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Flagship Report

Running Water in India's Cities: A Review of Five Recent Public-Private Partnership Initiatives



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**Creating Sustainable Services
Through Domestic Private Sector Participation**

Running Water in India's Cities: A Review of Five Recent Public-Private Partnership Initiatives

Abbreviations and Acronyms

\$1 = Rs 55

One Lakh Rupees: Rs 100,000 (One Hundred Thousand Rupees)

One Crore Rupees: Rs 100,00, 000 (One Hundred Lakh Rupees)

BOT	build-operate-transfer
DPR	Detailed Project Report
GoI	Government of India
IFC	International Finance Corporation
IRR	internal rate of return
JNNURM	Jawaharlal Nehru National Urban Renewal Mission
kl	kiloliter
km	kilometers
KMC	Khandwa Municipal Corporation
KUWASIP	Karnataka Urban Water Supply Improvement Project
KUWSDB	Karnataka Urban Water Supply and Drainage Board
LMC	Latur Municipal Corporation
LoI	letter of intent
lpcd	liters per capita per day
MCC	Mysore City Corporation
MJP	Maharashtra Jeevan Pradhikaran
mld	million liters per day
MUDA	Mysore Urban Development Authority
NRW	nonrevenue water
O&M	operations and maintenance
PPP	public-private partnership
RFP	request for proposal
RFQ	request for qualification
Rs	Indian rupees
SPML	Subhash Projects and Marketing Limited
UIDSSMT	Urban Infrastructure Development Scheme for Small and Medium Towns
ULB	Urban Local Body

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I. Overview

India is home to more than 370 million people in urban areas. Historically, almost all water supply provision has been managed by the public sector through municipal or state-level departments or parastatals.

Benchmarking initiatives show that coverage through piped water supply ranges between 55 percent and 89 percent in urban areas. Per capita availability is fairly high, at 90 to 120 liters per day, but no city yet offers continuous water supply. Daily supply averages four hours, with many cities alternating supply every other day.

Service efficiency is weak, which means utilities have low cost recovery, further exacerbated by low tariffs that have little relation to operating costs. Only about 20 percent of connections are metered, and nonrevenue water—water for which no revenues are collected—averages over 40 percent in most cities.

These challenges occur in a context of weak management systems and little data on existing assets, which makes it difficult to assess investment needs and time lines to improve service levels and operational efficiencies. While investment requirements are likely to be significant, it is recognized that investments alone will not be effective unless the country simultaneously addresses related issues such as complex and fragmented institutions with little accountability; lack of capacity to run utilities efficiently and meet performance standards; weak commercial orientation; interference in utility operations by external entities; and the absence of a regulatory framework focused on customer service and financial sustainability.

Against this sector backdrop, some cities began to attempt

public-private partnerships (PPPs) in water supply operations in the early 1990s, following economic liberalization. Many of these early projects focused on bulk water augmentation, with expectations of significant private investment. Most failed because of poor enabling frameworks for private investment, poor project preparation, weak financial strength of project proponents, and opposition to private sector participation.

In the first half of the 2000s, a shift in focus toward distribution services took place, although projects were still handicapped by opposition to private sector involvement in water supply services. The management contract model was explored, and governments started providing funding to meet a significant part of the investment needs while the private sector focused on creating efficiencies.

By 2005, cities were creating a mix of PPP arrangements, including concession agreements, management contracts, and build-own-transfer (BOT) projects. A review of the achievements of Indian water PPPs, drawing upon a study in 2011,¹ reveals the following: the shift in focus to service delivery; the increasing willingness of cities to explore and design solutions that suit their needs; the recognition that PPPs may be pursued for efficiency gains, in addition to private financing; the recognition and handling of sensitivities around tariff issues; the success in attracting interest from a cross section of domestic and international operators; the embedding of competitive selection processes; and an increased ownership demonstrated by cities toward PPPs. The number of projects achieving financial closure has also increased significantly: of the 15 projects awarded between 2005 and 2011, 10 involved private finance and eight achieved financial closure.

