Centre on Regulation and Competition

WORKING PAPER SERIES

Paper No. 108

REGULATION IN INDIA: ASSESSING IMPACT IN THE POWER AND WATER SECTORS

Anjali Garg & Sachin Gulaty

September 2004

ISBN: 978-1-905381-07-7

Further details: Centre Secretary
Published by: Centre on Regulation and Competition,
Institute for Development Policy and Management, University of Manchester,
Harold Hankins Building, Precinct Centre, Oxford Road, Manchester M13 9QH, UK
Tel: +44-161 275 2798 Fax: +44-161 275 0808
Email: crc@manchester.ac.uk Web: www.competition-regulation.org.uk

REGULATION IN INDIA: ASSESSING IMPACT IN THE POWER AND WATER SECTORS

Anjali Garg & Sachin Gulaty

INTRODUCTION

The first phase of the project[1] focused on providing an overview of the regulation in the power, telecom and water sectors in India and map the existing legal, institutional and policy framework in these sectors. Various issues including roles and responsibilities of different agencies including government, regulator, judiciary etc; autonomy, accountability, financing and staffing of regulatory bodies; consumer participation; role of industry & consumer groups and social, political and other external influences in regulatory reforms policies in the telecom and power sectors of India were also discussed in detail. It also discussed the existing framework in the water sector in India, though a formal regulatory mechanism does not exist in this sector.

This paper attempts to assess the impact of regulation especially in view of pro-poor regulation and the policy & approach adopted towards meeting this objective. This is done by looking at some parameters including rural electrification, subsidies and tariff in the power sector. In the water sector, an overview of the water supply and sanitation sector in India is followed by poverty-related issues specific to the sector. This is followed by a broad assessment of the reform options that India may adopt in the future which may serve as a basis for developing RIA frameworks for the water sector in India.

POWER SECTOR

This section assesses the extent of pro-poor regulation in the power sector and also attempts to assess the impact of reform in the sector especially with respect to economic growth and poverty alleviation. However, before undertaking this assessment, it would be useful to note a few points. The impact of regulation as assessed here refers to the combined effect of the efforts of those entities which are associated with regulatory reforms.

[1] TERI is a CRC partner in the Regulation research Project since 2003 and is working on issues related to Regulatory Impact Assessment in the power and water sectors in India as part of its research activities as a CRC partner.

This is because developments in these sectors are not a result of the actions of the regulator alone. Government and market forces have also played an equal role. In such a scenario, it is difficult to identify the impact made by solely the regulator's orders, directives and regulations.

Another issue that needs to be highlighted is the difficulty to quantify the extent to which regulation in the power sector has contributed to economic growth. This is on account of two reasons. The first is that the concept of independent regulation is still at a nascent stage in India. As a result, while it would be possible to undertake an assessment of the impact of regulation on micro variables related to the concerned sector, an over-all picture of impact assessment at the macro level will take time to emerge. Second, and more importantly, economic growth and poverty alleviation are driven by a number of factors and cannot be attributed to one or two factors. Nevertheless, an attempt is being made to measure the impact of regulation on economic growth.

Though reforms in the electricity sector began in mid 1990s in the country, regulators are yet to be established in all the states. Poverty alleviation is neither on the direct or indirect agenda of regulation, now is it a specified objective of regulation; nevertheless, the objectives of regulation are such that these reforms would ultimately translate into benefits that lead to poverty alleviation.

Many electricity regulatory commissions have looked at the issue of poverty reduction and in many cases have also adopted innovative approaches to link electricity access and tariffs with income. Attempts to integrate objectives of pro- poor regulation are also seen in decisions taken with respect to rural electrification, subsidies and tariffs.

Rural electrification

The Government of India has taken many steps to improve access and has launched a number of schemes and programmes at different points of time. One of the most important of these is the Kutir Jyoti Programme (KJP) launched in 1998-99 to encourage electrification of households below poverty line. This provides for extending single point light connection to the households of rural families below the poverty line including harijan and adivasi families. Under this programme, the one time cost of internal wiring and service connection charges is provided by way of 100% grant to the state governments/State Electricity Boards through the Rural Electricification Corporation (REC). Apart from this, other schemes like the Accelerated Rural Electrification Programme, Rural Electricity Supply Technology Mission,

Minimum Needs Programme and the Pradhan Mantri Gramodaya Yojana were also initiated by the GoI from time to time.

However, the reform programme did not per se have any provisions for enhancing electricity access for the poor. Neither the ERC Act 1998 nor the State Reform Acts explicitly mentioned the universal service obligation of electricity. The Electricity Act, 2003 however has special provisions for the Central Government to prepare and, national policy on stand alone systems for rural areas and non-conventional energy systems, national policy on electrification and local distribution in rural areas.

One of the simplest indicators to measure the impact on electricity access is the village electrification level[2]. SEBs / state governments have pursued rural electrification actively since inception. This can be validated by the number of villages, which have been reported as electrified. As on March 31, 2003, of the 587,258 inhabited villages in the country, more than 508,162 villages are reported electrified representing about 87% of the total inhabited villages. The states of Haryana, Punjab, Delhi, Gujarat, Maharashtra, Goa, Andhra Pradesh, Kerala, Tamil Nadu, Sikkim, Nagaland and the union territories of Chandigarh, Daman and Diu, Dadra & Nagar Haveli, Pondicherry, Lakshadweep Islands and Andaman & Nicobar Islands have already achieved 100% electrification of villages in their territories.

