

**RESEARCH AND POLICY NOTE**

**No. 4**

**CITY GOVERNMENTS AND  
PUBLIC WATER SUPPLY IN INDIA:  
ANALYSING THE INSTITUTIONAL ECONOMICS**

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*The views expressed here are those of the author and does not represent the view of the Centre for Development Studies.*

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## **ABSTRACT**

Given that the 74<sup>th</sup> amendment to the Indian Constitution stipulates that the water supply service is to be transferred to the city/urban governments, this note analyses the institutional economics of such a proposition. It recaps the economic reasons for government intervention in water supply and assesses the advantages of city governments over state governments in this regard. It brings out that the city governments have advantages over only some (and not all) activities of water supply. The transfer of such activities to city governments would require an unbundling of the existing water supply system (mostly overseen by the state governments.) This note also highlights the organisational and political economy factors that may work against such devolution of power in terms of water supply.

## FOREWORD

The 73<sup>rd</sup> and 74<sup>th</sup> amendments to the Indian Constitution facilitated the transfer of several functions from the state governments to local (rural and urban) governments. One such function is that of water supply. Though the 74<sup>th</sup> amendment stipulates that the water supply function is to be under the urban/city governments, this is yet to be transferred to them in many Indian states. This function is mostly carried out by the state public-sector organisations.

It is in this context that this policy note analyses as to whether there are some economic advantages in transferring water supply to city governments. It is also possible that legal and constitutional changes are brought about without considering economic efficiency. Thus, this paper uses the insights of institutional economics and that of organisation and contract theory in the context of public water supply to look at the relative economic advantages as between city and state governments in the matter of managing the different activities of water supply.

The paper brings out that the city government does not have advantages in the management of the overall activities of water supply. This would mean that some activities (like centralised water storage, or design and planning functions) are more efficiently carried out by agencies other than the city government. On the other hand, the water distribution system within the city and its operation can be carried out by the city government more efficiently using its own sub-organisation or through outsourcing to (or contracting with) private firms.

The transfer of these activities to city governments would require an unbundling of the water supply system currently overseen by the state government. However, there are organisational and political economy factors that may work against such devolution of power in terms of water supply, and these are also highlighted in this note.

The idea that such a study be conducted came up during the meeting of the Programme Advisory Committee of the Research Unit on Local Self Government of the CDS, held on 4 December, 2009. We hope that the insights of this policy note are helpful for the policy makers and that they will give it due attention.

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*The seventy-fourth amendment of the Indian Constitution (1992) defines the responsibilities and functions of urban local bodies (or city governments). Its twelfth schedule (article 243W) lists out the functions that can be handed over to such local governments. It includes, as item no. 5, water supply for domestic, industrial and commercial purposes.*

Would it be better for citizens if the responsibility for water supply were transferred from state governments to local governments? This note is an effort to use the insights of institutional analysis to ascertain the desirability of transferring the responsibility of providing water supply from the state to city governments. It starts with a recap of the need for government intervention in water supply. This is followed by a review of the advantages enjoyed by the city over the state government in different activities involved in providing water supply (such as water storage, water distribution system, operation of water supply, etc.). The organisational and political economy constraints in achieving a more efficient institutional arrangement in this regard are discussed in the penultimate section, followed by the conclusion.

The need for government intervention in water supply is widely recognised. Hence the question is: at what level of government is it appropriate to carry out this task as part of the 'government intervention' in water supply? In order to analyse this issue, we need to revisit the logic of government intervention in water supply.

***Why should there be government intervention in water supply?***

*What is the ‘market failure’ in water supply? Why cannot individuals buy or make water supply on their own?*

***Is water supply a public good?***

One reason for government intervention in the supply of a good/ service is the latter’s ‘public’ character. A good is characterised as ‘public’ when there is some degree of non-rivalry in its use, i.e., one person’s consumption of the good/ service does not reduce its availability for other people’s consumption and it is costly to exclude somebody from using the service even in the case of non-payers (non-excludability) .

However, piped water supply – the main mode of safe water supply in urban areas – does not have these characteristics. There is ‘rivalry’ involved in its use, as consumption by one person reduces the quantity available to others. It is also not very expensive (relative to the cost of providing the service) to exclude non-payers by metering and cutting off water supply. Thus government intervention in water supply is necessitated not on the grounds of its being a public good.

***Water Supply as a Merit Good!***

Merit goods are those which governments (and society) would want people to consume (in required quantity and/or quality) irrespective of the preferences of the citizens. These are goods for which consumer sovereignty is not considered relevant. There is case for the merit good argument for water supply in developing countries, where many people are unaware of the need for consuming safe water supply (and their consumption of poor quality water may lead to water borne diseases). In the absence of policy intervention, the consumption of unsafe drinking water by some sections of the population would lead to the spread of water borne diseases. Thus, encouraging or insisting on the consumption of safe water is reasonable ground for government intervention here.