TABLE 1.1 FIVE CASE STUDIES IN WATER SUPPLY PPPS IN INDIA

	Nagpur	Aurangabad	Mysore	Latur	Khandwa
Population (millions)	2.5	1.2	1.0	0.38	0.2
Mandate	Rehabilitation + operations	Bulk + reconstruction + operations	Reconstruction + operations	Operations + select rectification	Bulk + reconstruction + operations
Duration (years)	25	20	6	10	25
Bid parameter	Lowest bid price	Least annual subsidy	Least rehabilitation cost and fee	Highest payment to state entity	Least end user tariff
Operator	Veolia & Vishwaraj	Essel-SPML	JUSCO	SPML	Vishwa
Private investment	30%	50%	Nil	Nil	10%
Government grant	UIG (70%)	UIDSSMT + State	UIG (90%)	Nil	UIDSSMT (90%)
Revenue model	Fee/kl	Tariff + annual subsidy	Management fee	Tariff	Tariff
Contract signed	Late 2011	2011	Mid-2009	2008	Late 2009
Contract management	City	City	Parastatal	Parastatal	City
Current status	WS system handed over	Preparatory phase: WS system yet to be handed over	Rehab, O&M in progress	Under suspension	Construction in progress

Note: UIG: Urban Infrastructure and Governance.

UIDSSMT: Urban Infrastructure Development Scheme for Small and Medium Towns.

While the shift in focus toward distribution, and hence service delivery, is a positive one, it is meaningful only to the extent that objectives are achieved through the arrangements, an outcome closely linked to the manner in which projects are structured and contracts are designed. A more detailed assessment of five PPP projects was consequently undertaken to evaluate the underlying rationale of the initiatives; the preparatory and bid process; key contract provisions; risk allocation and related issues that may have a bearing on the operational trajectory; and impact the achievement of objectives.

The five projects, in Maharashtra, Karnataka, and Madhya Pradesh, provide a detailed analysis of the process, politics, and preparation of PPP projects in India. They represent all PPP initiatives in urban water supply undertaken in the country between 2005 and 2011 that have a citywide distribution focus.² All of the projects are currently under way and still face significant challenges, but they are milestones

in the movement to build stronger, more sustainable, and customer-responsive water supply services through PPPs. A snapshot of the case studies is presented in Table 1.1.

Both UIG and UIDSSMT are components of Government of India's JNNURM Program. UIG is applicable to 65 mission cities, and UIDSSMT is applicable to cities other than mission cities.

Observations and Implications for Future PPP Initiatives

1. *Distribution projects have been taken up where bulk water availability has been assured.* These five projects reflect the shift from bulk water to service delivery or end user experience with the assurance of bulk water at the start of each project.
2. *Data and information on the existing infrastructure was poor.* Distribution projects are inherently brownfield

and closely tied to the nature of existing assets. However, all contracts have been executed with poor data. In three of the projects—Mysore, Khandwa, and Latur—this resulted in additional distribution rehabilitation estimates once the operator was able to more closely assess the system, rendering committed funds inadequate.

Lack of accurate data is a real risk for water PPPs. Public agencies should explore contractual approaches that incentivize the operator to cope with this risk. This could include more detailed project preparation, in which operators assume a role, providing incentives to the operator to maximize achievement of service standards within the initial budget. Contracts could also explore clauses that permit changes in scope or service standards to cope with increased costs or to include a contingency fund.

It is reasonable to expect that brown-field water PPP contracts may require adjustment or even renegotiation, given that they are awarded in the context of poor data relating to the existing system and inadequate preparation. A credible and transparent mechanism would help address this issue during implementation; in the absence of this currently, public sector officials are reluctant to exercise judgment to resolve issues objectively and stakeholders perceive any adjustment negatively.

