is assumed in the mainstream economics literature; and (iii) when exogenous factors (such as, general inflation) play a role in determining the behaviour of the agents in reaching contracts, the objectives laid down in the institutional arrangements cannot be achieved. Therefore, there is a greater uncertainty over identifying the appropriate, efficient institutions among various alternatives in the urban water supply sector.

In recent years, however, the reform measures seem to agree that urban drinking water has the characteristics of 'private goods' with divisibility and excludability nature and therefore, it is argued that the appropriate institution which can provide it efficiently is mainly the private sector. This kind of policy decision has been arrived at from the strong empirical evidences which show that: (i) the private sector in many of the urban areas in developing countries has been efficient in delivering the public goods such as electricity, etc in an efficient manner; and (ii) in the water supply sector, the strong presence of the 'informal water markets' as well as some success stories of the private sector in the formal water markets suggest that the private sector has a greater potential to play in providing water supply in the urban areas. Since the urban water supply sector experiences severe crises in the hands of the government sector, the governments with the help of international donors have gradually moved onto attract private investment by way of providing substantial amount of incentives. In this regard, a considerable effort has been made by some of the developing countries and the international donors to device and modify the institutions in the domestic economy such that the private sector can have a smooth sailing, with a minimal amount of government intervention (Menard and Shirley, 1999). The assessment of the effectiveness of

PPP introduced during the past one and half decades reveals that in general, the private sector participation in urban water supply sector has not delivered the goods adequately, except in few cases (see Chenoweth and Bird, 2005). In the following section, let us discuss other issues involved in PPP that has generally failed in certain regions and succeeded in others.

Herd-behavior, demonstration effect and privatisation

One of the reasons why the privatisation in many of the countries had failed is because of the 'herd-behavior' of the governments in blindly adopting the privatisation approach followed in other countries, as well as in other sectors within the same country. The economic crisis arising from the 'deficit financing' has been the underlying reason behind the privatisation effort (Menard and Shirley, 1999). Many developing countries in the early 1990s were experiencing economic crises and 'deficit financing' had added fuel to this crisis. The deficit financing was identified to be coming from the mammoth, loss making public sector companies - including public-utility based ones - that enjoyed enormous amount of subsidy from the governments. Since the water supply sector was also enjoying huge amount of subsidy, the countries with the help of international financial donors started introducing the private sector, in line with what has been done in other sectors in the economy. However, this kind of 'horizontal approach' adopted across sectors including water sector has not resulted in any desirable outcomes in certain countries, but worked well in certain other countries where governments took lot of serious initiatives to pave the way for private sector operation (see, Menard and Clarke, 2000). Apart from this particular problem, the private sector had run into several difficulties and these difficulties were reinforced by various factors such as political instability, economic crisis such as inflation, etc.

Pricing of water

Since the private sector is generally interested in the profit motive, the 'pricing' of water plays a crucial role in sustaining the private sector operation in a given region. However, pricing of drinking water is a challenging issue in practice. It should be noted that the cost-based pricing mechanism is dominant in the urban water supply sector. But this mechanism does not take into account the 'preferences' of the individuals, and this leads to create some problems caused by the demand-based factors in the market. Moreover, the 'opportunity cost-based pricing' suggested by a group of economists poses many other