However, the provision of water supply directly by the government need not be the only way of achieving this merit good objective. There are alternative strategies. The government can insist on a given standard of quality for all forms of water supplied for domestic consumption. The government can also help (financially) those who cannot afford clean and safe water. To do so, government agencies may need to check the quality of water periodically and to provide support to acquire safe quality water from whatever sources are available, as part of the other support packages for people who cannot afford to buy commodities of basic consumption (or as part of poverty eradication programmes). Local or city governments may be in a better position than other levels of government to carry out these tasks.

*Are local governments better equipped than higher levels of government to carry out poverty eradication? This is a question that requires detailed analysis, and not attempted here. It will suffice at this level to know that local governments are better equipped to carry out some tasks of poverty eradication like 'extending support', even though it may be useful for the higher levels of government to fix the criteria for selection of those who are eligible for support. This would discourage local governments from resorting to wastage of tax resources on distribution driven by local political interests.*

### ***Issues related to information***

Like many other goods, water too requires quality control (by independent agencies) as it is costly for individuals to ascertain quality at the time of purchase. This requires the setting of quality standards and putting in place an enforcement mechanism to see that sellers follow these standards. It may also require periodical quality checking of the water supplied by different agencies. It may be desirable for the national government (or even an international organisation such as the World

Health Organisation - WHO) to come out with standards for water for drinking and other purposes. It may be desirable for national governments to issue certificates on the compliance of standards by the water vendors (like 'this particular product meets Bureau of Indian Standards (BIS) specifications for drinking water quality). On the other hand, safety/quality inspectors of the city government may carry out periodical checking of water quality. Thus, 'information problems' may warrant some government intervention in water supply, but they do not make it necessary for the government or its agencies to produce/process and distribute water supply.

### *Economies of scale in water supply*

The economy of scale – the reduction of cost per unit of goods or service as higher quantities are produced – is in the operation in water supply in general. It would be cheaper per unit of water stored if there were a larger surface reservoir to store water. It would be cheaper per unit of unit of water treated if there were a bigger treatment unit (with large sedimentation ponds, filters, etc.). It is cheaper to have one pipeline system in a single geographical area. Thus, there are economies of scale in the capital investments for processing and supplying water.

The implication is that it is better to have one single firm carrying out these tasks as against multiple firms, each owning reservoirs, treatment plants, and pipeline systems for supplying water in a geographical territory. However, if only one firm is allowed to function, it could exercise monopoly power – not producing adequate quantities and hence being able to charge a higher price than would prevail in a competitive situation. Such a situation would generate social losses. Hence, it may be necessary to have a single firm, which does not exercise monopoly power or that does not impose social losses.

Government intervention is required to see that the single firm does not behave as a socially harmful monopoly. However, government

intervention may be of different kinds. Conventionally, it has taken an extreme form of regulation, i.e., by resorting to ownership of firms supplying water. What about water supply by private firms? See Box 1.

### **Box 1: On Private Water Supply Companies**

Theoretically, one can analyse the regulation of the private firm providing monopoly service versus the government owning the firm. Regulation has merits and demerits. Tapping the possible superior incentives to achieve efficiency existing in private firms is the main advantage of having a regulated private utility. However, regulation of private firms, especially in a crucial public service such as water supply, has not been that easy. The possibility of regulatory capture arising out of the superior information on the production/supply process and its costs that the private company has vis-à-vis the regulator is the main disadvantage. We have not seen many successful cases of regulated private utilities supplying water anywhere in the world<sup>1</sup>.

However in many parts of the developing world, state-owned centralised systems do not provide (adequate) water supply to many locations. These include suburban or newly developed areas, urban slums, and other places where the poor live without adequate property rights. Even in areas catered to by the centralised supply systems, the duration or quantity of water supply may be much less than that which is adequate. In such areas, people depend on water supply by private operators which can take many forms – use of tanker lorries to bring water to households and firms (widely seen in India), bottled water available in shops, and private well owners allowing people to draw water on payment. It is observed that people who depend on such private supply have to spend significantly more than what they would have had to pay for getting water from the centralised system.

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1 For example, see Bakker, K. (2003) for an experience in England and Wales in the UK.

However, all activities carried out as part of water supply do not have economies of scale. For example, billing and charging (and collection of water charges) does not seem to have economies of scale beyond a point. It may be possible for a multiple set of firms in a densely populated urban area to go to the households, record meter charges and collect the payment for the water bill. (Competition among them would minimise the cost of meter reading, billing and water charge collection). This would also be the case with regard to repair of line faults. Frequent line faults and lack of timely repair and maintenance are an important reason for the erratic water supply in many localities of the developing world. There may not be any significant economy of scale in carrying out such repair/maintenance services, and more than one firm could probably provide such services competitively.

