



Water and Sanitation Program

An international partnership to help the poor gain sustained access to improved water supply and sanitation services

South Asia Region

SMALL PRIVATE INITIATIVES (SPI) IN THE WATER AND SANITATION SECTOR IN INDIA

In India, water and sanitation services are predominantly provided by Government and para-statal agencies. There are very few instances of large-scale formal private sector participation; where they exist they are mostly service contracts or management contracts.

However, a number of small-scale informal private initiatives have emerged to fill the gaps in the existing delivery system. Some of these private initiatives are in partnership with the Government, and others have come about on their own in response to demand from clients.

This series of Field Notes on Small Private Initiatives in the Water and Sanitation Sector in India is designed to document a few successful urban and rural experiences focusing on the poor.

SPI Series: **1**



Privatizing the Operation and Maintenance of Urban Water Supply: The Experience of Ajmer, Rajasthan, India



A privately maintained pumping station

SUMMARY

The Public Health Engineering Department in Ajmer, Rajasthan, has privatized the operation and maintenance of the filtration plant, pipelines and pumping stations of the new water supply scheme from Bisalpur Dam. This has reduced labor management problems, decreased time taken for repairs and resulted in substantial saving in the operation and maintenance cost for the Public Health Engineering Department. Consumers also benefit from a better maintained and more reliable drinking water service. This is one of the few examples of private sector participation in the management of urban water supply in India.

The New Bisalpur Dam Water Supply

IN FEBRUARY 1995, the Government of Rajasthan commissioned a major drinking water supply scheme to draw water from the Bisalpur Dam in Ajmer - but with a difference. This time, the State-level executing agency, the Public Health Engineering Department (PHED), was not given the responsibility of the operation and maintenance (O&M) of this scheme. Instead, private sector operators were contracted to operate and maintain the pipelines, pumping stations and the water treatment plant, and the PHED was only to supervise the operation and maintenance.

The new Bisalpur Dam scheme on the river Banas supplies water to 6 towns in Ajmer district, namely, Ajmer, Beawar, Kishangarh, Nasirabad, Kekri and Sarwar, through 112 kilometers (km) of pre-stressed cement concrete (PSCC) pipelines and 5 pumping stations, managed by private contractors. Prior to the scheme, drinking water was supplied from the Banas river to these towns through an older network of mild steel (MS) pipelines and pumping stations run by the PHED.

From the intake well at Bisalpur Dam, raw water is pumped via a booster station at Thadoli to a large and modern filtration plant at Kekri, which can handle up to 132 million liters per day (MLD). From here, about 100 MLD of treated water is supplied through new pipelines and 2 pumping stations at Kekri and Goyala. Another 32 MLD is sent via the pipelines of the old system.

Ajmer is the largest town amongst the 6 towns covered by

the scheme. The projected population of Ajmer for the year 2001 is 730,000, which accounts for about 63 per cent of the total population

WHY CONTRACT OUT?

THE PHED in Rajasthan was prompted to privatize the O&M of the new drinking water supply project from Bisalpur Dam for two main reasons:

- The Government of Rajasthan had forbidden new recruitment, and, therefore, the PHED could not enlist new staff to operate and maintain the new scheme.

- The equipment in the pumping stations and the filtration plant was quite sophisticated and required suitably trained staff for operation and maintenance. The PHED did not have such staff.

Four years later, it is clear that this was a move in the right direction. All the important stakeholders - the Government exchequer, the PHED, the private contractors and the consumers - have benefited from this new arrangement.

served by the scheme. The major share of 85 MLD is supplied to Ajmer town alone.

The Contracting System

THE O&M contracts for the water supply system are awarded through a rigorous bidding process. The bids are for an O&M contract of 2 years, covering all possible costs of operation and maintenance, including price escalations. These costs are of 2 types: 'Fixed costs' which comprise salaries of operational staff, costs of equipment, insurance premiums and preventive maintenance; and 'event-oriented costs' of minor and major repair, which may require hiring technical skills or sending machinery and equipment back to the factory for repairs.