3. *None of the projects have targeted capital investment efficiency.* All the projects reviewed rely substantially on public funds. However, the availability of public funds has had an unintended consequence on project development and implementation, in that the imperative for efficiency of capital deployment has been diluted or compromised. The focus has shifted from rehabilitation to replacement; and the scope of replacement has further expanded in three of the cities after initial design. In all cases, the PPP design did not build in adequate incentives for the operator to optimize capital expenditure or draw out rigorous technical expertise, creativity, or innovation to address the challenges of service delivery in the context of existing Indian cities.

In the current funding environment, PPP structures must be consistent with the depth of public financing. PPP design should seek to balance public objectives such as optimization of capital investments and focus on application of technical skills, expertise, and innovation along with underwriting risk for the private operator in order to maximize the impact of available funds.

4. *PPP design and monitoring are not always consistent with the rationale for reform.* In all projects except Latur, city officials clearly articulated the need to focus on customer service and therefore on distribution. This formed the basis of the rationale for PPP in all cities: in Khandwa and Aurangabad, the promise of daily water supply and 100 percent coverage; in Nagpur, the scaling up of the pilot project and equitable supply; and in Mysore, continuous water supply, which was thrust on the city although the initial project design did not envisage continuous supply.

However, in all the projects the consequences of not meeting the targets, or standards outlined in the contracts, are either too weak or too unrealistic. There is not adequate incentive to perform, and there is limited recourse for poor service performance. The service level objectives should not only influence the PPP choice and contract design but should be embedded in specific and meaningful contractual commitments. In the absence of such enforcement, the primary objective of PPPs, which is to leverage private sector efficiency, stands compromised. This is further compounded by lack of strong institutional mechanisms to monitor performance.

Additionally, there is no balanced assessment and treatment of risk sharing in any of the projects. Standard clauses such as treatment of escalation in power tariff, change in law, compensation in the event of termination, arbitration, and so forth vary significantly between contracts. High bidder interest is one of the indicators of a successful PPP process. Following well-established principles for standard commercial risks is shown to enhance the possibility of increased bidder participation.

5. *The PPP contracts focused on delivering technical improvements while the financial sustainability of operations has not been addressed in the PPP design.* This has been the case in all the projects except in Khandwa. Other cities will continue to be responsible for providing subsidies from the general budget. Cities have (justifiably) insulated the operator from cost-recovery risks; however, they do not seem to have put in place any parallel mechanisms to ensure financial sustainability of the water supply function at the city level in the medium to long term.

Public funding aims to reduce the cost of initial service delivery improvements so that cities may dilute the impact of capital expenditure on corresponding tariffs. However, it is important to ensure that the PPP design is part of an overall framework to ensure long-term financial sustainability and viability of water supply functions for the city, as well as the viability of the PPP project.

6. *In all cases, institutional arrangements have had an impact on project design, implementation, and management.* In two of five cities—Latur and Mysore—responsibilities in the water supply chain are divided between the parastatal and the city. This fragmentation has led to weak PPP design and implementation, as interests of different agencies do not seem to be aligned. A meaningful focus on service delivery improvements and realistic contract management is possible only when the entity accountable for service delivery is the key counterpart to the contract and when clear institutional mechanisms are provided to monitor private sector performance objectively and buffer the contract against external and extraneous interests. While PPP designs may require the city to develop sophisticated contract management skills and decision-making capability, which they may lack, contract arrangements should seek to supplement city capabilities without undermining their position as the key counterpart to the contract.

7. *Transitioning of city employees to the private operators is challenging, as loyalties and incentives are not always aligned.* When public sector employees are delegated to the operator but continue to

be paid by the government, it can create significant employee resistance, as in the case of Mysore.

Conflicts occur when staff are transferred physically to a private operator but remain tied administratively to the city. Staff may transition better if they are able to see a clear gain for both themselves and the project if it succeeds. Contracts that provide clear incentives to employees help build staff ownership to work toward a successful project.

8. *All projects rely on either external grants or public agencies to implement linked investments.* None of the contracts have a practical or bankable mechanism for resolving either delays in receipt of grants or the need for additional grants due to expansion in scope of works, an issue that two of the project cities—Mysore and Khandwa—are confronting.