Thus, it is the existence of economies of scale that primarily shapes the logic of governmental ownership and/or provision of water supply. Information issues and the merit good property of water supply also justify government intervention, but these reasons do not warrant direct government provision or management to process/supply water.

### ***Who should supply water – city or state government?***

If a city government is better placed than a higher level of government to provide a good or service more efficiently, then it should be called upon to do so. There can be two dimensions to efficiency here. First, the service provided by the government should reflect the actual demand by its citizens. For such services provided by the government, demand is not expressed through the market, but through a political process including elections. Here, people may exercise an

'exit' option in the political market during elections and a voice option in between elections. Thus we expect that for goods like water supply, citizens in a locality may express their actual demand more effectively through their representatives in local government rather than those in higher strata of government. However, the veracity of this presumption may depend upon the 'access' of local government representatives vis-à-vis those of the state government in a region. For example, if the elected reps to the state legislature can get information about the problems of (demand for) water supply in most parts of his/her constituency, and communicate these to the state government, then the presumed advantages of handing over the function of water supply to local government representatives are exaggerated. Moreover, the expected efficiency gains when the function is transferred to local/city government is based on the assumption that losses due to corruption, if any, are similar whether the responsibility is in the hands of the local government representatives or state government representatives. However, the focus of this note is not on such efficiency gains through the 'demand' route.

The second dimension of efficiency is that the cost of supplying a given amount of the service should be minimal. This is related to the level of economy of scale of different activities involved in water supply. For a particular activity, if the peak of the economy of scale (at which maximum cost reduction is obtained as the scale of operation increases) occurs when the level of operation is limited to the geographical area within the city, it is desirable that the activity is controlled/regulated by the city government. On the other hand, if the peak of economy of scale requires operation in an area larger than the city area, then it would be appropriate to have higher forms of government (either the state or central government) to manage water supply. This may vary for the different activities involved in water supply. Let us consider some specific activities in this regard.

### ***Water storage***

If surface water is the source of supply, large ponds/lakes or reservoirs with or without dams are needed to store water. Such large water storages are likely to be cheaper in terms of per unit cost of storage compared to several smaller ponds/reservoirs. Though such areas of storage may be available within the cities in some cases, more often this is not so. Such reservoirs may be located in areas outside city limits. This does not necessarily mean that city governments cannot have control over water storage. However, this situation poses some challenges. There can be multiple institutional/organisational options for regulating/controlling water storage.

#### ***Option A: City government constructing or (contracting for) water storage elsewhere***

The city government can buy land/territory outside the city and construct reservoirs. The construction of dams/reservoirs and ensuring that adequate water reaches it requires upper watershed management and also possibly, acquisition of land from several private landowners and/or use of public lands. This may call for the active coordination of activities by the local government over the territory in which the reservoir is located. Otherwise, the city government would require the full backing of the state government which has ultimate authority over the local government. The city government may also provide some monetary compensation for the loss of the reservoir territory or even pay a royalty for the use of their water. There can also be a contract between the local government and city government regarding transfer of water. This would mean that the local government (or a private entity licensed by the local government) would build the reservoir in the hope of selling water to the city government as part of a contract.

However, two contract contingencies need to be considered here<sup>2</sup>. After putting up the reservoir and associated water supply system within the city, will the local government withhold water in anticipation of more favourable terms, as part of a renegotiation of contract? Such action on the part of the local government is more likely when the local government has other possible buyers for its water (say other city governments or other customers). The city government in question may be forced to accept conditions that may be unfavorable to it, especially when it does not have other alternative sources of water. There can also be another contingency. What would happen if, after building the reservoir, the city government wants to reduce intake (or price) through a renegotiation of the contract? It may prove costly for the local government if it does not have other buyers for the water in case the contract with the city government breaks down. This is because the asset (here water storage or reservoir) was created specifically for use by the city government. Such contingencies and uncertainties may encourage both parties to be over-cautious in the negotiations preceding the drawing up of the contract. In some cases, such excessive caution may discourage them from contracting altogether or cause them to go in for terms which may increase the transaction costs of the contract.

Such contingencies may also encourage the water user (city government) to seek to own the water storage in the territory outside the city (rather than obtain regular water supply through a contract). Such ownership would solve some of the problems associated

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2 We need to understand that all contracts are incomplete. Moreover, when one of the parties makes an investment based on the contract relationship with the other, there may be problems in the expected returns of such investments due to the hold up problem (Grossman and Hart, 1986; Hart and Moore, 1990). For a review of the theory of contracts relevant for discussions on outsourcing, see Spencer (2005).

with the contingencies mentioned above. Since the water user in this case is the party mainly responsible for the greater part of the 'surplus' (or welfare) generated through the use of water storage, it is more beneficial if that party owns the asset.