practical problems as well. In the case of water sector, the opportunity cost estimation depends not only on the value of the water in the present use but also on the value of next best use. This not only includes the value related to quantity but also quality, namely the 'externality cost' of water use in the alternative sector. Estimating the value in alternative uses becomes so difficult if the alternative uses are highly non-marketed in nature. Moreover, environmental economists have identified five types of values generated by environmental resources like water which are: direct use values (such as water meant for drinking, irrigation, etc), indirect use values (such as biodiversity protection, etc), option value (i.e. individuals' willingness to pay (WTP) a premium for protecting the water resources for future use), quasi-option value (i.e. individuals' WTP for maintaining the status-quo of water resources until full information is available for alternative options) and existence value (i.e. individuals WTP for protecting the water resources for their intrinsic and unique characteristics). Estimating all these economic values to be incorporated into 'opportunity cost pricing' is a costly affair. On top of everything, the economic valuation of services provided by the water as such is a controversial one. For example, the value of water estimated differs depending on the nature of the economic valuation technique used. One particular value may be estimated using the cost-based approach while the other benefit may be estimated using utility-based approach. This leads to aggregation problem or 'additivity' problem. Moreover, when two valuation techniques are used to a single benefit, one can get more than two values leading to a dilemma of which value should be used for policy-making. Anomalies in values always create problems for decision-making. Therefore, value judgment plays a major role in making normative decisions about pricing policies in relation to water.

At present, it seems that there exists no consensus on pricing of drinking water in urban areas. Broadly speaking, it is mainly the cost-based pricing that plays a dominant role in pricing system followed in many of the urban areas. The existing pricing mechanism focuses on the 'full-cost pricing', defined in a narrow sense. This full cost pricing mechanism is designed to cover the 'average total cost' of supplying water to an household that includes the apportionment cost of infrastructure and the operation and maintenance cost. However, the full-cost pricing refers to the 'opportunity cost' of water that includes the direct cost (cost infrastructure and O&M cost), indirect cost (treatment of waste water) and the opportunity cost (value of water use in the next best efficient sector) (Rogers et al. 2002). Unless the price of water reflects the 'full economic value' of water supplied, the 'social cost' of water supply may not be addressed properly in the overall water management arena.

It should be noted that not only the private sector but also the public sector follows a pricing mechanism that does not adhere to any of the economic principles. Both these institutions follow an arbitrary method of pricing, guided most of the time by the existing political and other non-economic factors in the economy (see Dinar, 2000). This neither achieves efficiency nor fulfills other objectives such as equity and sustainability. So, PPP may not be a viable institution to address the issues involved in pricing, as well as the associated issue of scarcity of water. Indeed, one of the major concerns raised by the opponents of the private sector is that the private sector and its pricing policy are not capable of addressing the equity issues involved in the water supply sector, which is a serious issue.

Equity Issues

Even though the equity concerns could be well addressed under the government regime, the skeptics of private sector always raise doubt about the role of private sector in serving the poor. The underlying assumption here is that the private sector is motivated by the self interest of maximizing their profits and therefore: (i) fixes the price at a higher level[2] that is not conducive to the poor; and (ii) it may not be able to extend the services to poor, which is not profitable to the private sector. However, if at all the private sector could maximize its profit by way of serving the poor as well, then why it should shy away from doing so? Naturally, it all depends on how to make the poor to fully participate in the 'water market' and get equal amount of benefits enjoyed by the rich. In certain countries, participation of poor in the markets has been made possible though appropriate institutional arrangements. For example, existence of strong government sector as well as NGOs makes the private sector to serve the poor adequately. Similarly, in Santiago, Chile, the 'water stamps' had been issued to the poor to purchase water from the private sector. This has facilitated both the private sector and the poor to achieve a 'win-win' outcome. In general, the proponents of the private sector argue that the private operators are indeed capable of benefiting the poor more than the richer ones. As we have already seen, the private sector participation in water supply programmes has even resulted in increased social benefits such as reduced infant mortality among poor (Galiani et. el 2005). In certain countries, introduction of private operators had even reduced the existing level of government-fixed water tariff by several folds. For

[2] Even though the price of water is fixed high under the private regime, the revenue collected will not be ploughed back to treat waste water, etc and therefore, increased price under private regime may not be suitable for overall management of water on a sustainable basis.

