

## Water and Urban Poor

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### Abstract

Rapid urbanization has given way to increased urban poverty and greater demand for many utility services in India. In particular the pressure on public water utilities becomes immense, which to a great extent are not able to provide services of good quality for all. The urban poor suffer the most because of the inadequate water supply as they can not afford the payments that have to be made as coping strategies and neither can they afford to spend time standing in lines. Among the numerous factors responsible for the poor service delivery the most important is the meager pricing of the water, which discourages investments in the system and prevents the municipalities from adopting any water saving schemes.

Since the Governments in general are either unwilling or unable to raise tariffs and improve cost recovery, the only solution is allowing private participation in the sector. Privatisation along with improving cost recovery and encouraging quality and cost innovations will also ensure a more efficient and accountable service delivery system. As for the arguments against privatisation of the water sector: the perceived inability and unwillingness of the poor to pay the charges under the privatised system, both are proven to be baseless. The poor do pay and often pay a lot more per liter than the well off even while they do not consume as much as the rest of the population do. In addition, as numerous WTP studies show the poor would be willing to pay higher user charges if they were ensured a more adequate and efficient supply. Thus we have privatisation as the model means to counter the deficiencies of the current water supply system.

**Key Words:** urban poverty, public utility, privatization, willingness to pay, cost recovery, tariffs.

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## 1. Introduction

In the recently held World Urban Forum in Vancouver, the United Nations launched the State of the World's Cities Report 2006/7 which made a surprising claim: Slum dwellers in developing countries are as badly off if not worse off than their rural relatives. The report shows remarkable similarities between urban slums and rural areas in health, education, employment and mortality. It shows how in countries such as Bangladesh, Ethiopia, Haiti and India, child malnutrition in slums is comparable to that of rural areas. In many Sub-Saharan African cities, children living in slums are more likely to die from water-borne and respiratory illnesses than rural children. Women living in slums are also more likely to contract HIV/AIDS than their rural counterparts.

The report has a special significance today as the world enters a 'historic urban transition'. In 2007, for the first time in history, the world's urban population will exceed the rural population. Most of the world's urban growth – 95 per cent – in the next two decades will be absorbed by cities of the developing world, which are the least equipped to deal with rapid urbanization.<sup>1</sup>

### *1.1 Urbanisation and its pressures*

Urbanization has been taking place at rapid rates in India too. In 1961 about 79 million persons lived in urban areas of the country; by 1991, their number had increased to over 217 million, registering an increase of over 250 per cent in the three decades.<sup>2</sup> In 2001 the urban population had increased to 285 million, an addition of 31 percent.<sup>3</sup> Trends suggest that by 2011 the urban areas would support a population of over 400 million and of over 553 million by 2020 (41% of the projected total population).

Among the numerous infrastructural service demands that rapid urbanization places on the country's resources, the one that often remains unfulfilled is the urban water demand. According to WHO statistics, around 1.1 billion people globally do not have access to improved water supply sources whereas 2.4 billion people do not have access to any type of improved sanitation facility. Around 2 million people die every year due to water related diseases such as diarrhoea most of them being children less than 5 years of age.<sup>4</sup> A UNESCO report estimating that by 2050, at best 2 billion in 48 countries and at worst 7 billion in 60 countries will face fresh water scarcity indicates only a further deterioration of affairs.

The situation is not much better in India. A survey conducted in 2000 showed that in many urban centers, the availability of water is less than 100 liters per capita per day, with only 2.7 per cent of surveyed municipalities are reported to supply over this amount. Approximately 28 per cent of the municipalities provided less than 50 liters per capita per day.<sup>5</sup> In case of sanitation, although nearly 50 percent of the urban population is covered with sanitation services, only 28 percent of the urban households are connected to the public sewerage system. Further, where as approximately 300 urban centers have a sewerage system, only

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<sup>1</sup> UN- HABITAT Report, 2006

<sup>2</sup> NIUA Urban Statistics – Handbook 2000

<sup>3</sup> Census of India, 2001

<sup>4</sup> WHO Report, 2006

<sup>5</sup> NIUA Urban Statistics – Handbook 2000

70 of them have sewage treatment facilities. The position with respect to the collection and disposal of garbage is worse; the coverage is as low as nearly 30-40 percent.<sup>6</sup> While there has been some improvement in 2001 (the urban access to drinking water considered safe by Government standards has risen to 90% and urban access to sanitation facilities has risen to 67.1%) however access to reliable, sustainable and affordable water supply and sanitation services is still meager.

Whether in small towns or mega-cities, piped water is never distributed for more than a few hours a day, regardless of the quantity available. In urban areas raw sewage often overflows into open drains because sewers are blocked or pumping stations not functioning. As far as financial sustainability is concerned, a few mega-cities recover from user charges the full cost of water supply and sanitation service, including operation and maintenance and capital costs. But most urban operations still survive on large operating subsidies and capital grants provided by the states.

Most households, forced to cope with poor quality water supply and sanitation service, spend time and money on expensive and unsafe substitutes and on treatment for waterborne diseases. User charges are low by international standards, but the cost of the alternatives on which users must rely far exceeds the full cost of providing good quality service. In addition, government laws usually prevent suppliers from providing water pipe networks into illegal, unplanned housing areas. So though up to half the city may live in these areas, including the poorest, these people receive no government support for water. The higher income households, living in the planned areas, receive most government help.

This discussion paper examines why the water services in India, especially to the poor, is found lacking. And then proceeds to suggest possible reforms and measures that can be undertaken to improve the current situation.

## **2. Present Status of Urban Water Supply in India**

India is blessed with some of the best natural water resources in the world. It has perennial rivers that are spread fairly evenly across the country, a large coastline, and generally high rainfall levels. The country's large population centers also tend to be spread out according to the availability of water. Despite all of this, many urban Indian households do not have adequate water available for their daily requirements.

International organizations such as USAID, the World Bank and the WHO recommend between 20 and 40 lpcd for the average human being. This estimate excludes water for cooking, bathing, and basic cleaning. However, for hot countries such as India, somewhat larger amounts are required – both for better hygiene and for consumption. The National Capital Territory of Delhi with its extreme climate provides a perfect example. The 2001 'Master Plan of Delhi' (MPD) recommends 70 gpcd (equivalent to 265 lpcd), while a manual on water supply and treatment produced by the Central Public Health Engineering and Environmental Organization's (CPHEEO) recommends 60 gpcd (227 lpcd) as a minimum. According to these estimates, Delhi's daily water requirement in 2001–2002 was 827 or 965 mgd, in contrast to the Delhi Jal Board's capacity to supply only 650 mgd, and even this amount does not fully reach the household consumers.

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<sup>6</sup> NIUA Urban Statistics – Handbook 2000

Before analyzing the factors responsible for the inadequate service and the consequences of the meager and inefficient supply an overview of the institutional arrangement responsible for the water supply is essential.

### *2.1 Institutional arrangement for water supply*

Provision of water supply in India had for long been a function of the municipalities and still is in many urban centres. In most urban centres this task is divided between at least two bodies - capital works are executed by state level agencies and the operation and maintenance (O&M) function is performed by the local governments. Most large capital works are funded by higher levels of government, which also provide technically qualified manpower for construction purposes. The local government is then handed over charge to maintain the water supply system. However, there are many variations to this arrangement. In different states there exist different arrangements and even within the same state different cities may have varying arrangements.