***Option B. State government regulating/controlling water storage***

Considering that large-sized water storages or reservoirs can be used for supplying water not only in that area but also elsewhere (in areas that come under different local governments), the state government may regulate/control or even own such storages. Such ownership by the state government can be extended to include water resources in general or even large-sized water bodies like rivers/lakes spread over the territories of different local governments.

The state government (or private companies licensed by it) may develop/conservate the water storages/reservoirs for multiple uses (including irrigation, water supply, electricity generation, tourism, etc.), and for multiple users (water supply for different city and local governments). It will then have to enter into contracts with the city governments to supply water in bulk quantities for the latter's internal distribution system. There are challenges in contracting here too, but these are not as severe as those in the case of contracting between a local government and the city government. Since it is the state government which owns reservoirs, it may have other buyers for its water, or, the city government does not have other sources of water if it violates the contract with the state government. This may reduce the contingencies involved in this contract. The bulk water seller is a monopoly here but since it is owned by the state government, it can be presumed that the monopoly will be regulated or managed in a manner as to avoid the associated social losses.

However, the advantage of a contract between the local government (or its licensed private company) and the city government is that the costs for both parties become more transparent. If the state government builds a reservoir in the same territory and supplies water to the city, the costs imposed on local people (where the reservoir is located) may become less transparent.

### ***Water Distribution***

There is a natural monopoly in the pipe-line system for water distribution, in the sense that it is cheaper to have one pipe-line system within a geographical area. However, this natural monopoly is likely to exist only within the city government territory. Thus, it would be efficient if the city government owns the pipe-line system. Similarly, it is cheaper if a single agency invests for upgrading/improving the pipe-line system. Thus an economy of scale does not necessitate any role for a government higher than the city government in the regulation/control/ownership or investment in the water distribution system. Here, contracting between the city government and private companies under Build and Transfer terms are feasible, but Build, Operate and Transfer (BOT) contracts may be more difficult to implement, since there can be costly contingencies involved. The BOT contractor creates specific assets, and after making 'sunk investments', the city government may ask for terms favourable to it through renegotiation. Democratically elected city governments will be under political/electoral pressure to reduce (or not to increase) water rates in future and this may encourage them to put pressure on the BOT contractor. Moreover, city governments, which are elected for 3 to 5 years, may find it difficult to give credible commitments to stick to the contract with the BOT contractors, who may need 30-50 years of operation for recovering fixed investments. All these features may necessitate that the city government own the asset, i.e., the water distribution system (rather than allowing a private company to own it and operate it under a long-term contract.)

### *Operation of Water Supply*

We have seen that it is cheaper or more efficient to have one firm investing in the water distribution system. However, this does not mean that the operation of the water supply system has economy of scale. For example, it may be better to have public ownership of roads, while both private and public firms can own and operate vehicles or buses on them. However, there are certain technical reasons that limit the efficient number of firms that can operate to supply water in a city on a regular basis. Given the interconnectedness of water in the whole distribution system, it may be costly to have multiple control or input points. Thus it may be desirable to have one agency operating the water distribution system for the whole city.

However, this agency need not have jurisdiction beyond the city area, and hence such an agency can be one owned or controlled by the city government. It can be a department or organisation directly functioning as part of the city government. However, it can also be a private agency contracted for the purpose. The competitive selection of the private operator is likely to bring down the cost of its operation (by tapping this competition and private sector incentives for cost minimisation). Nevertheless, there can be contracting challenges involved. Some of these are discussed in Box 2.

#### **Box 2: Contracting a private agency to operate the water supply system – Challenges**

There are two major issues here: the first is the typical problem of the contingency of ex-post demand for renegotiation of the contract. The city government may ask the private operator to put in more effort or reduce its potential revenue. Since the private operator has not created the water distribution system, the 'sunk investments' for assets specific to this particular operation may be not very high. Thus, the private operator may not yield to such pressure on renegotiation. On the other hand, if the pressure

to renegotiate is initiated by the private operator, the city government can take a firm stand only if it has organisational alternatives for the eventual take-over of the operation from the private operator as quickly as possible. This is due to the fact that water supply is an emergency service, and any break in service due to possible 'black-mailing' on the part of the operator can prove very costly for the society. The second challenge is that due to finite nature of the duration of the contract with the operator. In order to benefit from competition and also from the changing economic environment, the parties may enter into short-period (say, annual) contracts. However, the contracting party who sees the end of the operation at the end of one year, may not have enough incentive to cooperate with the principal (here, the city government) towards the end. For example, why should the operator handle the physical assets of the water distribution carefully, when he expects to end his contract within, say, one year? This problem can be solved if all aspects of handling of the distribution system, and any default in this regard, are accounted through proper liability clauses in the contract. Given the inevitably incomplete nature of all the contracts, this is seldom possible. Usually private firms which take up such operational contracts, would like to build up a reputation as a way of enhancing their likelihood of getting future contracts in the same city or elsewhere. Such firms may be careful when handling the water distribution system. However, this depends on the way the government in question incorporates the past performance indicators of the firm (in this locality or elsewhere) into the selection of the competitive bidder for the operation contract, and also the way it communicates this firms' performance deficiencies, if any, to other potential principals (say, other city governments who are likely to contract in such firms).