While the number of villages electrified in the VIIIth and IXth five-year plan periods may have reduced to 18,500 and 11,200 respectively as compared to the 1,00,000 villages electrified in the VIIth five-year plan, the cumulative numbers may lead to the inference that in terms of providing electricity access to rural areas, very little needs to be achieved. However, these numbers, if viewed along with the 2001 Census figures depict a different picture. As per the 2001 Census, of the rural population which constitutes about 72% of the total population of the country only 42%-44% of the rural households have access to electricity. The stated anomaly is on account of the definition of "electrification". Originally villages were deemed to be electrified if electricity reached any point within the boundary of the village. While the definition enabled creation of access to electricity at the village boundary level as a first step, electricity did not reach the larger section of the rural households. Given this low penetration of electricity at the household level in rural areas, the Ministry of Power has envisaged the scenario of "Power for all by 2012".

[2] The definition of village electrification (October 1997, GoI) is that a village will be deemed to be electrified if electricity is used in the inhabited locality, within the revenue boundary of the village for any purpose whatsoever.

Recently, the Government has also approved a new scheme for Accelerated electrification of one lakh villages and one crore households. This new scheme replaces the existing Accelerated Rural Electrification Programme (AREP) and Kutir Jyoti Programme presently being administered by Ministry of Power. The scheme would be implemented through the Rural Electrification Corporation which may associate other financial institutions in the implementation of the programme.

Subsidy

Subsidies are used to meet universal service obligations/goals especially in the case of monopoly provision and generally take the form of underpricing of the service, lifeline tariffs, and cross-subsidies. The most common justification for subsidising infrastructure services for the poor in developing countries like India is that it is a part of the move towards poverty relief measures being embedded in the welfare system through grants. It leads to benefits in the form of better access to modern living standards, increased awareness and greater employment opportunities, thereby enhancing social and economic welfare of the poor[3]. The subsidisation of such goods and services is often driven by policy decisions that the society functions better when everyone has access to a minimum set of these goods and services.

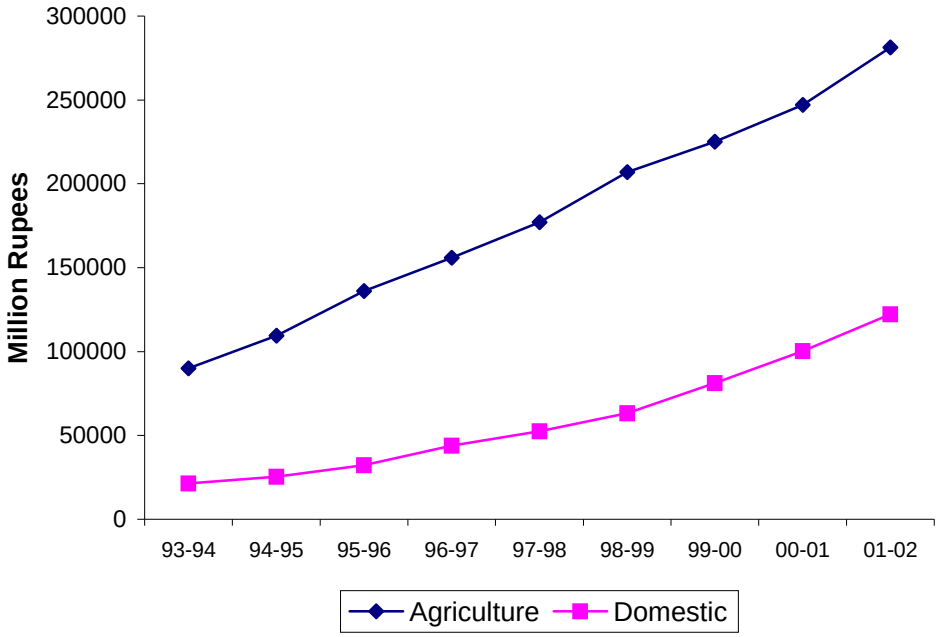
In most of the states in India, agricultural and residential consumers are provided electricity at subsidized tariffs. Subsidies in India were introduced to promote economic development and the initial impact was small and could be funded through government budgets. However, during the last decade the element of subsidy increased manifold and State Electricity Board (SEBs) are in severe financial distress. This method of providing input subsidies makes it difficult to track efficiency across sectors and leaves little incentive for efficiency inducement. Also, electricity tariffs are not cost reflective and increasing dependence on the public budget is stretching the demand on public funds beyond capacity. This also impedes the development of private capital market, the other alternative of raising funds.

Subsidy to the agriculture and the domestic sector has been increasing over the years, even after regulatory reforms began in India (Figure 6.1). However, the growth rate of agriculture subsidy has declined from 18.45% (CAGR from 1993-94 to 1997-98) in the pre reform

[3] World Summit for Sustainable Development-Electricity for all: targets, timetables, instruments (an Electricite de France publication): The goods provided to the poor by access to electricity are not limited to improvements in the satisfaction of their basic needs, nor the changes brought in their day-to-day life. It also includes improvement in the productivity of labour and availability of income raising employment.

period to 10.77% (CAGR from 1998-99 to 2001-02) in the post reform period. For the domestic sector, these growth rates are 25.34% and 24.56% respectively.