In some cities, the municipal body is still responsible for providing water supply, while in some others, city level water supply and sewerage boards have been constituted to perform this function (mainly in metropolitan cities). While in still others, state level water supply and sewerage boards are responsible for this function. The common pattern observed in most cities is that a state level agency, such as Public Health Engineering Department/ Division (PHED) or a state level water supply and sewerage board, does the capital works and once the construction is over, hands over the responsibility of O&M to the local government. In some cities the state level agency does the capital works and O&M while the revenue functions are with the local government.

### *2.2 Factors responsible for inadequate service*

Where does the problem lie? In India water is priced very low; the municipalities would actually receive negative net revenues if they undertook water saving mechanisms, such as setting up of water metres etc. The low cost recovery has discouraged investments in improving the water supply infrastructure. Theft and pilferage are rarely monitored and leakages are common. Consequently, a large percentage of the water is lost. Estimates of these losses range from 40 to 60 percent of the total processed water in Delhi.<sup>7</sup> Another problem is that of unpriced water in the urban slums. These areas receive water at a common source, where it is collected by each household. In many places, this source is not even tapped, so water flows and drains away freely whenever it is supplied and regardless of whether it is collected.

### *2.3 Consequences of inefficient and restricted water supply*

Unlike the cities of the rest of the world, no Indian city supplies water 24 hours a day. Almost all neighborhoods obtain water once or twice a day. Consequently they are forced to draw and store water for their expected daily requirements. During this drawing and storing, water is lost. Moreover, users are likely to draw more water than they actually need. Leaking pipes, water storage and the slow movement of water during transmission and distribution contribute to health problems, especially for the poor. In India's tropical climate,

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<sup>7</sup> Laveesh Bhandari & Aarti Khare, March 2006. Poor provision of household water in India. Chapter 4 in *The Water Revolution; Practical Solutions to Water Scarcity*. London, UK: International Policy Press

parasites multiply rapidly. When water moves slowly, or is stored, this process accelerates. When pipes leak, impurities enter the water. Consequently, households are forced to filter and/or boil their water to make it fit for human consumption, a process that requires use of electricity and cooking gas (or LPG). Households that are unable to do so have negative health consequences – in the form of water-borne diseases such as diarrhoea, typhoid and many others.

The following table gives an overview of the water access problem in urban India. Approximately 70% of the urban households have tapped municipal water as the main source of water. The rest must rely on other sources of water supply.

<b>Main sources of water in urban India</b>		
<i>Source</i>	<i>No. of households (millions)</i>	<i>Percent</i>
Tap	33.3	70.1
Tube-wells	10.2	21.4
Wells	3.2	6.7
Tank/ pond reserved for drinking	0.1	0.2
Other tanks/ ponds	0.0	0.1
River, canal, lake	0.1	0.2
Spring	0.0	0.1
Tanker	0.5	1.0
Others	0.1	0.2
Not available	0.1	0.1
Total	47.6	100.0

Numbers rounded to nearest decimal place.

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Water is unavailable to many households due to lack of adequate infrastructure, leakage and theft and pilferage. Some individuals break into the water pipe and draw water for free; the municipals and the police are paid regular bribes for allowing this to continue. In the year 1998-9, 44% of the total water supplied by the DJB was unaccounted for, which implies they were lost during distribution.<sup>9</sup> Irrespective of whether these losses are due to leakages or due to theft, they translate into inadequate quantity of water being received by the households and thereby the households have to supplement their water sources. Roughly 7 million households (20.5) percent that receive municipal tap water must supplement their water supply with other sources water as their main source of water.

While much of the water is wasted, many households do not receive adequate water and have to resort to drawing subsurface water. These solutions often entail numerous hidden costs. First, they involve large-scale withdrawals of sub-surface water. This causes unobserved and irreversible harm to the environment. Second, they are highly energy-inefficient, since many households have to draw water using their own motorized pumps. Typically, many large pumps drawing water require more energy than if water was adequately pressurized at a single point. Third, this requires households to store their own water. When water is priced artificially low or at zero, there is inadequate incentive for households to prevent waste. And lastly, poorer households purchase water from private or publicly subcontracted vendors. These vendors transport water tankers to neighborhoods

<sup>8</sup> Source: Laveesh Bhandari & Aarti Khare, March 2006. Poor provision of household water in India. Chapter 4 in The Water Revolution; Practical Solutions to Water Scarcity. London, UK: International Policy Press

<sup>9</sup> Economic Survey of Delhi, 2001-02

that face water scarcity. This especially affects the poor, leading to a high unit cost of water, plus hidden costs in terms of additional effort and inconvenience.

### 3. Water for the Urban Poor

#### 3.1 Status of water supply to the urban poor in India

As a result of rapid urbanisation and declining economic performance many urban centers in the developing countries are facing a great increase in the people living in poverty. According to the 2001 Census data, 607 urban centers with a total population of 178 million were reported to have slums and the total population of these slums was estimated at 41 million. Trends suggest the slum population to increase at a growth rate of 3.5% during the next 15 years to reach about 69 million in 2017. Many of these poor people live in unplanned settlements with limited access to affordable and reliable water supply and sanitation services. The unhygienic and unsafe conditions of living lead to high rates of waterborne illnesses, loss of livelihood and loss of human dignity; all of which will increasingly take a toll on the economies of the cities in which they are located and of the country.

In the article ‘Poor provision of household water in India’, Laveesh Bhandari and Aarti Khare use a simple index, based on the ownership of certain amenities and lifestyle characteristics to assess the economic status of the households. Accordingly the households were classified as low, medium and high. Approximately 41% belonged to the low economic strata, 13% to the medium and 23% to the high strata. (The remaining 23% could not be categorized due to lack of adequate information)

Distribution of economic status as per principal source of water – urban India					
Source	Economic status of household			Missing	Total
	Low	Medium	High		
Tap	66	74	80	66	70
Others	34	26	20	34	30
Missing	0.2	0.0	0.1	0.1	0.1
Total	100	100	100	100	100

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The figures indicated the distribution between tapped and untapped for the low class to be 66:35 as compared to the medium class with a ratio of 74:26 and the high with 80:20. The absolute figures are more revealing; roughly 7 million households in urban India belonging to the lower economic strata do not have access to tap water. These data however pertain only to the authorized slum settlements. Semi authorized or unauthorized slums as was mentioned earlier, are not recognized by the government and therefore are not required to obtain water.

<sup>10</sup> Source: Laveesh Bhandari & Aarti Khare, March 2006. Poor provision of household water in India. Chapter 4 in The Water Revolution; Practical Solutions to Water Scarcity. London, UK: International Policy Press

### *3.2 Barriers to access to water supply*

There are four general barriers to gaining access to water for the urban poor. These are: first, the legal position of the residents with respect to land tenure. Second, political barriers; third, the locality of the settlements, distance from the municipal source and accessibility. And fourth, the cost of accessing water services.

Legal land tenure provides people and communities with official status and documentation to live in their settlement or land. Many residents however lack legal land tenure because of which they face a lot of difficulties in accessing essential services such as water supply. Municipalities do not supply to such communities, lest it be seen as political acceptance of the unauthorized settlement, even when policies exist which state that water should be provided to all citizens. Those without security of land tenure are often not incorporated in city planning; they are not included in national statistics and are therefore not identified or are consciously left out of urban water services.