### ***Billing, water charge collection, line fault repairing***

As mentioned earlier, there need not be any significant economies of scale in these activities. For example, one person can

be hired for billing and he can do a maximum of 40-50 households or firms per day (or 1000-1500 per month) after reading the meters located their premises. Thus if the city wants to hire private firms for such billing operations, it can have a number of firms in a city with a population of about a million or half a million. This would enable competition among firms. For example, one can designate a large number of firms to carry out the service, on the basis of a competitive fixing of the cost to be transferred by the water distribution agency (to the billing firm) based on the number of customers the latter serves. This may encourage billing/water collection firms to compete among themselves to provide better service (for example, to have flexible timings or dates or organise the site visits at times convenient to the customers for the collection of charges, etc.), so as to attract more customers. It may be necessary to have information campaigns and contract clauses in countries like India to prevent customers from being fleeced by such private billing firms (recording incorrect meter readings, over-charging, etc.). It is also necessary to have a proper accounting of the flow of water at higher levels of the distribution system so that cross checking of the metered sales can be carried out at different levels periodically. There has to be cross checking of the functioning of the private billing firms, and there have to be penalties including the termination of the contract, if the party is found guilty of violating its terms. If the institutional structure is weak and characterised by problems such as the absence of proper records of water sales, high probability of fleecing and high supervision costs, then it may nullify the benefits of efficiency in having competition and private firms in billing and water charge collection.

Line fault repair is also an area which allows contracting with private firms, as several such firms can usually function in a city of even medium size (say, half a million). However, there are challenges in contracting here and some of these are similar to the problems in billing

and water charge collection. Further, the line repair firm may have to coordinate more closely with the water distribution agency, as it may require closing/altering the water flow during repairs. Moreover, it may be necessary to ensure quality in the standards of repair (so that it does not lead to more line faults in the future or impact the other nodes of the water distribution system in the locality). Thus there is an issue of negative externality here, warranting regulation/supervision on the part of the water distribution agency.

The repair firm could also have ulterior motives, and these need to be considered in deciding the compensation and contract conditions. If the payment is per event of repair, then the firm would try to increase the number of faults (this can be done by purposeful negligence which would cause more faults to occur later. In extreme cases, the repairing agency may even deliberately cause more damage). If the compensation is fixed for a territory and duration, then it becomes a monopoly service, and hence the firm may have little incentive to persevere to rectify each line fault or to respond quickly to the calls for repair. If the compensation is decided according to the performance of the water supply service (free of interruption due to line faults), the firm may have an incentive to keep the water distribution system in good health, and to minimise the durations of 'no supply', but this service has to be a monopoly in a geographical territory, which in turn may require regulation by the water distribution agency. This may not be different from the case in which the central water distribution agency license distribution in each sub-area to a private firm.

Thus for services like billing, water charge collection and line fault repair, the city government can use its own agency or contract out these tasks to private firms. For efficiency reasons, it is not necessary to involve the state or other higher governments in such areas.

### *Planning, Design and Technological Services for Water Supply*

These are activities which have economies of scale. It may not be cost-effective for a city government to employ several highly qualified persons or those with good experience in planning, design and the provision of other technological services related to water supply. If the government does so, a substantial part of the time and services of such employees may be underutilised, since there may not be adequate demand for their services. Or if the city government is overly cost conscious, it may have to be content with employing persons with lower qualifications and experience to perform these services. There are different ways of solving this problem.

One option is for the state or higher levels of government to have agencies specialising in the provision of these services to multiple cities (and localities) as and when their services are required. Another option is for the city government to hire consultants/consulting firms as and when it requires such services. These consultants may be those providing similar services to many such governments within the region/country or even outside the country. Hence they need not be limited by the lack of economies of scale for their services within a particular geographical territory (like a city). Moreover, the technical services (including planning and design) for water supply are well standardised nationally and internationally, and so there are no major challenges in arriving at ex-ante contracts with consultants for this purpose. (However, this may not be the case for some other services, say, the institutional reform of water supply in a developing economy).