Figure 1: Trend in agriculture and domestic subsidy



Source: Planning Commission, 2002, Annual Report on the Working of State Electricity Boards and Electricity Departments

An interesting case is that of Orissa, where prior to reforms and establishment of the regulatory commission, the Government of Orissa was providing subventions to the state utility (Orissa State Electricity Board). However, this practice was withdrawn immediately in the post reform period on the assumption that with the advent of reforms, the utility would start earning profits immediately.

With the beginning of the tariff rationalisation process, the domestic and agricultural tariffs have been increased in many states in the movement towards cost based tariffs. The Electricity Act 2003 provides that the tariff should progressively reflect the cost of supply of electricity and there should be reduction and elimination of cross subsidies within a period to be specified by the regulatory commissions. The Act also protects the interests of the utilities and provides that if the State Government requires the grant of any subsidy to any consumer class; it should pay in advance the subsidy in such manner as specified by the Commission. Consequently, it was seen that most states began to impose a nominal charge for electricity supply to farmers marking an end to the regime of free power supply to agriculturists in the country. However, this did not last for long and many states in the

recent past have announced supply of free power to agricultural consumers. While in some states this was driven by the socio-economic conditions of the farmers due to failure of monsoons, it is also driven by political factors. While, this is acceptable as long as the state utility does not suffer financially, it is yet to be seen whether these states will compensate the utilities for the loss in revenue as mandated under the Act. An important reason for the drive behind tariff rationalisation in India was the high levels of cross subsidies and non payment of subsidy amount by the state governments. The regulatory commissions will have an important role to play in such a scenario. There is no denying the fact that the interest of the poor have to be taken into account for effective regulation, it is also to be ensured that the utility and other consumers so not suffer on this account.

> Also to be kept in mind is that the provision of subsidies in the form of subsidized tariffs encourages its use-this degrades the environment through increased usage of fuels to produce this electricity. Also, in the case of agriculture, the result is inefficient on-farm use of water, over extraction of water, declining water tables and distortions in crop choices in favour of more water intensive crops. This not only degrades a very vital natural resource but also has long term effects for the agriculture sector in the future.

Tariff

Almost all states have the provision for a life line slab for consumers with low consumption. Some states have attempted to link this consumption slab to the income levels and have special tariffs for below poverty line consumers. One such example is the state of Himachal Pradesh, where the state regulatory commission (Himachal Pradesh Electricity Regulatory Commission) recognized that while the tariff for domestic consumers needed to reflect the cost of supply in a progressive manner, the marginal consumers were also to be protected. It therefore introduced a lifeline slab within the domestic category, which was applicable to all those consumers who had been identified under the *Antyodya Anna Yojna* by the Government of Himachal Pradesh. The Commission was of the view that the families included under this *yojana* had been properly targeted and deserved sympathetic considerations. So, the benefit of the concessional tariff was available for use of electricity by these families up to a maximum of 45 units per month and in case this limit was exceeded, the normal domestic tariff was to apply for the entire consumption. However, following pressure from the state government, the tariff structure introduced by the commission for domestic consumers was rolled back and the earlier tariff was reintroduced.

Thus, the subsidy support from the government is enjoyed by other consumer also that may necessarily not fall under the category of poor consumers.

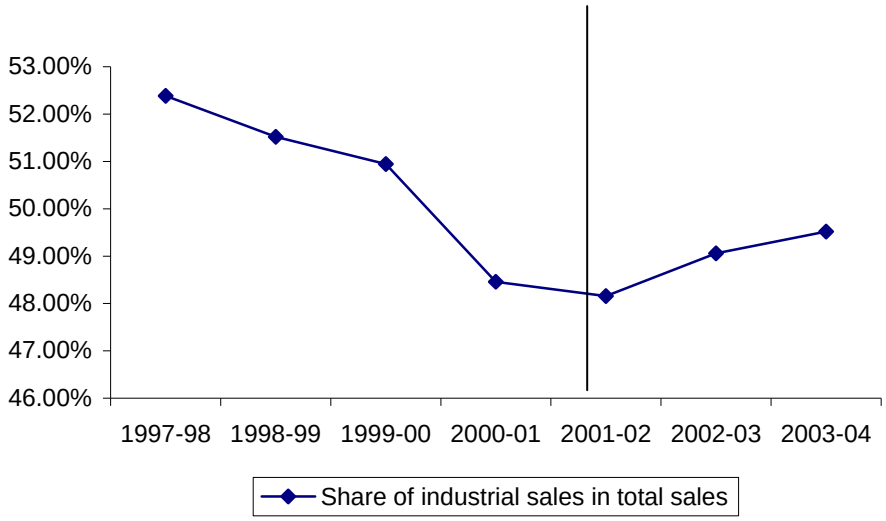
Himachal Pradesh

In May 2002, the State Government of Himachal Pradesh rolled back the tariff approved by the Commission for domestic consumers in the tariff order of FY 2001-02 to the pre November 2001 levels (this decision was made effective form 1st June, 2002). However, this order for roll back of tariff was issued without the approval of the HPERC and the Commission expressed its objection to all parties concerned in this regard. The State Government was, as a consequence of its order to roll back tariff, liable to compensate the Board for the loss in the revenue on account of this tariff roll back, which is to the tune of Rs 21 Crores annually. The State Government compensated the Board for this amount till FY 2002-03; however, the Board did not receive the subsidy for the year 2003-04.