In addition slum communities are often perceived to harbor criminal elements and so it is not uncommon to find that government staff are unwilling to enter these areas. This presents additional difficulty to getting slum communities involved in any development projects.

Where communities are living in densely populated areas or are at a distance from the municipal supply, the access to water services will be limited. The cost of accessing water supply is greatly dependent on both the locality and the legality of the settlement, which poses yet another barrier in the access to water supply. Governments regularly promise low prices for water so everyone can have access to this precious basic need. However, government laws usually prevent suppliers from providing water pipe networks into illegal, unplanned housing areas. The higher income households, living in the planned areas, receive most government help.

### *3.3 Consequences of inadequate water supply to the urban poor*

Without connections to the main water supply system the urban poor have to buy water from water vendors that charge anywhere from 5-2500% more per litre than what a user connected to the main supply would have to pay. Water is an important requirement for minor trading and services such as prepared food, drink, ice and ice product, laundry, car washing etc. Any disruption to the water supply therefore directly influences the incomes of these people. Due to the generally poorer quality water the urban poor are frequently victims of water borne diseases like diarrhoea, cholera, gastroenteritis thus costing them both through medical treatment and as income lost. Thus the lack of access to reliable, adequate and safe and affordable water supply has a direct bearing on the livelihoods and the incomes of the people- their ability to engage in income generating activities, the types of livelihoods they can engage in, their incomes from these activities and their overall cost of living.

The poor suffer first (and most) from the effects of declining utility performance. During shortages, rationing of water affects the poor most adversely, as their storage facilities are either non-existent or inadequate. They are commonly dependent on daily wages, which means that any time spent queuing for and collecting water cuts into their earnings. Utilities that are slow to repair leaks in general are even less likely to respond to requests for service from poor neighborhoods; people with little political influence must resort to bribery in order

to obtain services they should be entitled to, or else they go without. Fundamentally, utilities with financial difficulties find it difficult to extend service to new areas, particularly the challenging areas of the urban poor.

The poor of a city are important residents, both in their own right and because they supply many of the goods and services that keep the city running. There is abundant evidence to show that incremental improvements in water supply can have major positive impacts on health, efficiency and productivity. In addition, poor health among the poor is an issue for everyone since it impacts the city as a whole and causes serious negative health externalities.

Therefore it is essential that any approach or strategy for reform incorporate the needs of the urban poor.

#### **4. Strategy for Improvement**

In the long term, better supply and usage of water will require it to be priced appropriately. Much water simply does not carry a price. Where prices do exist, in most Indian cities these are in the range of Rs. 0.5 to Rs. 5 (US \$0.01–\$0.12) per kilolitre. Experts tend to believe that if water is priced at Rs. 15 (US \$0.30) per kilolitre, even poor households have the ability to pay for water, and also have an incentive to use it more efficiently. At these levels, even local governments would have sufficient revenue to overhaul the water supply infrastructure and to implement water efficiency measures.

In the article, *How not to reorganise an industry*, Colin Robinson suggests a supply system based on monitoring through partial privatisation followed by appropriate pricing of the service. The subsequent section provides a summary of the recommended system.

##### *4.1 Monitoring of the water supply system and privatisation of the distribution stage*

The water supply system can be broken up into 3 stages: processing, transmission and distribution. For any pricing system to be established it is imperative that the input and the output be monitored. When monitoring is possible, financing and pricing become a lot easier and simple subsidy mechanisms also become possible.

**Water processing:** An urban water supply system depends on an adequate source of water. This is largely possible, since most of India's cities are located close to perennial rivers or large lakes. However, in the long summer months, the water levels in many rivers reduce and the water levels in reservoirs or lakes are substantially reduced and sometimes even dry up. This requires an extension of the lakes, tanks, or reservoirs. Minor dams on rivers that trap the surplus water during non-summer months would also be useful. All of these require capital. Water processing plants in many cases are quite old and need to be improved and their capacity expanded. This also requires some investment.

**Water Transmission:** The transmission stage essentially requires a transmission agent, which may or may not be a government entity. The entity's primary task would be to prevent water from leaking and being stolen. In the long term, as Indian cities also shift to pressurized water supply (as opposed to the existing system dependant on gravity and gradient), almost all the infrastructure at this stage needs to be repaired. Since the input, from the processing stage and the output, sold to the distributor are both measurable commodities, the problem of transmission is simple in economic terms. However, the

process of improving the system, preventing leakages and theft, and repairing the infrastructure is operationally a very complex one. The key issue, however, relates to adequate revenue generation.

**Water Distribution:** The key problem with distribution is the inability and unwillingness on the part of government bodies to recover costs. This can be corrected easily if this stage is wholly in private hands: the water can be supplied to distributors at a price, for which the distributor can charge a mark-up to the consumer. The amount of water supplied to the distributor can easily be measured by the transmission agent ; and since there are relatively fewer distributors than consumers, it is far simpler to monitor. In turn, the distributor would supply water to the consumer and it would be the distributor's responsibility to recover revenues from consumers. The government could, of course, subsidize the cost of water meters in the poorer areas. Water for the poor could also be subsidized through water stamps, direct subsidies, or area-specific water rates (since urban households tend to be clustered according to their economic status).

#### *4.2 Merits of the recommended system*

Such a system would have several advantages over the existing one:

- The costs of any water losses in the distribution stage are automatically borne by the distributor, and it has a strong incentive to prevent waste or theft
- Water is not given for free; those who waste the water are required to pay for it.
- The consumer pays the distributor, who thereby has an incentive to collect the charges from the consumer as its returns depend upon the revenues it receives.
- Subsidies can be directed to those who are most in need. More importantly, subsidies need not be unlimited.
- Private entrepreneurs have an incentive to reduce costs, take risks and engage in innovative behaviors, in contrast to public sector distributors, which are run by salaried government employees.
- Since the firm charges a per-unit mark-up to the consumer, it is in the firm's interest to supply adequate quantities of water, but not to waste it. Similarly, it is in the interest of the households to not waste water.
- Shifting to this system would require no large-scale, up-front investments; distribution of water could be privatised in the system that currently exists.
- The private distributor has an incentive to provide 24-hour water at the appropriate pressure level, and it is therefore in the distributor's interest to invest in quality and efficiency improvements.

### **5. Privatisation of the Water Sector**

In view of the above discussion it would seem that privatisation of the water sector is the ideal solution to the inefficiency and inadequacy problems that the current system suffers from. But before we allow such an assertion a more detailed analysis of the merits and limitations of privatisation is required. We begin by first studying the difficulties fundamental in the public ownership of utilities and then proceed to examine the arguments against privatisation of the water system and scrutinise the validity of them.

### 5.1 Problems with State owned companies

For any industry (especially those industries involved in network utilities like electricity, gas, water) to operate efficiently and to serve their consumers well, two important requirements have to be met. First, the market for the industry's product should be a competitive. A consumer dissatisfied with their current supplier should be able to take his/her business to an alternative supplier. This ensures that each firm follow strict measures to maintain competitive prices and constantly be engaged in quality and cost innovations in order to maintain or improve their market positions. Consumers benefit both from the presence of alternatives and the cost reductions and quality innovations because of market rivalry. Second, the companies in the industry be held privately. In such circumstances the shareholders will place demands on the managers to work efficiently, reinforcing the demands placed by competitive product markets.