Appraisal of PPP projects also has to take into account the capacity of the city to manage changes in scope and delays in funding. External grants are helping cities take up projects far beyond their financial capacity, but they also make them vulnerable to unforeseen events. Project preparation, the financing plan, and the tariff/fee design would benefit if a contingency was built in to handle these issues.

9. *All projects had weak communication and stakeholder engagement.* None of the projects included any type of opinion research or communications assessment. These could have helped the proponents understand stakeholder opinions and attitudes toward reform, which could have fed into a broader more responsive communication strategy.

If upfront communication about the rationale for a PPP is weak, it puts the project at risk. This will have a cascading effect when citizen support is poor and political consensus across party lines is lacking, such as in Latur. Projects are also vulnerable to vested interests. Communication programs should be implemented well before the bidding of the project. An effective communication strategy helps mitigate political, social, economic, technical, and even

commercial risk. Where there is limited buy in, an initial focus on gaining and communicating quick results also helps to build support from stakeholders. In such interactions, platforms provided by an independent regulator—absent, so far, in the water sector in India—or an ombudsman offer a valuable institutional space for transparent discussions.

The Government of India, in a recent decision, now requires PPP projects to disclose information voluntarily. Communication programs should be designed to reflect this principle, and platforms for interaction should implement it proactively.

10. *Market appetite for PPPs is fairly strong, but seems to be dampened by inadequate project preparation, poor treatment of risks, and weak prequalification standards.* A standard approach to prequalification has increased competition in other infrastructure sectors in India, such as highways and ports. A similar approach may be needed to provide predictability to potential domestic and international bidders. Improving project preparation and PPP structuring is also important to convert the overall bidder interest in the sector to actual bids for specific projects. A key challenge lies

in encouraging operator behavior that is consistent with sector objectives. Projects have to be designed so that both local knowledge and international expertise are available to cities, and operators are encouraged to look beyond short-term gains from construction and focus on longer term objectives of sustainable service delivery.

11. *All five projects include a target of universal coverage and common service standards, including continuity of supply, for all consumers—conditions that are acknowledged to deliver maximum benefits to lower income populations.*

In response to social issues, all contracts have proactively provided for service delivery options to consumers as well as tariff concessions (bulk supply to poor neighborhoods, fortnightly payment options, special tariff for group connections, and so forth). It would also be useful to explicitly state the subsidy that the city will bear for connecting poor consumers to the network. Explicit arrangements in the contract would allay apprehensions of urban poor as well as encourage the operator to connect the poor.

II. Introduction

KEY POINTS

- Service levels as well as service efficiency of water supply continue to be poor across all Indian cities
- Water PPPs in India have recorded significant achievements—notably a stated focus on leveraging private sector efficiencies for improved service delivery, rather than private sector finance alone
- PPPs are one among options to improve water supply services, and are being preferred due to the perceived limitations of public sector reform

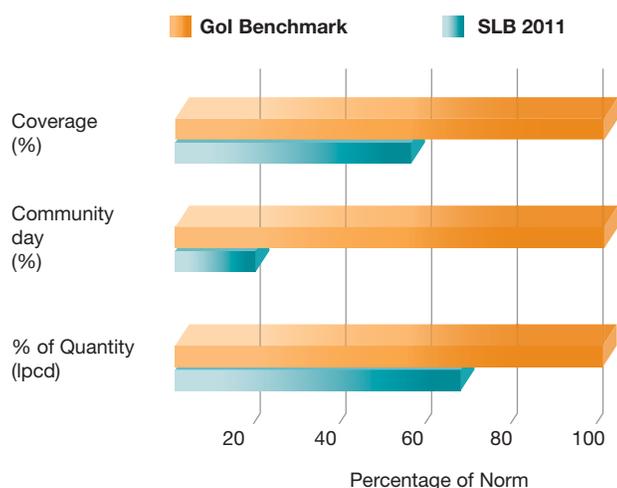
India is home to more than 370 million people in urban areas. No city in the country meets the government's targets for continuous pressurized safe water with full coverage and full cost recovery. Groundwater sources are also being depleted putting severe constraints on economic development. To make up for unreliable services, households have invested significantly in alternate arrangements over the past three decades.