Main Features of the Bidding Process

- For the O&M of the filtration plant, pumping stations, and pipelines, separate sealed bids are invited from pri-

The Bisalpur Dam



vate firms through advertisements in newspapers. Potential bidders have to deposit guarantee money of Rs. 160,000 per bid (in 1998), which is returned to the unsuccessful bidders after the contract is awarded. No interest is paid on this sum, and the sum is forfeited if a successful bid is retracted within 75 days of the opening of the sealed bids. This is to reduce

HOW IT WORKS

AT PRESENT, the 112 km of pipelines are looked after by a single private firm, Paharia Construction Company, based in Delhi, which has its own cranes, stock of pipes and patrolling staff equipped with wireless sets supplied by the PHED. The pumping stations and filtration plant are also connected by this voice communication system.

Two private firms, Hydon and AEC India Ltd., look after the 5 pumping stations between them (one has 2 stations, and the other has 3). Hydon also operates and maintains the filtration plant, employing about 30 people, including well-qualified engineers and technicians. The staffing is adequate for normal maintenance operations, but the workers have to put in additional hours when there is a breakdown. Nonetheless, the number of staff employed by the private contractors is small compared to the PHED norm.

The PHED officials closely monitor the operation of the entire scheme. Executive Engineers share the responsibility for different stretches of the pipeline and the pumping stations within these stretches, while Junior Engineers are in charge of each pumping station. These Government officials also supervise the staff provided by the private firms.

the risk of collusion among firms and also to prevent frivolous bids from unscrupulous firms.

- Each bidder has to submit details of its organization, management staff and personnel, evidence of similar work carried out in the past, a list of current jobs, as well as current income tax and sales tax certificates.

- The annual turnover of the bidding firm in the last 3 years has to be at least 50 per cent of the estimated cost of the bid.

- No consortium or collaborative bidding is permitted.



- A pre-bid conference of all the bidders is held 2 weeks prior to the last date for submitting the bids.

The PHED awards the contract to the best-qualified bidder offering the lowest evaluated valid tender. This essentially means that the lowest bid does not necessarily get the contract. According to the PHED, past experience has shown that the lowest bidder may not always have the prerequisite staff, experience, equipment and access to credit to successfully carry out the work.

Performance Monitoring of Contractors by the PHED

The operation and maintenance contract for the water supply scheme has been drafted to ensure efficient service delivery by the contractor, as well as to facilitate the supervision and monitoring of the contractors' performance by the PHED. The terms of the contract include well-defined obligations of the contractor and the PHED, and a balance of performance-linked payment and penalties. The financial penalties against the contractors, in case of failure to meet the requirements of the contract, are important performance-monitoring

Work on pipelines in progress

tools incorporated in the contract.

Obligations of the Contractors

- Furnishing a bank guarantee amounting to 5 per cent of the contract value, valid for a period of 5 months beyond the period of the contract.

- Acquiring necessary tools and equipment at their own cost.

- Providing supervisory and other



A filtration plant at Keki

staff, according to a list supplied by the PHED, both for regular patrolling and repairs and emergency work such as pipeline bursts.

- Carrying out round-the-clock surveillance and preventive and breakdown maintenance of the pipeline.

- Providing adequate safety equipment at their own cost to the operating staff and taking the responsibility for all unforeseen losses of equipment or injuries to the workers.

- Paying wages, incentives, group insurance, compensation and providing other amenities to their staff in accordance with the rules and regulations laid down by the Ministry of Labor Welfare, Government of India.

Responsibilities of the PHED

- Making monthly payments of the annual O&M costs quoted in the accepted bid on submission of bills by the contracting firms.

- Paying all initial costs of spares

and repairs of the equipment to the contractor.

- Installing a wireless system to connect the local units of the private firms maintaining the filtration plant, pumping stations and pipelines.

- Providing office space, storage space for supplies and accommodation for the staff free of cost, excluding the cost of electricity and water, to the contractor.