In this regard too, there are many contracting challenges. It is desirable for the principal (city government) to have ability (qualified in-house staff) to assess the requirements in terms of planning, design, etc., and also to assess the quality of the work delivered by the outsiders (whether they are the agencies of the higher governments or consultants). In the absence of such capability, there is a problem in hiring appropriate

consultants and also in seeing that appropriate quality output is delivered. If the city government does not have this ability, it may be desirable to depend on agencies deputed by the higher levels of government, since such agencies have long-term contracts with those governments, and they may be penalised for provision of poor quality or faulty service.

There are advantages and disadvantages in using the state-level agencies vis-à-vis private consultants. The compensation offered to the technologists of the state-level agencies may be unrelated to the services provided in a particular case, and hence they have less incentive to put in adequate effort to provide such service or to acquire expertise to provide such service. Thus they can be both 'lazy' and 'outdated' in terms of technological expertise (and this is a problem that we see in many state-government technology departments). Even when the state government recruits bright young engineers or technologists at the entry level, they do not update their expertise and hence, become obsolete as time goes on. It is difficult to reward the acquisition of technological expertise within government agencies, especially in India, where the decisions on salaries and promotions are based merely on seniority (partly due to the fear that any consideration of merit in this regard may lead to ad-hoc, corrupt and biased practices). However the compensation of technologists of these agencies is likely to be indexed to salaries in the domestic market.

On the other hand, compensation is related to the service provided by the consultants. They compete for at the national or international level. Thus they have an incentive for delivering the service and also to acquire expertise to outsmart competition. If the output is not well monitored, consultants too can deliver sub-standard or unsatisfactory service by spending less time on a given assignment, especially if they are busy seeking other lucrative assignments. The delivery of poor or shallow output/service in one assignment would also affect their

reputation and lower the likelihood of getting other assignments in future. They may be competing internationally to get jobs in other countries carried out by the international funding agencies, and hence their salaries are indexed to the international wages for comparable jobs. If the consultant hired is one who is not competing for an assignment at the international level, his/her required salary may be lower, but the quality of services can also be significantly poorer. This is so since if someone is not competing in international market, it may be more often due to the inability to win over other international consultants. Thus quality consultants may have international opportunities and hence their compensation is likely to be much higher. Moreover, there are several imperfections in the market for consultants for such technical services. Some of these issues are discussed in Box 3.

### **Box 3: Imperfections in the market for consultants**

First of all, there are principal-agent (PA) problems at multiple levels. Citizens as principal, use the political representative as an agent, political rep as principal uses official as the agent, and official as the principal uses consultant as the agent to carry out the task. In any PA relationship, there is a problem of how to induce the agent to behave in the way to meet the objective of the principal, and there are possibilities of divergence between the interests of principal and agent. This problem gets magnified in multiple PA relationships. Thus if having good quality public good is the objective of the citizens, same may not be the real objective when they use political rep as the agent and then when the politician use the official. Consultant is hired to meet the objective of the official or the political representative. Consultants or consulting firms are aware of this issue. Thus they may develop 'expertise' to meet the interests of officials or political reps rather than meeting the interest of the citizens.

There are (asymmetric) information problems too. One issue is the difficulty in judging the quality of the consultants. This would

call for the inevitable dependence on signalling and screening mechanisms. Past experience is one such indicator. This and also the necessity of fulfilling the objectives of officials/political reps, could give rise to a situation where those consultants with long years of experience in meeting the 'requirements' of officials/politicians, get more contracts. They need not be the 'best' in terms of meeting the 'quality standards' of the public goods provided to citizens.

Thus there may be a need for city governments to depend on state-government organisations or private consultants operating at the national/international levels for the design, planning and other technical services. The choice between these two (state organisations and private consultants) may be decided on the basis of quality and cost. It would be better if both the state agencies and private consultants compete for jobs from the city government, and the selection is based on quality-cum-cost evaluation. Such competition may encourage the state-level agencies to improve their skill sets and be responsive to the requirements of the clients (provided such agencies and people working within them have incentive to capitalise on such contracting opportunities.) On the other hand, the city government with its own section/people for providing design/technological services may not be the desirable solution. However, city governments should have people who are able to demand the quality service from the consultants, and also to judge the quality of the service provided by them. This requires a minimal set of staff, which has proficiency in the technological and regulatory aspects of water supply. Otherwise, city government may have to go for multi-level contracting for the provision of technological service at the first level, and contracting with an oversight agency which can (and have incentives to) critically evaluate the services provided by the first level consultant. Even if multi-level contracting is attempted, the city government should have the managerial/regulatory capacity to judge reasonably well, what it wants and what it gets from different tiers of consultants.