State owned companies with monopoly in the product they sell do not meet either of the requirements. Such companies have little incentive to operate efficiently, to maintain competitive prices, to innovate or to meet consumer demands well. Managers have no motivation to perform well.

**Ownership by no one and its consequences:** In a market with State owned companies, consumers have very little authority and there is little they can do to influence what the corporations do. " 'Public' ownership in this sense is valueless because the 'owners' have no defined, transferable property rights in the organisation: in the well-known phrase, what is owned by everyone is perceived to be owned by no-one."<sup>11</sup>

There is always a principal-agent problem when there is a separation of ownership and management of resources. The principal agent problem in essence is the organizational design problem of how organisations can design incentives so that agents who are placed in control over resources that are not their own, with a contractual obligation to use these resources in the interests of some other person or group of people (the principal), actually will perform this obligation as promised — instead of using their authority over the resources to serve their own private gains at the expense of the interests of the principal.

While the problem exists also under private ownerships but it is greater in the case of public corporations. Both the fact that shareholders in the private companies can sell their shares and 'exit' if they are not satisfied with the performance of the managers and that falling share prices would make the company susceptible to a takeover, mean that managers have enough incentive to work efficiently.

In the case of public owned corporations the owners (the public) do not enjoy the opportunity of exit; they have no property rights that they can sell if they are not happy with the company's performance. Instead they must rely on exerting indirect influences by voicing their concerns through the politicians or civil servants. Such an approach is highly inefficient unless we assume that politicians and civil servants are purely 'public spirited' and are completely devoted to the interests of the community. But such an assumption has no

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<sup>11</sup> Colin Robinson, March 2006. *How not to reorganise an industry: Privatisation, Liberalisation and Scottish Water*, Chapter 8 in *The Water Revolution; Practical Solutions to Water Scarcity*. London, UK: International Policy Press

real validation: “as public choice theorists have pointed out, one of the inconsistencies in mainstream economic theory is that it assumes people in the private sector pursue their own interests whereas people in the government sector pursue the public interest.”<sup>12</sup> In addition the risk of a takeover is also absent in such corporations.

Therefore the managers in the public owned companies do not have to face the pressures exerted by the shareholders on the management, which means there is no demands on them to perform well.

**Weak efficiency pressures:** As discussed previously, the efficiency pressures on public owned companies are extremely weak. While they are subject to monitoring, in the absence of a competitive capital market the government departments monitoring them have no useful way of determining how efficient the corporations are.

The presence of state monopolies in the national product market (protected by law from entry) translates into captive consumers unable to exit from their current supplier. Lack of competition indicates lack of incentive for innovation, cost reduction and lower prices. A government monitoring agency is forced to rely on unsatisfactory efficiency comparisons and efficiency audits, as it has no alternative standard of comparison against which it can critic the company.

Thus public owned companies with a monopoly in the product they sell, have many shortcomings in terms of efficiency, ability to recover costs and incentives to set competitive prices or to quality innovate. But is a private enterprise free from all deficiency? In the following section we will examine the case against privatisation.

## 5.2 The arguments against Privatisation

There has been considerable debate over the issue of water privatisation world over. Water activist in Johannesburg, Manila, Atlanta, and Buenos Aires to lobbying and litigation organisations like *Public Citizen* in Washington DC to NGOs such as Parivarthan and The Right to Water Campaign in Delhi are united as one voice in the opposition to private sector participation in the water sector. The central thrust of the debate against water privatisation is that rather than improving the performance of the sector it would lead to an increase in tariffs and would make it inaccessible to the poor; water privatisation would result in a system based on the ability to pay and not on need. Private enterprises do not have any incentive to provide water to the poor communities, thus resulting in a system that puts the poor and the sections unable to pay the water charges at a disadvantage.

Ever since the rumours of the DJBs plans of privatisation were made know in end of 2004, there has been significant discussions over the matter. The DJBs proposed project of restructuring of the Delhi water supply involves handing over of the 21 zones of the DJB to multinational water companies, which would operate and run it. The proposed privatisation is along the French Model in which only the operation of the assets are privatised while the assets remain publicly owned. A management fee would be paid to each company for the running of a zone. A set of performance targets are set; exceeding these targets would earn

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<sup>12</sup> Colin Robinson, March 2006. *How not to reorganise an industry: Privatisation, Liberalisation and Scottish Water*, Chapter 8 in *The Water Revolution; Practical Solutions to Water Scarcity*. London, UK: International Policy Press

the companies a bonus while failing to meet the performance parameters would result in a fine.

Parivarthan and the Right to Water Campaign have together brought out a pamphlet *24X7 Water*, about the proposed restructure of the Delhi Water Supply, that examines the merits of the proposed system. According to them the involvement of a private company in the water sector would result in a tariff hike of over 400%, and at the same time would not be able to fulfill the promise of 24X7 water supply. In addition the urban poor of the JJ colonies would be severely constrained as the system is supported on the ability of the user to pay for the services.

Similar points were made were by Bangalore based NGOs such as Association for Promotion of Social Action, Janasahayog, Slum Suddi and Alternative Law Forum on the subject of water privatisation in Bangalore. These organisations made a number of points, most of which are indicative of the general concerns regarding the issue:

- The Indian constitution promises every Indian citizen certain fundamental rights – water among these. Therefore, to charge poor Indians for water is unconstitutional.
- Water is a common resource, and should not be commoditised by charging for it.
- Since much of India's urban poor comprises of migrant, daily wage labour (with no guaranteed employment or income) it is ridiculous to design a system of service to them centered on user fees. Water should be disbursed to them as a 'human right'.
- The involvement of the international private sector in water in developing countries will, by its nature, result in exploitation – particularly the poor. The high cost structures and rapaciousness of these companies always results in a sudden jump in user fees. Those who cannot afford to pay will be permanently deprived of water, as has happened in some developing countries where connections to the urban poor have been cut off.

Thus almost all the arguments against water privatisation are centered on two principal perceptions; first, that the poor should not be charged for water implying that they do not already pay for it and second, that the poor would be unwilling to pay the higher price charged for the water service. However both these fears are groundless, as the following sections will demonstrate.

We will begin by studying the current condition of the urban poor with regard to the payments made for water in the existing water system; following which we will examine the suggestion that they would not be able to afford the tariffs and the charges imposed under the privatised system. Further through the *Willingness to Pay* studies conducted across the country we will establish that the poor would be willing to pay more, provided they are ensured a reliable and adequate water supply.

### *5.3 The ability of the urban poor to pay*

The poor do not consume as much water as the rest of the population, but contrary to popular belief, they can and do pay for what little they consume. An UNDP-WSS report shows that the poor actually pay much more per litre than the well off.

The poor pay for water in two different ways. First, they pay the user charges that are made willingly for a reliable service. These costs are very low compared to international standards and are a lot less than the cost incurred in making the supplies. However these subsidies do

not benefit the poor as much as they benefit the rich and the politically better connected. The people who benefit from the subsidy are the people who receive some sort of water service. The people who do not receive any service do not benefit regardless of how much the subsidy is. In rural areas, it is generally the better-off who live close to good water sources, while the poor have marginal land and less reliable sources, and suffer most from falling water tables, seasonal variations, etc. In urban areas, most of the subsidies also benefit the non-poor, who typically pay far less than the real cost of the water they consume.