Industrial growth

It is observed that in almost all states that the impact of cross-subsidization of tariff has been that states are gradually losing their attractiveness to retain industries. This is reflected in the decreasing share of industrial consumption in the sale of electricity in these States[4]. For example, take the case of Himachal Pradesh, where industrial sales account for almost 50% of total sales in 2003/04.

Figure 2 Industrial sales in Himachal Pradesh (MU)



Source: Annual Accounts of the Himachal Pradesh State Electricity Board (excluding sales outside the state)

[4] At this point, it must however be recognised that high electricity tariffs are not the only reason for declining industrial consumption. Any change in the industrial activity is the result of a number of factor including government's policy and socio-economic and political situation.

The above figure clearly brings out the fact that the share of industrial consumption in total sales in Himachal Pradesh, which was 52.38% in FY1997-98, fell to 48.16% in FY 2000-01. Consequently, there has been a decreasing trend in the overall growth of Gross State Domestic Product (GSDP) in Himachal Pradesh that fell from 7.21% in 1998 to 5.11% in 2001. The contribution of the industrial sector in the total revenue of the state also depicts a declining trend. The state government's receipt from industries that was Rs 93.2 crore in 1998-99 was reduced to just Rs. 37.2 Crore in 2001-02[5]. This has been a reason for concern not only for the power sector but also for the economy as a whole. Industrial growth is one of the driving forces for the overall economic growth. Industrial development is necessary for rapid and accelerated growth of the economy leads to increase in employment and revenue, balanced regional development, and reduction of income inequalities. This is also one way of ensuring that the poor would benefit from this through increased economic activities.

The HPERC in its first tariff order that was for FY 2001/02 and was issued in October 2002 recognized the need to gradually reduce cross subsidies and designed a tariff structure that was revenue neutral with the existing tariff structure for its large industrial consumers an also introduced concessional night-time tariff to promote industrial consumption. It is thus seen that after these steps were taken, there has been increasing trend in industrial consumption which was 49.52% in 2003/04.

A number of regulatory commissions have also recognized that there is need to reverse the trend of using commercial and industrial consumers to cross subsidize other sectors and move towards tariffs that reflect the cost of supply that would in turn promote efficient and economic investment and consumption. As a result, many of the commissions have not increased the industrial tariff and some have in fact reduced the tariff for industrial consumers. A number of incentive schemes have also been approved to encourage industrial consumption.

FINDINGS

It is seen in that in India while the direct impact of reforms is often a tariff increase for many users; attempts have been made to protect the poor against increases through subsidies. Attempts to realign and rationalize the tariff structure and provide subsidies in a

[5] Public Finance, March 2003, Centre for Monitoring Indian Economy. Page 234

transparent manner are all steps that will in the long run contribute to the economic development and growth of the economy.

WATER SECTOR IN INDIA

Growing population in India, over decades, has put constraints on the availability of water resources in both urban and rural areas. In India, according to official figures from various central government ministries, approximately 90 percent of rural habitations have been fully covered with drinking water facilities; 20 percent of rural habitations have been covered by sanitation facilities (Annual Report, Ministry of Rural Development 2002-03). Similarly, in case of urban habitations, more than 90 percent of the urban population has been covered with water supply and around 55 percent by sewerage and sanitation facilities. Accelerated water supply and sanitation programs in each sector, namely urban and rural sectors, have been under implementation for the last few years to ensure coverage of rural as well as urban habitations with access to safe drinking water and sanitation facilities. Since water in India is a state subject, Central government has also been providing financial assistance to the State governments for making provisions for water supply and sanitation. A number of programs are ongoing in this context with the objectives of ensuring sustainability of drinking water systems and sources; tackling the problem of water quality in affected habitations; covering habitations with proper sanitation; and institutionalizing reform initiatives in water supply sector. Various schemes have come up under these programs such as the programme of Urban Water Supply launched in March, 1994; Swajaldhara launched in December, 2002; Prime Minister's Gramodaya Yojana - rural drinking water; the Rajiv Gandhi Drinking Water Mission; the Central Rural Sanitation programme that was restructured in 1999; and the concept of 'Total Sanitation Campaign' has been introduced, which is a demand driven approach and people-centered. Similarly, since 1989-'90, centrally sponsored low cost sanitation schemes for urban sewerage and sanitation facilities have been under implementation.

Institutional framework for service delivery

Water supply and sewerage, and solid waste management are State subjects as provided in the Constitution of India. The Union Government only formulates guiding policies, sets standards, and provides technical and financial assistance to the states. At the local level, according to the provisions of the 73rd and 74th Constitutional Amendments (CA), urban local bodies are responsible for providing water supply in urban areas, and the Panchayati

Raj institutions in rural areas. Local Government including self-government institutions in both urban and rural areas is an exclusive state subject. Though the Union Government cannot enact any law to create rights and liabilities relating to these subjects, it plays an advisory role for the State Governments who implement the provisions of the CA by making laws, or amending their own existing laws to bring them in conformity with the provisions of the CA, and influences decisions based on funding allocations.