We summarise the discussion on who – whether city or state government - should carry out the different activities involved in water supply service in Table (1):

**Table 1: Desirable role for city government on different activities in water supply**

Activity	Institutional arrangement which is likely to be efficient	Desirability of Competition
Water Storage	City government ‘buying water’ from state or other local governments or their licensed water ‘sellers’	Only limited competition possible/desirable
Laying down water distribution system	City government	No competition desirable; competition for construction contracts
Daily operation of water supply to the customers	City government or its licensed agency	Competition for licensing for annual operational contract desirable
Billing, water charge collection, line fault repair	Many firms licensed/ designated for this purpose	Competition among licensed/designated firms possible
Planning, design and other technological services	State organisations or private national/ international consultants	Competition for hiring consultants/state organisations desirable

***Factors that constrain the shift towards an efficient institutional framework***

Even though the constitutional amendment encourages the city government to have full responsibility in water supply, and the economic rationale, as argued in the previous section, shows efficiency gains in having a greater role for city governments in some ( not all) activities of in water supply, this is hardly achieved in many parts of India. Water supply is currently carried out by the state government organisations.

There may be multiple factors that operate at different levels and lead to this situation.

At the lowest level, the city governments in most parts of India are yet to acquire any significant capacity to intervene in water supply. This could be partly due to the lack of willingness on the part of state governments to transfer the staff and responsibility required for this due to organisational and political economy reasons.

### ***Organisational Constraints***

We have seen that the level of economy of scale and the desirable role for the city government (for efficiency considerations and not constitutional reasons) vary for different activities of water supply. However, currently all these roles are bundled and assigned to the state government organisations (like Water Authority or Water and Sewerage Boards). For example, the state organisation develops and manages reservoir and water storages or sources, constructs water distribution systems, operates water supply, carries out billing, water charge collection and repair of line faults, and also undertakes planning, design and associated technological services. Under such a system, if the city government wants to supply water services, it may have to depend on the state organisation for getting water (as it may not be efficient for the city government to develop its own water reservoirs). The state organisation's cost of supplying water to a city is known only to itself (even that is unclear due to its bundled nature). The city government may be asked to pay a price much higher than the actual cost of supply due to the monopoly ownership of water storages. This may make the proposed role for the city government a costly and difficult one. Thus the shift towards an efficient institutional framework would require the unbundling of the different activities of the state organisation that currently carries out these tasks. This will achieve more transparency in not only the costs of each of these activities but also the gains of competition if any from contracting out or outsourcing some services.

Assume that water storage itself comes under one or several organisations (or governments), and they have to or want to sell water to different bulk buyers. Then reasonable bargaining and mutually beneficial contracts may become possible.

Similarly, the sub-organisation dealing with the operation of water supply in each city is not clearly visible in the current organisational structure, and in such circumstances, this task could have been handed over to the city government. At present, services like billing, water charge collection, line fault repair, etc., are mostly carried out by the employees of the state level organisation, and this may also prevent the shift to a more efficient arrangement in this regard wherein a greater part of these activities can be outsourced to licensed/regulated private firms.

In the present set-up, the state organisation provides the planning, design and technical services for water supply all over the state. It may have to continue to play this role (ideally in competition with private national/international consultants), as it may not be efficient for the city government to create its own organisational capacity for this. However, the state organisation needs to un-bundle its sub-organisation that carries out planning, design and technological services.

Thus the city government can perform a greater role in water supply efficiently only if the activities of the state organisation are unbundled. There are two costs involved in this unbundling. There is a one-time cost for unbundling. This includes pricing of all assets, fixing of transfer prices between unbundled units and also the establishment of these units into separate and viable entities with appropriate management structures. The second cost is the transaction costs involved in the negotiation between the unbundled units to arrive at appropriate plans to procure inputs and services. For example, the water supply unit in each city may have to enter into negotiations with 'water storage' organisations to procure an adequate amount of water supply. There are

transactions costs involved in these exercises. It may be noted that when the state government organisation carries out all these activities as a vertically integrated firm, there is considerable saving in transaction costs. This is the conventional justification for the existence of a hierarchical firm (Williamson, 1975; 1985). Thus if the institutional context is such that the costs of unbundling and the transactions costs involved in the building up of relationships between the unbundled units are very high, this may be weighed against the expected gains of shifting the responsibility to city governments. There can be situations where the expected net gain may be small or minimal, and this may discourage societies from carrying out the proposed institutional change.

### *Political Economy Constraints*

The organisational constraints mentioned above may not be removed due to political economy constraints. These may be manifest at different levels.

Like any other state government organisation providing public service in a bundled manner, the existing organisations (and their employees) have a strong incentive to block organisational changes. This is so even if there are no major changes in the number of employees (warranting retrenchment) or their compensation structure. This opposition is likely to be severe in the case of water supply when an increased role of city government would require unbundling, which in turn, would make the cost of activities transparent and add competitive pressures for performance.