The poor pay in yet another way, through coping costs, which are the costs outside the system that are paid to gain access to water. While user charges are paid more or less voluntarily, in fair exchange for something of value, coping costs include three kinds of payment, which properly ought not to be required at all. The first include informal payments such as gifts, bribes etc. that are paid to municipal and water agency officials and which constitutes a significant burden on the poor. In Bangalore, for example, 12 percent of the respondents to a survey stated that they had paid 'speed money' to employees of the water authority to get better service with an average payment of Rs. 275.<sup>13</sup> Nearly half the respondents were willing to pay higher official fees rather than the bribes.

The second kind of coping costs includes the payments that ought not be paid but have to be due to inadequacies of the existing system. These are the payments to water vendors or investments in private pumps or storage facilities. Reports suggest that nearly seven million (20.5%) households that receive water through municipal sources have to supplement it with other sources.<sup>14</sup> While national estimates for the payments made to intermediaries such as water vendors or private investments to supplement the supply are not available, there are reports of particular regions that are fairly representative. In Baroda, for example half the households were reported to have made private investments in water supply totaling Rs 280 million, and they spent four times as much on these measures as they did on the public system. In Ahmedabad, slum dwellers were found to be paying vendors up to Rs 4 a day for water to avoid standing in line. In Dehradun, a slum resident paid a private contractor Rs 3,000 to install a house connection, saying that was much faster and cheaper than having the municipality provide the connection.<sup>15</sup> In rural Gujarat, water trading and supply by tanker is a well-established practice, for drinking as well as irrigation water, and people pay between Rs 175 and Rs 350 per tanker.<sup>16</sup>

In addition to these costs, there are also certain non-cash payments that have to be made, such as the time lost in collecting water and the illness caused by unsafe drinking or inadequate supplies. These coping costs though not made in cash nonetheless have the same effect in reducing the people's income; the opportunity cost of lost time and of poor health. One estimate put the national cost of fetching water at 150 million man-days a year, costing the Indian economy Rs 10 billion in lost production. More detailed estimates have

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<sup>13</sup> UNDP and World Bank Water and Sanitation Program, October 1999.  
*Water for India's Poor: Who pays for the broken promises*

<sup>14</sup> Laveesh Bhandari & Aarti Khare, March 2006. Poor provision of household water in India. Chapter 4 in *The Water Revolution; Practical Solutions to Water Scarcity*. London, UK: International Policy Press

<sup>15</sup> Choe, Varley and Bijlani, USAID 1996. *Coping with Intermittent Water Supply: Problems and Prospects, Dehradun*.

<sup>16</sup> UNDP and World Bank Water and Sanitation Program, October 1999.  
*Water for India's Poor: Who pays for the broken promises*

been made in particular cities. The Dehradun study calculated that for the whole city these costs averaged Rs 10 per cubic meter consumed, while the water authority was billing an average of only Rs 2 per cubic meter to those with connections. More significantly, the poor paid far more for water than the citywide average would suggest. In the dry season, the combination of low pressure and long queuing times drove the time lost cost as high as Rs 50 per cubic meter for those using public taps.

The time costs associated with inadequate water systems are not just those related to collecting water. The country suffers huge costs because of illnesses caused by unsafe and insufficient drinking water. By one estimate, India loses 90 million man-days a year due to water-borne diseases, costing Rs 6 billion in production losses and medical treatment<sup>17</sup>. It estimated that improved water and sanitation services could halve this loss, with savings to the country of between Rs 110 billion and Rs 290 billion.

Therefore the poor do actually pay and pay a lot more than others for the meager service that they receive. In fact as we will now proceed to show, the poor while obviously preferring to pay less than more, would be willing to pay fair user charges for an improved and efficient supply system.

#### *5.4 Willingness to Pay for improved services*

There are many definitions for Willingness to Pay (WTP) but the most widely accepted one is: 'WTP is the maximum amount that an individual states they are willing to pay for a good or service.'<sup>18</sup>

Often the consumers are willing to pay a higher price than what they are charged for basic amenities such as water supply. How much higher a price they are willing to pay depends on the quantity of the service used. Consumers are normally willing to pay more for the basic minimum requirements, but as the quantity rises the WTP diminishes. Hence the relation between WTP and the quantity of the service can be expressed as a downward sloping line, in much the same way as a demand function.

The WTP is by and large estimated through Contingent Valuation Methodology, based on the Stated Preference of the consumers. Contingent Valuation surveys simulate a market for a non-marketable good and then determine a value for that good contingent on the hypothetical market described during the survey. CV Surveys on the water sector involve surveys in which the consumers are asked a range of questions about the existing water supply system and then provided with a hypothetical scenario where they are offered improved water service options at different prices. This is done in order to determine the kind of services the users want and the prices they are willing to pay for it. This information can then be used to decide on an appropriate tariff policy and financing package for the improved water service.

In India the general consensus is that people, in particular the poorer sections of society, are unwilling to pay more for water services. However a number of WTP studies carried out across India coupled with practical experience on ground, has revealed that many urban and rural settlements are willing to pay more for improved social infrastructure such as water and sanitation. We shall now look at some of the cities that were covered under the CV surveys and discuss what the studies revealed regarding the WTP of the service users.

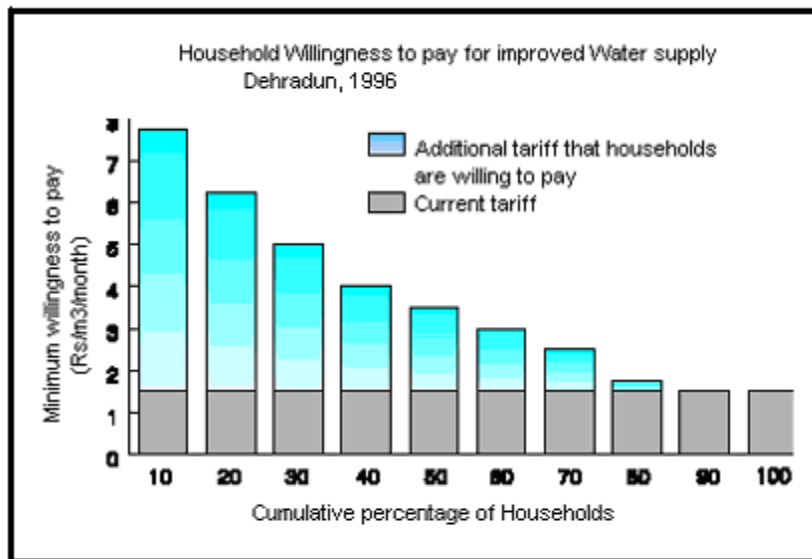
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<sup>17</sup> *ibid*

<sup>18</sup> Department for International Development (DFID), 1997

## I. Dehradun City:

In 1996 a CV survey commissioned by USAID was conducted in the city of Dehradun. The survey was based on a random sample of 1112 households drawn from the 1995 electoral poll. The data collected were then used to estimate the WTP of the sampled households. Separate estimates were prepared for households with their own connections and those using public taps.