Regulation of water sector in India

The water sector in India, like most developing countries, is being governed through administrative regulation. Economic regulation in the water sector in India has been in practice for quite some time now, though it is significantly influenced by various factors and is not based on economic principles of efficiency and complete cost recovery. There have been some efforts in states within the country towards reforms in improving efficiencies in this sector but they have been limited either to contractual regulation on a project basis or municipal and utility reforms. An important pioneering activity in context of contractual regulation has been the case of Tiruppur Water Supply. The outcomes of this venture, over time, between the private sector and the government will have a significant impact on the sector and is expected to set a precedent for future initiatives. Social regulation, whether it is in terms of groundwater use or conservation of the resource, has been limited to a few states, namely Gujarat and Maharashtra, where governments have acted upon the necessity to promote sustainability of the sector. Difficulties in promoting social regulation are driven primarily by the fact that water rights are governed to quite an extent by landholding. In urban areas property rights to plots indicate physical tenure from the centre of the earth to the sky within the limits of the demarcated plot. Consequently, antagonized by poor service delivery by institutions, people access groundwater on a large scale to meet their growing requirements. It is anticipated that only when service delivery is improved to acceptable levels of efficiency, quality, and adequacy will there be concerns for social regulation in the sector.

Ineffective regulation, including administrative, has several repercussions. One of the most important issues is that of price regulation which is a very sensitive issue in the Indian context. The existing mode of revenue generation is either through a fixed monthly rate or in some instances through tariff slabs wherever there is metering of water consumption. Water being a basic necessity, its pricing is subject to pressure from elected representatives and service delivery institutions may be under pressure to keep these costs as low as

possible. There have been instances where water is being charged at Rs. 8 to 12 per kilolitre while the financial cost of providing this water is as high as Rs. 20 to 30 per kilolitre. This has severe repercussions on the financial health of the sector with the government cross-subsidizing the sector. This fiscal condition is manifest in the ill-health of the sector where there are issues of inadequate coverage, inadequate or no monitoring of quality, and overall inefficient performance in terms of service delivery. This, inevitably, leads to uncontrolled access of groundwater thereby leading to a drop in groundwater tables, in some places at an alarming rate, with the consequent increase in density of dissolved solids thereby rendering the water unfit for consumption.

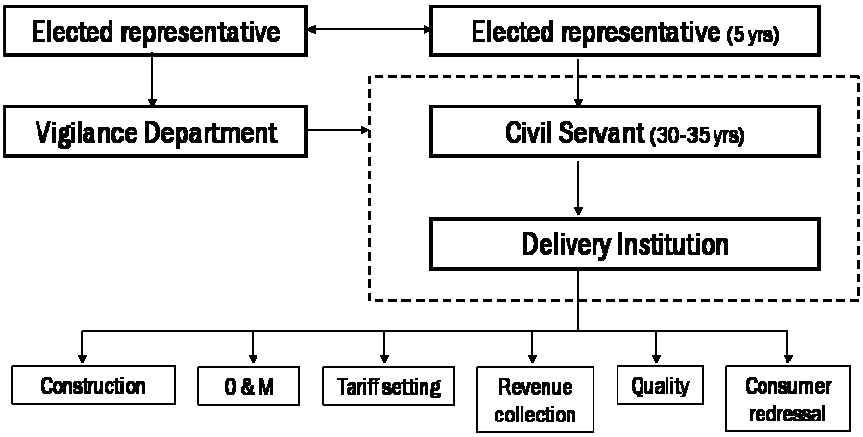
This leads to the creation of a situation akin to water scarcity that has led to water markets being created that operate both legally and illegally. Water is transported by tankers from as far as 30 kilometres with the financial cost of transporting this water being built into the sale price. This does not include health costs that the nation has to bear through increased pollution by these vehicles. In addition, there are no monitoring mechanisms to ensure the quality of water being sold by these private operators. The issue of equity and access gains prominence when this functioning of water markets is viewed in context of the fact that parts of cities that do not have access to piped water supply are generally those that are inhabited by the economically marginalized segment of the population. With no access to piped supply, they end up paying exorbitant amounts of money for this water with the consequent impact on their livelihoods and health.

Reforms in this sector have also looked at improving efficiency of existing service delivery mechanisms. Some states have initiated municipal reforms targeting at improving revenue collection efficiency, application of user charges, fixing of meters for indicating water consumption, reforms in accounting procedures, setting up of escrow accounts, initiating grievance redressal systems that eliminate human interface thereby ensuring a 24-hr grievance recording facility and collusion between defaulters and officials, computerization of all records of consumers in terms of their consumption patterns, and computerization of billing. However, instances of consumers forming a group to collectively address various issues in the water sector have been very few. One noticeable instance has been the case of Tiruppur where the Tiruppur Exporters Association made several representations to the Tamil Nadu State Government that set the wheels rolling for the Tiruppur experience in private sector participation in provisioning of water. However, this has also been facilitated to quite an extent with international donor organizations, like the World Bank and United

States Agency for International Development (USAID)[6], coming forward to assume a portion of the risk inherent in such projects to demonstrate the potential benefits of reforms in the sector.

Another aspect that needs a look is relationships between the civil servants heading the utilities and elected representatives in the ministries under which these utilities are located (Figure 3). While the elected representatives have a term of 5 years, the civil servants are usually in service for about 30-35 years. Consequently, it may not always be possible to align public expectations with sustainability of the utility. This is an important factor that will need to be considered while preparing the RIA framework.