States like Kerala may face yet another challenge. Conventionally, the water resources portfolio is given to a minor partner in ruling coalition, or seen as a slot to accommodate a political person/constituency. One of the main tasks of this ministry is managing the affairs of the Kerala Water Authority (KWA). Any reduction in the role and size of KWA can be viewed as shrinkage of the 'power sphere' of the

minister or coalition partner. Thus, the minister's tendency would be to collude with the organisation and its employees in order to retain its current structure without unbundling or reduction of its operations.

In a country like India, citizens at large, too, could have perverse motives for opposing such institutional changes. Santhakumar (2008) discusses this point in the context of electricity supply. Currently, very few people (almost no household in a state like Kerala) pay the actual cost for the supply of water, that is, water supply is a heavily subsidised service for almost everyone, a situation which calls for the state government to meet the cost of subsidy from tax revenue. This has important implications. First of all, citizens in general do not have much interest in enhancing efficiency in water supply, since they do not bear the cost directly. If city governments have to provide similar levels of subsidy, the state governments' grants to them would have to increase drastically (and this will make transparent the fact that a major part of water-supply costs of the state government are actually the subsidy to the residents of a few cities). On the other hand, if city governments reduce the subsidy and charge a higher cost (maybe with improved efficiency and quality of service), this may not go down well with a substantial number of citizens who may prefer higher subsidy (since this will mean less pay out cost for them) and probably the current levels of effectiveness or quality of supply. A prescription to enhance the role of the city government and limit the role state government (and the unbundling of its organisation), thus poses significant uncertainties for a number of citizens. This situation can serve as a base for building up opposition to the institutional reforms by the employees of the current organisation, the political structure at the state level that wants to retain the ministry, and also anti-reform ideologies of different kinds. Thus the political feasibility of water supply reforms that would increase the role of city governments in water supply is, at best, uncertain.

## **Conclusion**

The institutional economic analysis shows that supply side efficiency could improve through a greater role for city government in water supply. However, there is no guarantee that city government can achieve efficiency in all the activities related to water supply service. Hence a blind application of the 'constitutional principle' may not increase efficiency. Given the possibilities of enhancing supply side efficiency, the overall efficiency may go up if the city governments can achieve greater demand-side efficiency (i.e., to communicate the actual demand for public service to the political decision-making process through the local government reps) compared to higher levels of government.

In order to realise this efficiency, significant institutional changes are needed in the existing state organisation that provides water supply. Unbundling of its activities into water storage, management of the city-level water distribution system, provision of planning, design and other technological services, etc., is necessary. Only then can the city governments take over some activities, and conduct transactions with the state level organisation (on a competitive basis) wherever efficiency warrants such transaction.

These proposed institutional changes are likely to be opposed by the existing organisation and its employees. This is true even if there is no retrenchment and there is no significant change in the compensation structure of the employees. Politicians at the state level would also oppose this if the change in the state level organisation is likely to shrink their power sphere. Interestingly, citizens at large may also have an incentive to oppose the proposed change. This is due to the fact that, currently, they do not bear even a minor part of the cost of water supply through the charges they pay as it is subsidised through taxes by the state government. Thus they may not have much interest in achieving efficiency gains in water supply as they are not bearing the cost directly,

and also due to the uncertainty involved in the ability of city governments to provide similar levels of subsidy. Thus, if efficiency gains from the supply side are the intended benefits of enhancing the role of city government in water supply, it may not have adequate social support in the current context in many developing countries. This ‘disinterest’ in enhancing the role of city government in water supply will be compounded if there is a perception that local government representatives, compared to their counterparts at the state level, are likely to be more corrupt or less able to control the corruption of their employees.

## References

- Bakker, K. (2003) *An Uncooperative Commodity – Privatization of Water in England and Wales*, Oxford: Oxford University Press
- Blasé, M. G., Gottman, W. and McNabb, C.G. (1972) “Public Water Supply Districts: Evaluation of a New Institution,” *Land Economics*, 48 (3), 273-276.
- Grossman, S. J. and Hart, O. D. (1986) “Costs and Benefits of Ownership: A Theory of Vertical and Lateral Integration,” *Journal of Political Economy*, 94 (4), 691-719.
- Hart, O.D. and Moore, J. (1990) “Property Rights and the Nature of the Firm,” *Journal of Political Economy*, 98, 1119-1158.
- Santhakumar, V. (2008) *Analysing Social Opposition to Reforms – The Electricity Sector in India*, New Delhi: Sage.
- Spencer, B. J. (2005) ‘International Outsourcing and Incomplete Contracts,’ Working Paper 11418, National Bureau of Economic Research, Cambridge, Massachusetts.
- Williamson, Oliver E., (1975) *Markets and Hierarchies: Analysis and Antitrust Implications*, New York: The Free Press
- Williamson, Oliver E., (1985) *The Economic Institutions of Capitalism*, New York: The Free Press.