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The study showed that the willingness to pay for a continuous water supply exceeded the revenue received by the Dehradun Water Works Department in that year. The total revenue received by the WWD including non-household revenue, was approximately Rs 30 million. The estimated household demand for water shows that with effective metering, at a price of Rs 4.5/m<sup>3</sup> the WWD could have earned Rs 46 million on the volume it was able to supply to households. The findings of the study are illustrated in the figure given below, which clearly shows that a majority of the sampled households were willing to pay a tariff higher than the existing one, for a reliable water supply service. 60% of the households were willing to pay more than the prevailing tariff rate while 10% were willing to pay Rs 6.25 more per month

## II. Baroda City:

A similar CV survey was conducted in the city of Baroda in 1995, commissioned by the Human Settlements Management Institute (HSMI) of the Housing and Urban Development Corporation (HUDCO). The survey was performed with the aim to evaluate a tariff revision proposed by the Baroda Municipal Corporation.

<sup>19</sup> WSP-South Asia – Field note, 1999. *Willing to Pay but Unwilling to Charge*

The study showed that the households were willing to pay upto 3 times the tariff proposed by the BMC. 85% of households without individual connections expressed WTP for improved stand post service. Among the households with individual connections, about 63% were found to be willing to pay for better pressure, and 11% for better quality.

However although BMC raised tariffs in February 1996, the increase was a lot below what was recommended by the study. In fact the study findings were never presented to the Standing Community and the board of BMC and while it could have been used to promote a considerable tariff increase it was not.

### **III. North Kerala:**

In 1988 a World Bank team conducted a rigorous WTP survey in rural north Kerala. The study indicated a widespread willingness to pay increased tariffs for superior water service. Consumers who were already paying Rs 5 per month for the existing service were willing to pay Rs 25 for enhanced water supplies.

Since then, there have been three changes in tariff rates. In 1991, the prevailing system of differential rates was replaced with a uniform minimum tariff of Rs 1.00 per 1,000 litres. In 1993, this was raised to Rs 1.50. With this announcement, the Government of Kerala also agreed to an annual increase of 15 per cent in the minimum uniform tariff. However, after the next increase in 1994 (to Rs 1.70), there have been no changes in the tariff rate.<sup>20</sup> With four successive tariff hikes postponed by the government, the pending increase is now 60 per cent of the 1994 tariff. Clearly, the government subsequently developed a reluctance to raise tariffs.

Similar WTP surveys were also conducted in Punjab, Hyderabad and parts of Maharashtra, all of which indicated the same willingness of the residents to pay more for a better system. People were already paying much more than the official tariff rate through informal channels and coping strategies and were willing to pay the government even more for better services. However, governments seem unwilling to match this with a willingness to charge consumers for these services and the result is a continuing cycle of low revenues, high costs, unsatisfactory services and financial crisis.

In view of the government's obvious reluctance to raise tariffs despite mounting evidence supporting such an action, permitting the private sector seems to be the only solution. To conclude the debate are special case studies of how with proper understanding of the water market among the poor and by designing the system keeping the poor in mind, privatisation can be made to work in support of these sections.

#### *5.5 Making Privatisation Work for the Poor*

The poor have three main concerns when urban water sector reform is suggested. The price of the service delivered; the poorer sections would be interested in ensuring that the price be affordable and may be interested in cross subsidies, designed to charge the poor less than the non poor.

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<sup>20</sup> ibid

The expansion of the system so that previously uncovered areas receive connections; both the current and the potential customers would be interested in how expansion is prioritized and how the connection costs are covered.

The service levels such as water quality, hours of supply, speed of response to service calls etc. In addition the nature of administrative services such as billing and connection applications will also be of significance. The urban poor with subsistence incomes would find it very difficult to pay large, infrequent bills and prefer frequent billing.

Privatisation can be made to work to the advantage of the poor if these issues are kept in mind while designing the system. When this is not the case the reforms measures may be skewed disproportionately towards providing improved services for the well off, rather than new services for the poor, often based on the assumption that general improvements in city infrastructure will benefit the entire city population, including the poor. Without proper analysis of the impacts of reform and how benefits will be distributed, there is always a possibility that benefits will flow to the better off, however with proper planning a system can be established that benefits all the sections including the low income groups.

A case in point is the success story of water privatisation in Senegal with a comparable climate and per capita income as India. Water privatisation in Senegal is an excellent example of how privatisation can work for the betterment of the urban poor if it is planned and executed with a proper understanding of their needs.

## **I. The Case of Senegal**

Senegal is a mid-sized country in West Africa, with a population in July 2006 of 11.98 million.<sup>21</sup> Three quarters of the country lie in the arid Sahel, severely restraining its development options. When Senegal obtained independence from France in 1960, it had one of the most developed economies in West Africa. But by the late 1970s, Senegal was facing severe economic problems due to a combination of an uncompetitive economy and a huge public sector wage bill.

At independence in 1960, the urban water utility was in private hands, run through a concession contract by the *Compagnie Générale des Eaux du Sénégal* with the majority owned by *Générale des Eaux*, a private French firm. The company was nationalized in 1971 when the shareholders were required to sell their shares to the State.

In the 1970s and 1980s, the water utility (which was responsible for supply to the capital, where approximately 30 percent of the population lives, and 41 of the 75 secondary towns), was plagued with problems which resulted from a lack of autonomy from government, chronic water shortages in the capital city, and piecemeal development of the assets. In 1983 a newly formed public utility, the *Société Nationale d'Exploitation des Eaux du Sénégal* – SONEES was presented with the undertaking of managing the urban water utility.

Though SONEES was technically a well-run agency, with capacity to execute projects well the government did not give it adequate autonomy. SONEES was not able to exercise full control over planning for the sector, to set tariffs to recover costs, or to settle unpaid bills with clients in the public sector such as government departments, municipalities, and parastatals. A combination of tariffs that were too low and large uncollected accounts meant

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<sup>21</sup> [www.cia.gov](http://www.cia.gov) - The World Factbook

that SONEES was soon unable to settle its arrears with suppliers such as the state-run electricity utility (Société Nationale d'Electricité –SENELEC), and lacked funds for investment after the World Bank project ended. Private capital was difficult to obtain as a local capital market did not exist, and SONEES in any case lacked a credit rating. In 1995, only 54 percent of Senegal's urban population had access to safe water .<sup>22</sup>

In summary, there was an urgent need for reform. The sector needed to grow, both to meet the immediate needs of urban residents, and to accommodate a growing population. Increased productivity and operational efficiency were imperative. In particular, sustainable improvements were needed in water and sanitation services in unserved and low-income urban areas. The government recognized that greater managerial autonomy was needed in order to ensure both greater productivity and operational efficiency, and that some sector investments would have to come from sources other than the government. All these requirements indicated the need to involve the private sector.

In 1995, the Government of Senegal launched wide-reaching reforms in the urban water sector. The reforms consisted of dissolving the state-run water company and creating a new asset-holding company (SONES, Société Nationale des Eaux du) that owned all the fixed assets in the government's name and had a mandate to manage the sector. The distribution and production was delegated to a French water company Sénégalaise des Eaux (SDE) engaged on a 10-year contractual basis with a clause that allows the government to fine the company if it does not meet certain performance standards.

The effect of this transfer from public to private sector management has been dramatic. The reform in the water sector in Senegal has had wide-reaching effects, not only in Senegal itself, but in other countries as well. We shall now take a look on the impacts of the reform process on the urban water service delivery and on the financial health of the sector, with a special reference to the impacts on the poor consumers.