Figure 3: Institutional relationships



Issues

Since this sector entails large sunk costs with long recovery periods and the significant health costs and universal service obligation associated with the water sector, investments in the sector have traditionally been financed by the governments. However, as in other core infrastructure sectors, the state can no longer finance all such development activities on its own. The lack of capital expenditure in this sector has resulted in low coverage and poor quality of service. One of the major issues in the sector is that the approach being adopted for service delivery is a supply-driven one with governments allocating funds from their kitty for water sector and sanitation projects with no incentives for improving (or disincentives for not) current performance levels. It may be noted here that the enabling legislations for these institutions does not define efficient performance. There is a high level of subsidies in the water sector with water not being treated as an economic good. In addition, there is a

[6] While the World Bank pulled out of the project before it reached financial closure owing to certain reasons, USAID is still involved in the project by providing a USD 25 million loan, through its Housing Guaranty Program, to Infrastructure Leasing and Financial Services (IL&FS), one of the equity holders in the project.

high level of information asymmetry in the sector that is restraining the utilities from evaluating feasibilities of reform options for improved performance primarily because they are unable to estimate the demand. Moreover, since consumers are dissatisfied with such service, there is a strong opposition to increasing prices. They are however, generally, willing to pay for assured and good quality of supply. Here private investment could augment the efforts of the state in this key sector. However, the peculiarity of the water sector in terms of being one of the basic minimum services makes private participation in this sector particularly complex. All of this has contributed to the sector to operate at a low level equilibrium with poor services leading to a low willingness-to-pay on part of this consumer. This, in turn, adversely affects revenue streams that are already weak leaving utilities with lesser amount to make capital investments. Lack of financial and fiscal resources is reducing management efficiencies of utilities which, in turn, contribute to poor services.

Social and economic implications of poor service delivery

The economic restructuring in many countries and the world financial crises since the1980s have impacted on the well being of residents in major cities, mainly through declining public expenditure on municipal services, housing, and infrastructure (Demery and Squire 1996; Gilbert 1993). Brockerhoff and Brennan (1998) used the level of infant mortality to compare well being across cities of one million or more residents and smaller settlements within developing regions. They found that the pronounced early infant survival advantage of big city residents in Latin America and the Caribbean declined steadily since the late 1970s and was no longer apparent by the early 1990s. Sharp reductions in expenditure led to an exclusion from access to public utilities such as water access and sanitation.

Exposure to polluted water results in numerous diseases including diarrhoea, hepatitis, typhoid, trachoma, and hookworm infection. Evidence from around the world establishes a strong inverse correlation between the well being of a society and the poor delivery of environmental services (Feachem 1981; Schultz 1980; World Health Organization 1978). Increase in the amount of water used and wide coverage of sewerage connection contribute to better hygiene and to the elimination of bacteriological contamination. Puffer and Serrano (1973) studied infant and child mortality in several Latin American cities and found that a high proportion of households reporting infant deaths lacked adequate water sources. In a study on the mortality variation in urban Brazil, Merrick (1985) found that access to piped water in a household is likely to be of most direct benefit in lowering mortality by reducing exposure to water-borne diseases, particularly diarrhoea. Even though it is often difficult to

show the exact cause without large epidemiological surveys carried out over many years, some evidence of the health costs associated with poor water and sanitation quality is collated in Table 1.

Mortality rates are affected not only through reduced public expenditure on city infrastructure, but also through the way in which the urban infrastructure was managed. One important aspect of urban infrastructure management is water and sewerage system provision and delivery. Recent urban studies suggest that it is necessary to have empowered co-ordinating bodies at the local level, which incorporate indigenous urban institutions into a program, to implement service provision effectively (McCarney, Halfani, and Rodriguez 1995; Werna 1996). In addition, active involvement by the private sector in bridging supply-demand discrepancies in city service is also considered a necessary step to ensure the welfare of the city population (Briscoe 1992).

Table 1: Impact of poor service quality on health and associated costs

Study	Result
The Global Burden of Disease 2000, WHO	5.4 percent of all deaths in the world are due to water related disease.
The Cost of Inaction: Valuing the Economy-Wide Cost of Environmental Degradation in India, Asian Environment Division, The World Bank	It was estimated that a reduction of 47 percent of water related loss of life was possible with the provision of safe water and sanitation
Hygiene and Health in Developing Countries - A Cost Benefit Assessment, By Bjorn Larsen for the 2nd IFH Conference, New Delhi India	425,000 out of a total of 800,000 preventable child deaths per annum may be achieved by means of improved water and sanitation
Environmental Health in India, Priorities in Andhra Pradesh: Environmental and Social Development Unit, South Asian Region, The World Bank.	Lack of proper sanitation results in over 40,000 child deaths in Andhra Pradesh per year.
How Access to Urban Potable Water and Sewerage Connections Affects Child Mortality, Anqing Shi, Development Research Group, The World Bank	Child mortality rate is inversely correlated with access to potable water ($r = -0.68$) and sewerage connection ($r = -0.66$). Improved service delivery and involvement of the private sector would result in a reduction in child mortality

Although a large percentage of households have access to safe public water supply and sanitation in India as indicated earlier, mortality and morbidity associated with water-borne diseases remains high in the country. As is obvious from above, improvements in water supply and sanitation can substantially reduce the incidence and severity of these diseases. Apart from increased capital outlay for these sectors and leveraging investments from the

private sector, some benefits would also be realized from efficiency improvements that can be realized from private management of these sectors.