example, the water delivery by the private sector in Manila has reduced the tariff by 65% in 1997 (Owen, 2005). Chile is another good example where competitive bidding led to cost reductions due to efficient use of existing assets (see Owen, 2005). In Tiruppur, Tamil Nadu, India, people used to pay Rs. 1000/kilo litre in the informal private water market but, once the private sector operation started, the price has drastically come down to Rs. 5/kl (Vyas, 2004)). Private sector has also got several other advantages that would potentially benefit the poor. For example, cost saving due to efficiency will lead to serve additional users, including the poor. Distribution loss will be minimised leading to saving of water that could be served to extra households, especially in the low-income settlements. Private sector is supposed to improve the infrastructure in a better way leading to reduce 'unaccounted-for' water. Improved low-cost technology is another advantage that could be achieved through private sector participation. All these suggest that private sector may play role in those regions where the government had actually failed in providing water to the households, including poor. But, still one does not know whether private sector can play a role wherever the government fails in addressing especially the equity issues. In certain cases, the government sector is more efficient in serving the poor than any other institution and in certain other cases, private and public participation is proved to be a success story. However, one of the problems in making the private sector to work is to identify the rules of the games, which may take several years (Dumol, 2000). In a country where the private sector is introduced in the urban water supply sector for the first time, the transaction cost of doing it becomes huge and the decision-makers have to adopt trial and error method that is highly costly (Dumol, 2000). Since increased transaction cost increases the price of water substantially, addressing the equity issue in the urban context is warranted for.

The Way Forward: Institutions Do Matter

It should be noted that the PPP is not being guided properly by any standard disciplinary framework. In economics, the 'new political economy' (NPE) framework provides some useful insights into understanding and analyzing the PPP in urban water supply sector. It provides the 'way forward' to make the PPP as a successful institution in this sector. For example, the NPE is based on the notion that a substantial amount of unexploited 'big-bills' (or, profits) is found in the urban water supply sector in developing countries. Therefore, a non-zero sum outcome can be guaranteed if the underlying

'institutional failures' leading to low-level-equilibrium-trap in the water supply sector are rectified; and hence, the agents involved, including the poor, could collect these 'big-bills' appropriately (Olson, 2001). The NPE is indeed in favour of appropriate mix of various institutions (such as public, private, community, NGOs, etc) for providing water supply to the households in general and it basically emphasizes on the 'appropriate' role of government in providing the institutional environment in doing so. The NPE provides us insights into what role the government could play, where it can play, and so on, leading ultimately to suggest a 'minimal' government intervention. The underling policy implication is that the market is indeed an efficient institution and *provided that the other institutions in the economy could play a supportive role*, the market is capable of achieving the desired goals in the urban water supply sector. However, the deeper analysis of the issue with inputs from NPE suggests that it is the transaction cost that determines which institution has a dominate role to play in making the situation better. For example, in certain cases the provision of water by the public sector may result in reduced transaction cost whereas in certain other cases, the private sector may do the same job in a better way. But, according to one school of thought in the NPE the transaction cost economy may not always be efficient because of 'bounds on rationality' of the economic agents involved in the transactions (Williamson, 1985). This implies that the economic agents are not capable of acquiring and using all the relevant information required for an efficient transaction. Alternatively, the economic agents have 'multiple-equilibria models' (North, 1994) on their mind and this makes the prediction of the behavior of these agents more difficult. The non-predictability of the behavior arises from the existence of asymmetric information about the 'opportunistic behavior' of the economic agents. When the agents could not get full information required for the contract and when the full information about the future consequences of this contract is not forceable at the time of contractual agreement, the opportunistic behavior of these agents will lead to increase the '*ex-post'* transaction cost of the contract (Williamson, 1985). In the case of water supply sector, this means that private-public partnership with the given level of asymmetric information may sometimes lead to increased *ex-post'* transaction cost affecting the efficiency and sustainability of the water supply projects. For example, the government sector, in order to attract private investment, may provide certain incentives to the private sector in the *ex-ante* situation. However, once the private sector has made its investment, then the government may behave opportunistically by brining additional conditions in the contract such issues as serving the poor, reducing the opportunity for the private sector to increase the tariff, etc.