#### *More Water to More People:*

Since the reform process began, the volume of water produced for use in the urban water sector has risen each year, from 96.3 million cubic meters in 1997 to 113.88 million cubic meters in 2003, an 18 percent increase.<sup>23</sup>

The impact that the availability of more water had on consumers can be seen clearly from the sales turnover (what consumers paid for services) between 1996 and 2001. Sales turnover increased steadily from 23.2 billion F CFA to 34.3 billion F CFA, an increase of 47.8 percent (Note that these figures include sanitation as well as water.) During the same time period, water and sanitation tariffs increased by just under 20 percent.

There has been a substantial increase in the number of clients, from 241,671 in 1996 to 327,501 in 2001, an increase of over 35 percent. In the Dakar region (which represents about 75 percent of the total service area), the number of private water connections increased from 135,414 in 1995 to 181,824 in 2002 (a 34 percent increase; exceeding the

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<sup>22</sup> WSS Discussion Paper, 2004. *Innovative Contracts, Sound Relationships: Urban Water Sector Reform in Senegal*

<sup>23</sup> *ibid*

planned target by almost a double). Over the same period, the number of public standpipes in Dakar rose by 5 percent, from 940 in 1995 to 1424 in 2002.

One of the reasons that more people were connected to the network was that the system was substantially expanded during the last seven years, reaching into areas that had not been served before. Extensions to the network were initiated on a small scale in the first three years, and then increased significantly after 1999. The entire network increased from a length of 4319 kilometers in 1996 to 5330 kilometers in 2001, a 23 percent increase. Coverage figures for the Dakar region show that the proportion of the population served increased from 80.3 percent (1.63 million) in 1995 to 89.5 percent as of the end of 2002 (2.25 million people).

#### *Better Financial Health:*

The sector reached financial equilibrium in 2003, as planned. SONES was able to service all financial obligations, including 10 billion F CFA of debt service payments for the year 2002, which represents 75 percent of its income in this year. In 2003, SONES's revenue was 13.5 billion F CFA, and debt service 11.0 billion (81 percent of revenues).<sup>24</sup>

One of the reasons that progress towards financial equilibrium and financial sustainability has been kept on course is that the government remained rigorously committed to ensuring that the cost of providing water was balanced against price – which has meant gradually increasing tariffs.

#### *Service to the Poor:*

A substantial proportion of the population of Senegal is poor. It is estimated that 54 percent of the population of 9.2 million lived below the poverty line in 2002. Many of the poor live in rural areas, but urban areas also have high rates of poverty: in 1995 it was estimated that 16 percent of Dakar's population was poor, a percentage that is probably higher today.

At the time that the private operator entered the picture, increasing access for the poor was an important priority. However, the poor also faced an additional problem. The water shortages and pipe bursts that were common in the networks resulted in frequent service interruptions. These were both more common in poor neighborhoods, and also more keenly felt by the poor. Wealthy residents were able to install storage mechanisms, such as overhead tanks with electric pumps to fill them, but poor people had to wait for water or look elsewhere – these interruptions sometimes meant that poor neighborhoods would receive water only once in several days.

The solution to the problem of service quality was, of course, to improve the functioning of the system so that there were fewer interruptions and the repairs were attended to quickly. However, as 24-hour supply was not achievable in the short term, the private operator pursued another strategy. This was to “distribute the deficit”. This meant evening out the interruptions so that they were no longer experienced more frequently in poor neighborhoods. This approach led to rapid improvements in service quality for poor

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<sup>24</sup> WSS Discussion Paper, 2004

*Innovative Contracts, Sound Relationships: Urban Water Sector Reform in Senegal*  
(Note: All figures on the page are from the same source)

connected households, and little change for wealthy households that already had storage tanks to ensure 24-hour supply within their homes.

The issue of access was addressed by a combination of more stand posts and more social connections. One of the reasons for this significant increase was the incentives created in the contract for the operator to serve the poor. As the operator was remunerated for water sold, he had a positive incentive to add more customers, including those who were poor. The operator was paid for making the connections out of the government-controlled investment fund at a rate that covered his costs and allowed for a margin of profit. In addition, as the operator is paid on the basis of a water supply rate that does not vary according to the type of customer served, he was “blind” to the tariff each customer paid. This meant there was no disincentive to serve the poor on the basis of tariff.

There has also been much improvement in SDE’s response time for leaks and network interruptions as well as an improvement in the services at payment centers. While these benefits are common to both poor and non-poor, but poor people with no storage facilities benefit more from a more reliable system which provides water over longer hours, and those for whom time lost means lost earnings, such as day-laborers, benefit from being able to make complaints and pay bills in less time.

The case of Senegal is perceived to be an example of a well planned and well executed reform that has stood the test of time. It is one of the biggest success stories of private sector participation in the water sector. In the years since it was designed, the water sector reform in Senegal has not only improved water services to citizens of that country, but has also had a pronounced impact on the design of several World Bank transactions in other countries. For instance, the recently completed reform of the utility in Niger was closely modeled on the Senegal transaction. Planned transactions in Nepal and Sri Lanka are also being influenced by the Senegal experience.

## **II. The Case of Argentina: Privatisation and Child Mortality**

From 1870 through 1980, water services in Argentina were provided by the federal company Obras Sanitarias de la Nación (OSN) and a number of non-profit cooperatives. In 1980, OSN’s jurisdiction was restricted to the federal district and 17 municipalities of the suburban Greater Buenos Aires area. While OSN remained under control of the federal government, the responsibility for public water services in the rest of the country was transferred to local governments. In 1990, before privatisation, public companies provided water services in two-thirds of the municipalities and non-profit cooperatives provided services in the remaining one-third. Between 1991 and 1999, about half of the public water companies servicing 28 percent of the country’s municipalities and covering almost 60 percent of the country’s population were transferred to private for-profit control. The remaining municipalities continued receiving water services from either public companies or non-profit cooperatives.

The privatisation of the water of the public water systems was a part of a program of structural reform undertaken to improve the state of economic decline that existed in Argentina at the time. In the late 1980s Argentina was experiencing growing inflation driven in large part by printing money to finance huge fiscal deficits. The deficit averaged approximately 9 percent of GDP during the decade. While federal and provincial overspending generated the majority of these deficits, a smaller portion was due to

significant SOE losses. By the end of the decade the ruling Radical government was unable to balance the budget. Further deficit spending could not be financed through printing money or issuing new debt. In 1989 the country entered a period of hyperinflation that led the Radical government to resign six months before the official end of its administration. The newly chosen government immediately launched structural reform program designed to reduce the budget deficit, control inflation, and put the country back on a positive growth path. The program consisted of financial and trade liberalization, a monetary currency board, the decentralization of health and educational services, the reform and privatisation of the national pension system, the emancipation of the Central Bank, a general deregulation of economic activities, and the privatisation of SOEs.

The privatisations were planned to reduce the budget deficit. The acquiring firms paid the government substantial sums for the privatised companies in the form of cash and Argentine debt bonds. The privatisation revenues collected by the federal and provincial governments reached U.S.\$24 billion. As a percentage of public resources, privatisation revenues were particularly important during the initial years of 1991 and 1992, when they represented approximately 10 percent of public revenues. In addition to the revenues from privatisation, the government did not need to cover SOE losses from the budget.