In addition, there are a number of issues concerning pro-poor regulation. An important issue is that of land tenure. Ground water rights, as per current legislations, are inextricably linked with land tenure. Moreover, given that a significant percentage of urban population lives in squatter settlements with no tenure rights, there is no way that the infrastructure utilities can include them in their agenda for infrastructure provisioning. Consequently, this segment of the population illegally taps water mains thereby reinforcing the wrong impression that one does not need to pay for water. There is also no mechanism for revenue recovery from these residents. In places where there are no such opportunities, there has been an emergence of water markets that operate within these settlements. It is a clear indication of willingness to pay by these settlers who pay an amount higher than what is otherwise being charged by the utilities. This is happening even in planned settlements where residents are calling private water tankers to augment their inadequate existing piped water supply. An important issue, particularly from the perspective of the poor, is that there are no quality checks on the water being supplied by these private operators. Given the significant correlation between quality of water and health, it is a major issue of concern. Another aspect that needs to be looked at is the existing tariff setting mechanism. In a number of urban areas, water charges are collected as part of the property tax, which is directly correlated with the property value. Since the poor inhabit properties that have a lower value, given the smaller sizes and locational aspects of these settlements which are usually planned as lower income group or economically weaker segment plots, they are required to pay less for water. This impact, however, is limited and does not address issues of scarcity of this resource.

There have been several policy interventions by the Union Government in these sectors. These policies highlight the need to improve the delivery of these basic services, acknowledge the possibility and need of independent body to regulate the sector and the importance of community participation. For instance, the National Water Policy of 2002 calls for a holistic and integrated approach to water management, identifies drinking water as the first priority, discusses various environmental issues, and proposes participation of the beneficiaries and the private sector in water management.

Several other Union Government policy statements also have a bearing on the water sector. The 1991 Economic Policy and subsequent policy statements on economic liberalization,

market based approaches to economic management have discussed issues like privatization of urban water, and decentralization. The policy statement for abatement of pollution emphasizes pollution prevention in place of the conventional end of the pipe treatment of effluents and identifies the adoption of best available and practicable technologies as the essential element for pollution prevention. Table 2 lists some of the policy interventions that have a bearing on the environment infrastructure sectors.

Table 2: Policy /programme/legal reform highlights

Year	Policy/Act/Programme	Highlights
1974	Environmental Improvement of Urban Slums (EIUS) Scheme	▪ The scheme is applicable to notified slums in all urban areas ▪ Aims at provision of basic amenities like water supply and sanitation ▪ The EIUS scheme was made an integral part of the Minimum Needs Programme in 1974
1979	Integrated Development of Small and Medium Towns (IDSMT)	▪ The scheme was initiated with a view to augmenting civic services ▪ Strengthening municipalities through promotion of resource generating schemes ▪ Reducing migration from rural areas to larger cities by providing sufficient infrastructure facilities, including water supply.
1986	Centrally sponsored Rural Sanitation Programme (CRSP).	▪ Provide technical and financial assistance to states to implement rural sanitation programmes under the Minimum needs programme.
1986, 1990/91	Urban Basic Services Scheme (UBSS) (1986) / Urban Basic Services for the Poor Programme (UBSP) (1990/91)	▪ The primary objective was improving the standard of living of urban low-income households, particularly women and children through the provision of sanitation and social services in slum areas. ▪ In 1990/91, the scheme was integrated with the EIUS and came to be known as the Urban Basic Services for the Poor (UBSP) programme.
1991	Rajiv Gandhi National Drinking Water Mission (RGNDWM)	▪ The Accelerated Rural Water Supply Programme (ARWSP) under the (RGNDWM) assists the States and Union Territories (UTs) to accelerate the pace of coverage of drinking water supply

Year	Policy/Act/Programme	Highlights
1992	73rd and 74th Constitution (Amendment) Acts	▪ A three-tier system of local governance, through Panchayati Raj Institutions (PRIs) in rural areas and through Urban Local Bodies (ULBs) in urban areas was established ▪ State legislatures were empowered to entrust local bodies with necessary power and authority to enable them to function as institutions of local self-government ▪ State Finance Commissions were to be set up to provide for sharing of revenues between State and local bodies ▪ The urban and rural local bodies are now responsible for Water supply and sanitation
1993/94	The Accelerated Urban Water Supply Programme (AUWSP)	▪ The Programme was initiated by the MoUDPA to provide safe and adequate water supply facilities to the entire population of the towns having population less than 20,000 as per 1991 Census. 50% of the finance for the urban water schemes is provided by the Union Government and the rest by the State Government.
1996	National Slum Development Programme (NSDP)	▪ Additional Central Assistance is being released to States/Union Territories for the development of urban slums ▪ Objectives of the programme include provision of adequate and satisfactory water supply, sanitation, shelter upgradation, garbage, and solid waste management in slums. ▪ Focus areas of the NSDP include development of community infrastructure, empowerment of urban poor women and involvement of NGOs and other private institutions in slum development.
2000	The Accelerated Rural Water Supply Programme (ARWSP)	▪ To cover the residual Not Covered (NC), Partially Covered (PC) and quality affected rural habitations.