Since the private sector has already made huge amount of investment, breaking the contract and getting rid of the project may impose enormous cost on it. Similarly, the private sector may also venture into behaving opportunistically with the government sector in case it finds some loopholes in the rules of the game. Same kind of opportunistic behavior may also occur between the private sector and the consumers, depending on the nature of the loopholes in their contract. In the case of consumers and the suppliers, the opportunistic behavior arises in a different way as well. For example, the self-interest of the economic agents would always lead to make 'taking' as a dominant strategy than 'making' (Olson, 2001). In the case of water supply, the 'taking' strategy of the consumers may lead to stealing of water from main pipelines by hooking to it illegally. This leads to increase the transaction cost to the private sector in terms of policing, filing court cases against the culprits, etc. Therefore, when there exists a substantial amount of 'privately owned' information required for making the contract more efficient, the opportunistic behavior of the agents will bring in only inefficiency in the PPP arrangements. The NPE, therefore, strongly insists on the appropriate institutional arrangements such as enacting stringent laws that constraint the opportunistic behavior of the agents which would otherwise result in unsustainable outcomes.

The inputs from NPE provide new insights into analyzing the government failure in the water supply sector, in a different way. As NPE suggests, the failure may be due to the 'self interested' behavior of politicians and bureaucrats, and that of the concerned lobbying groups concerned wit the water supply sector (see Buchanan and Tullock, 1962). Corruption as a source of failure can be explained by using this particular framework. Another area that the NPE has contributed to is, the *lobbying* and its impact on the outcome in the water supply sector. It should be noted that the lobbying groups may emerge either to maintain the status-quo position of the existing water supply programme or to change it depending on the size of the benefits that the lobbing groups could garner. For example, the private sector lobbying groups may pressurize the international donor agencies or the concerned governments to create 'conducive environment' for creating private monopoly in delivering certain types of activities. In the case of tariff policy, the lobbying groups may favour an upward revision of the tariff that would affect the poor considerably. Lobbying is supposed to increase the transaction cost in the economy and sometimes, it may lead to affect the outcome of the projects substantially. To avoid these negative consequences of the lobbying, the NPE suggests that there should be appropriate law and other institutions (such as monitoring of the

private sector activities by the community and NGOs) to prevent the negative consequences of the lobbying groups. Since many of the private water companies are spreading their activities in the developing countries and these companies have got the support of the international donors as well, the developing countries will face serious problems from lobbying, unless they take adequate steps to deal with it. More empirical studies are required to understand the impact of lobbying on the outcomes of water supply sector, especially in the developing country context.

Similarly, the NPE suggests that the *collusion* may also emerge as a dominant strategy in the water supply sector, which may become hurdle for the outcomes to be efficient. The collusion may take many forms: (a) collusion between the private operators may take place in order to garner larger benefits, creating a 'win-win' situation for the colluding parties. In a cooperative game theoretic framework, the private firms may find it to be beneficial to cooperate such that they can create an environment for making the 'bids' to be non-competitive in the market; (b) the collusion between the private firms and the government sector may sometimes lead to create a 'win-win' situation for both of them, but a worst outcome for the consumers in case these consumers have to face increase in tariff rates due to collusion; and (c) the collusion may also take place between the like-minded groups induced by things such as 'patriotism' within the host country, which may prevent the private companies belonging to foreign countries to step in. Since the collusion occurs depending on the size of the benefits to the colluding parties alone, it may have its own negative consequences on the consumers of the water services. To avoid these kinds of negative outcomes, the NPE suggests things such as transparency in bidding, involving the local operators, the NGOs and community-based organizations in all the activities related to the water supply programmes, etc. Ultimately, the institutions that are embedded in the socio, economic, political and behavioral aspects at different regions should be identified properly and shaped such as way that the PPP can be a better option for urban water supply services in developing countries.

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