The privatisations were also intended to reverse a long period of neglect of the physical infrastructure. During the 1970s and 1980s there was little capital investment in most public utilities, and indeed much of the physical infrastructure had seriously depreciated. After this long period of negative net investments, huge capital inflows were needed to improve both the quality of and access to public owned company services. While the public sector had no capacity to finance those capital investments, private firms generating positive cash flows were able to obtain private financing. Indeed, the transfer of the companies to the private sector greatly improved the firms' investment and access to credit markets.

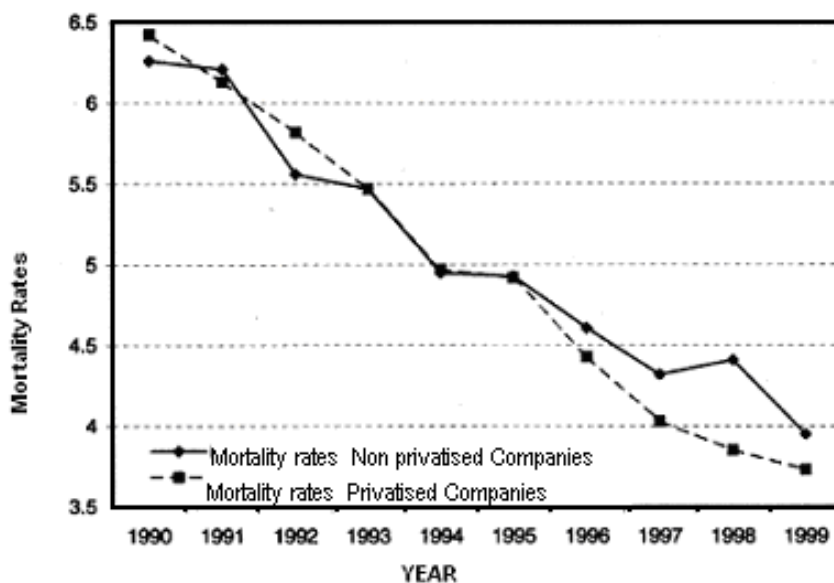
There have always been concerns regarding whether the efficiency gains from water privatisation would translate into enhanced health of the people and poverty alleviation. Private water companies may provide sub optimal levels of service quality because they fail to take into account the significant health externalities that are present in this industry. In this case, privatisation of water services may affect health outcomes negatively. In addition, privatisation may hurt the poor through price increases, enforcement of service payments, and investment only in lucrative high-income areas. In this case, efficiency gains from privatisation might be obtained at the cost of excluding the poor from access to water services, and thus health outcomes of the poor may actually deteriorate under privatisation.

However a correlation study by Sebastian Galiani, Paul Gertler and Ernesto Schargrotsky showed that privatisation of the water supply in Argentina actually led to improved health outcomes. The study focused on children because they are particularly vulnerable to water-related diseases as a result of weak body defenses, higher susceptibility, and greater exposure from inadequate knowledge of how to avoid risks. There are two main ways in which the lack of appropriate water systems result in negative health effects: waterborne diseases that occur by drinking contaminated water and water-washed diseases that occur when there is a lack of water and sanitation for household hygiene. Young children worldwide suffer from several deadly diseases that could easily be prevented by access to safe and sufficient water supply and provision for the hygienic removal of sewage. In Argentina, diarrhea, septicemia, and gastrointestinal infections are three of the top 10 causes of death for children under 5.

In the end, in spite of the concerns about potential harmful health effects, it was observed that the privatisation of water services is actually associated with a reduction in child mortality. The main result of the study is projected in the following figure, which depicts the evolution of the child mortality rates for municipalities with privatised and non-privatised water companies.

During the first half of the decade, the mortality rates of the municipalities that eventually privatised their water systems decreased at the same rate as the mortality rates of the municipalities that did not privatise. However, after 1995 the mortality rates of the municipalities that privatised decreased faster than the mortality rates of those that did not privatise. This timing corresponded to the timing of privatisation; before 1995 only a few municipalities had privatised, whereas the bulk of privatisations occurred after 1995.

Evolution of mortality rates for municipalities with privatized vs. nonprivatized water services



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The study used a difference-in-differences model to estimate the results illustrated in the figure. “A difference - in - differences approach compares the change in outcomes in the treatment group before and after the intervention to the change in outcomes in the control group. By comparing these changes, observed and unobserved time-invariant municipality characteristics that might be correlated with the privatisation decision as well as with mortality are approximated.” The change in the control group is an estimate what would have happened to the treatment group if there had been no intervention.

It was found that post privatisation of the water supply there was a reduction in child mortality of 8 percent. It was further derived that most of the reduction in mortality occurred in low-income areas (26 percent), where the expansion of the water network was greatest.

<sup>25</sup> Sebastian Galiani, Paul Gertler and Ernesto Schargrotsky, 2005. *Water for Life: The Impact of the Privatisation of Water Services on Child Mortality* Journal of Political Economy. Vol. 113, no. 1

Privatisation had a higher impact on child mortality in poor municipalities than in wealthier ones. Middle and high-income groups already had a high rate of connection to the water network prior to privatisation. Even when they were not connected or when service quality was unsatisfactory, these income groups enjoyed better access to substitutes such as pumped wells, septic tanks, or bottled water than poor households. The main beneficiaries of network expansions and service enhancements, therefore, were low-income households, which also are the groups most vulnerable to child mortality.

And so Argentina is yet another example of how privatisation; through establishment of more water connections and better service delivery; can and often does help improve the condition of the urban poor.

### **III. The Case of Santam Vihar, Delhi**

Sangam Vihar is a low-income unauthorised colony situated in South Delhi. The ownership of land in the colony is still unclear; as per the Delhi Master Plan 2001, the area falls under the 'green belt' that constitutes agricultural and forest land. The Sangam Vihar settlements, according to the residents of the colony and Community Aid and Sponsorship Program-Plan, a NGO operating in the area, have been in existence since the 1979. It started with the migration of people from nearby states and villages in search of improved livelihood employment opportunities in Delhi. With the construction boom in 1982 a lot of labour from Uttar Pradesh, Haryana, Bihar migrated to Delhi and set up temporary settlements in Sangam Vihar. These temporary shelters with time became permanent houses and the unauthorised colony was founded.

Ever since it came into existence the residents of the colony has had to face severe water insufficiency with the DJB not supplying water to these settlements. Since the municipality does not supply to the region. The residents have little option but to resort to private suppliers. The private players can be classified under three groups: first, private entrepreneurs who have dug their private bore wells and supply water to a large number of households. The second kind of providers are the tankers. The majority of the water providers are however the individuals who invest their resources into digging of private bore wells and then supply to the other houses at fixed monthly rents.

The residents of Sangam Vihar obtain regular supplies because of these suppliers, they do not have to stand all day in lines nor do they have to worry about inadequate and untimely supply. But all this comes at a price; in the absence of any regulatory body the suppliers are free to charge discriminatory charges. The monthly rates charged by the private suppliers vary anywhere between Rs 250-400.

Privatisation of the entire water supply board would ensure the efficiency gains to continue at the same time through the presence of a regulatory body prevent private parties from misusing their roles as suppliers.

## **6. Conclusion**

Thus we have privatisation as the model means of countering the deficiencies of the current water supply system. The numerous concerns against privatisation while valid in certain scenarios need not pose a problem if the process is planned keeping in minds the needs of all sections of society. In a well-planned environment privatisation can and as examples have proved, does lead to improvements in the service to the poor.

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