Penalties for Pumping Stations

- Deduction from the contractor’s monthly payment of Rs. 200 per day per missing person for supervisory staff and Rs. 100 per day per missing person for other staff.

- Deduction of 33 per cent from the contractor’s monthly payment for closure of the pump-house for 15 days or more in one stretch.

- Recovery of the cost of repair or replacement from the contractor’s monthly payments if negligence of the contractor is proved to be the cause of the repair or replacement.

- Operation and maintenance of the pumping stations by the PHED staff at the cost of the contractor if the contractor’s staff go on strike.

- Levying a compensation of liquidated damages at 0.25 per cent of the contract value per week of unsatisfactory performance (to a maximum of 10 per cent of the contract value).

- Deduction of twice the hourly rate to be paid to the contractor from his monthly payment for fall in the agreed pumping hours by more than 10 per cent.

Penalties for Pipelines

- Deduction of the daily patrolling charge from the contractor’s monthly payment if the patrolling of the pipelines by the contractor is not found satisfactory by the Engineer-in-Charge.

- Levying a penalty if each major breakdown is not repaired within 24 hours, bursts in PSCC pipelines within 36 hours, minor leaks within 8 hours. The penalties for delay in carrying out these repairs are listed in Table 1. If the leak persists, the cost of the wasted water is to be recovered from the contractor at the rate of Rs. 8 per 1,000 liters of water lost.

Table 1	
Penalty for Delay in Repairs Beyond Specified Period	
Hours of delay	Penalty (Rs./hour)
0-2	500
2-4	750
4-8	1,000
Beyond 8	2,500

Advantages of the System

ALL THE four stakeholder groups have benefited from the contracting system: the consumers, private contractors, the State Government and the PHED.

The consumers not only enjoy the additional availability of water following the commissioning of the new project, but also shorter periods of disrupted water supply after a leak or burst in the pipeline. According to the PHED, the average time taken to repair leaks and bursts in the pipeline has come down from 60-72 hours to 24-30 hours.

Private contractors, who were earlier engaged mostly in construction work, have found a new avenue for diversification of their business and also to make profits. The contractors are paid 20 per cent of the total cost of spares and repairs as overheads and margins.

The State Government is pleased that the drinking water supply is better managed, there are monetary savings due to increased efficiency in service delivery, and also there is consumer satisfaction.

The PHED has benefited in several ways, largely because of the system of incentives and penalties being put in place, which increases the efficiency of the private contractors. The major benefits enjoyed by the PHED are:

- Managing privately contracted staff is much easier since such staff is accountable for inefficiency, negligence and absence. The PHED also does not have to directly deal with labor union protests and strikes.

- Maintenance is now carried out on a preventive basis rather than on a

Table 2

Comparative Costs and Savings of the O&M of Water Supply
(in million Rupees @ 1998 prices)

O&M of water supply from Bisalpur Dam	Costs if done by the Government	Costs if done by private contractors	% saving over Government costs
Pipelines (112 km)	10.00	3.00	70
Pumping Stations (5)	11.20	8.30	26
Filtration Plant (1)	1.50	1.50	—
Total	22.70	12.80	44

Source: The office of the Superintending Engineer, PHED, Ajmer, Rajasthan.
Note: 1 Alternate costs calculated from costs incurred in the existing pump-houses and pipelines.
 2 Comparative costs for the filtration plant are not available since there is no other similar plant in the State.

‘breakdown’ basis, which reduces the frequency and duration of interruptions in the service.

- Private contracting has reduced the average time taken to repair bursts and leaks in the pipeline, which reduces consumer complaints and dissatisfaction, as well as the O&M costs.

- Contracted work is cheaper than work done by the Government and is getting cheaper every year. The annual savings to the PHED from contracting out the O&M of water supply from the Bisalpur Dam are presented in Table 2. The savings on pipeline and pumping stations maintenance are rising because bids are becoming cheaper over time, as firms become more efficient and learn that preventive maintenance is more cost-effective.