Year	Policy/Act/Programme	Highlights
		▪ Improve performance and cost effectiveness of ongoing programmes. ▪ Create awareness on the use of safe drinking water. ▪ Take conservation measures for sustained supply of drinking water. ▪ Have a need-based approach to achieve the objectives of coverage ▪ Decentralisation of powers to States for implementation of mission programmes. ▪ Enhance ceiling for Operation and Maintenance (OandM) from the present level of 10 percent to 15 percent of the annual plan allocation. ▪ Providing 100 percent funds for the nascent programmes such as Human Resource Development, Research and Development, Information Education and Communication and Management Information System. ▪ Institutionalizing community based demand driven rural water supply programme with cost sharing instruments by communities, gradually replacing the current supply-driven, centrally maintained non-people participating rural water supply programme. ▪ Institutionalizing water quality monitoring and surveillance systems.
2002	Urban Reform Incentive Fund	▪ Rs 500 crore to provide reform linked assistance to States on: ▪ Revision of municipal laws in line with model legislation ▪ Levy of realistic user charges and resource mobilization by urban local bodies. ▪ Initiation of public private partnership in the provision of civic services.
2002	City Challenge Fund	▪ Support to mega cities for transitional cost ▪ Partial cost of developing an

Year	Policy/Act/Programme	Highlights
		economic reform programme and financially viable projects undertaken by the ULBs
2002	National Water Policy	▪ Drinking water should be priority in planning and operation of systems ▪ Maintenance of existing water resources schemes would be paid special attention under these institutional arrangements. ▪ Participatory approach should be adopted and water user associations and local bodies should be involved in operation, and maintenance to lead to eventual transfer of management to the local bodies/user groups ▪ Private Sector Participation should be encouraged in planning, development and management to introduce corporate management and improve service efficiency ▪ A standardized national information system with a network of data banks and data bases, integrating and strengthening the existing Central and State level agencies should be established ▪ Exploitation of ground water resources should be so regulated as not to exceed the recharging possibilities as also to ensure social equity.

In 2004, all drinking water programs have been brought under the umbrella of the Rajiv Gandhi Drinking Water Mission[7]. This program is driven by the Central Government, under which funds are allocated to various states for accelerating the pace of coverage of drinking water supply.

Sector reform options for India

A number of reform options are available for India. However, each of these has its own limitations in terms of their capability to address issues of pro-poor regulation.

[7] http://indiabudget.nic.in/ub2004-05/bh/bh1.pdf; page 4

EFFICIENCY IMPROVEMENTS IN UTILITIES

Utilities, being the service providers, are currently operating at inefficient levels. It is envisaged that efficiency improvements in these utilities will enable increased coverage, improvements in existing water supply scenarios, quality checks, and grievance redressal. However, this may lead to increased tariffs which may or may not be acceptable to the public. In addition, these efficiency improvements would need legislative intervention, which would be time consuming. Also, in the event of these legislations being accepted, there would be a considerable time-lag before utilities begin to operate efficiently. This may necessitate introduction of disincentives for underperformance which would meet with significant resistance from labour unions. Moreover, these would require significant investments for capacity building of utility personnel. However, the biggest advantage that this option has to offer is that inclusion of pro-poor regulation in this scenario would be the easiest since the agency driving these reforms, namely the government, would also keep the poor directly within its mandate ensuring that benefits of efficiency improvements reach the poor.

PRIVATE SECTOR PARTICIPATION AND PUBLIC PRIVATE PARTNERSHIPS

These reforms would definitely entail an alignment of tariffs and costs thereby necessitating an increase in tariffs from their current levels. The direct benefits would be an improvement in quality of water delivered and overall service delivery efficiency. Lesser investments would be required for capacity building of utility personnel while they work with the efficient private sector. Benefits are usually visible in the short term extending to long term sustainability of the water sector. In these arrangements there would be relative ease for introducing incentives for inefficient performance. However, these arrangements are likely to be met with significant resistance from labour unions. In context of pro-poor regulation, it would be difficult to ensure that all aspects of pro-poor regulation are incorporated in these arrangements. This would necessitate positioning of an appropriate regulator that would ensure incorporation and enforcement of pro-poor approaches within the reforms process.

DIVESTITURE

Disinvestment of the water sector is the least likely option to be adopted primarily owing to the significant universal service obligation existing in the sector. There would be a definite

increase in tariffs with the private entity operating the sector at significant profit margins. It is quite likely that there will be cherry-picking with select consumer groups being accorded preferential services over the poor who are unable to contribute significantly to the profit expectations of the private sector. There would be no investments for capacity building with severe fiscal implications in case of exclusion of existing utility employees by the new management. Benefits to the water sector are likely to be apparent in the short term with ease for introducing disincentives for underperformance by employees. However, such an arrangement is also likely to be the least politically acceptable option with very high resistance from labour unions. The role of a regulator in this arrangement is also unclear particularly since the sector is then expected to operate on commercial market principles and it will be difficult to define malpractices and incorporate universal service obligation in service delivery.

FINDINGS

Full-scale reforms in the water sector in India are overdue. However, given the fiscal health of the state and the sensitivity of the water sector, it would be time before all stakeholders finally accept the need for economic regulation of the water sector. While some states have initiated efforts in this regard with encouragement from the central government, it is anticipated that there would be a time lag for building up of regulatory capacity within the country before the sector can look to operate in a viable manner. There is also an identified need for delinking land tenure from ground water and norms need to be clearly defined. While there are a number of reform options available for India, it is not known which option is most likely to be adopted. Each of these reform options entails a different RIA framework which can only be formulated in the event of knowing which option will be adopted. However, alternative RIA models may be developed and each model may be evaluated for its responsiveness to the evolved sector structure.