Major Problems and Concerns

THIS EXPERIENCE of contracting out the O&M of urban water supply in Ajmer has not been

without problems and some of these also have serious implications for the sustainability of the new institutional arrangement. These problems are:

Technical Issue: The main technical issue is the use of cheaper PSCC pipes instead of the more durable mild steel pipes. This is likely to lead to a higher frequency of leaks and bursts requiring more maintenance, eventual replacement with mild steel pipes and increase in the long-term cost of the scheme. This can be portrayed as a high-cost option by those who are not in favor of management of the water supply scheme by private contractors.

Labor Unrest: The PHED labor union has opposed contracting out the management of the water supply scheme to private operators. The union’s concerns are loss of jobs for the present employees and even the future loss of employment for their descendants. The workers have protested by holding sit-down strikes (*dharna*) outside the PHED Chief Engineer’s office in Ajmer and have also periodically disrupted the functioning of the city distribution network, which is the direct responsibility of the PHED. The PHED officials argue that contracting out does

not adversely affect the present workers directly. Because of the new recruitment policy of the State Government, no fresh recruitment of PHED staff can be made and their numbers are set to decline over time. Since the existing staff is not technically qualified to handle the new scheme and new staff cannot be hired, there is no option but to contract out to private firms.

Risk of Collusion Among Firms:

Private sector participation in water supply, particularly in the O&M, is very limited in India. Most of the private firms bidding for these contracts are large construction firms willing to diversify. The number of such firms with relevant experience, infrastructure, manpower and access to credit is small. One consequence of the small number of firms bidding for the contract is an increased risk of collusion among these firms. This has actually happened in the last round of bidding, when all firms quoted identically high rates. The bidding was cancelled and the existing contracts were extended, while the PHED started working on revising its contracting procedures.

Risk of Collusion Between Officials and Contractors: In addition to collusion between contracting firms, there is a risk of officials responsible for awarding contracts colluding with contractors. They could agree to award contracts to less able firms or those charging higher amounts than more qualified firms. At present, however, this does not seem to be a serious issue. The State Government has, in fact, asked the PHED to justify contracting out and the PHED is keen to prove to the Government that contracting out has significant benefits. But this situation can change in the future when there is no longer the need to make a case for contracting out.

Risk of Monopoly: Private contractors maintain that profit margins in such O&M contract work are low. Therefore, they are interested in getting more contracts in order to increase their profits. There will be more contracts in Phase II of the present scheme, which aims to extend the pipelines and the distribution system, and also in similar schemes which are coming up shortly in Udaipur, Jodhpur

and Churu. While it is true that firms with past experience are in a better position to provide the quality service required, the risk to the PHED is that a firm with a large number of contracts is likely to be monopolistic. The PHED recognizes this and, therefore, does not want the contracting to be restricted only to a few firms.

Key Lessons

THE EXPERIENCE of contracting out the O&M of a water supply scheme by the PHED to private operators in Ajmer, Rajasthan, shows that it is possible to increase the efficiency of service delivery, reduce costs, minimize labor management problems, improve the quality of service and increase consumer satisfaction by facilitating private sector participation. The key lessons that can be drawn from this experience are:

- The State-level agency responsible for the entire water supply system can successfully assume a new role, that is from a monopolistic provider to supervisor of a number of private sector operators.

- A well-designed contract with clearly defined responsibilities of the Government and private sector partners and a performance-linked system of payments and penalties is essential for the success of a public-private partnership.

- At the same time, this experience shows that while the system has worked initially, there is need for further revisions in the contracting design and procedures to counter the risks of collusion and monopoly.

- Given the advantages of this system to various stakeholder groups, this is clearly one way to improve urban water supply in India. Using the contracting method would, however, require a careful scrutiny of the ground realities, an assessment of the nature and size of the market, availability of private sector operators and, of course, willingness of the Government agencies to privatize water supply.

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4. Villagers Treat Water as an Economic Good, **Olavanna**, Kerala, India

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