Reliable estimates of asset condition and performance in Indian cities are difficult to establish, given the poor culture of documentation, data collection, and reporting. Data drawn from several benchmarking initiatives indicate the following (Figure 2.1): service delivery parameters are well

below established norms, with coverage through piped water supply ranging between 55 percent and 89 percent, and while per capita availability is fairly high, at 90–120 liters per day, no city offers continuous water supply.³ Daily supply averages four hours, with many cities alternating supply every other day.

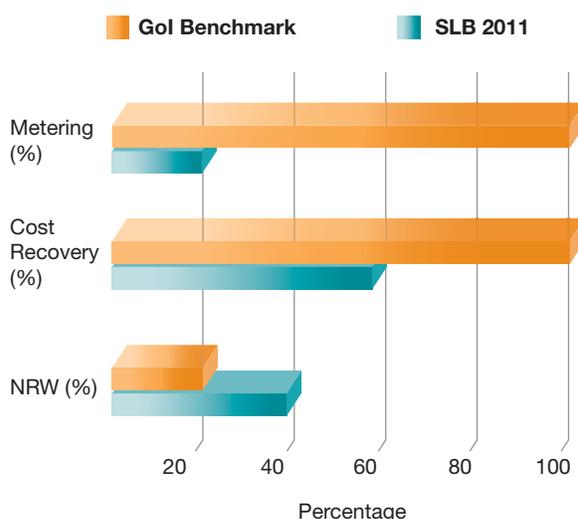
Large gaps exist in terms of service efficiency (Figure 2.2). There is little tradition of managing water networks as commercial ventures, and metering is abysmally low (20 percent of connections) or nonfunctional. Coupled with high levels of illegal connections, poor customer records, and weak billing and collection systems, this has resulted in low levels of cost recovery, which are further exacerbated by

FIGURE 2.1 SERVICE DELIVERY PARAMETERS IN INDIAN CITIES



Source: Service Level Benchmarks, Government of India gazette notifications, 2011.
Note: lpcd – litres per capita per day.

FIGURE 2.2 SERVICE EFFICIENCY PARAMETERS IN INDIAN CITIES



Source: Service Level Benchmarks, Government of India gazette notifications, 2011.
Note: NRW – Non Revenue Water.

low tariffs that have little relation to operating costs. Cost recovery ranges from 30 to 60 percent for operation and maintenance (O&M) costs only. Operating costs are also inflated due to inordinately high staffing levels, high power consumption, and high levels of nonrevenue water, averaging 40 percent in most cities.

These challenges occur in a context of limited data or data management capability and largely unknown conditions of existing assets, which present difficulties in assessing the costs and timelines involved in improving service levels and operational efficiencies. Moreover, the investments required are likely to be significant, particularly since most cities have seen little systematic investment in asset management and expansion over the years. Simultaneously, it is recognized that investments alone will not be effective in the context of complex and fragmented institutions with little accountability; lack of capacity to run utilities efficiently and meet performance standards; weak commercial orientation; interference in utility operations by external entities; and the absence of a regulatory framework focused on customer service and financial sustainability.

An Institutional Challenge

Almost all service provision in India to date has been managed by the public sector. Except in a few large cities, services are the responsibility of municipal- or state-level departments/parastatals, which do not link organizational or individual staff incentives to performance. Many of the agencies who manage services lack technical skills and the freeze on public sector recruitment for the past several years has depleted the quality and quantity of in-house manpower. Older and more seasoned senior staff are leaving and taking their knowledge with them. Institutional drawbacks in the system are forcing utilities to pursue alternate arrangements to acquire the technical expertise that is required to achieve improved service delivery standards. Box 2.1 presents lessons learned in other developing countries facing similar daunting challenges offer hope with regard to the potential of PPPs in addressing these obstacles.

Trends in PPPs in India⁴

The first PPP initiatives in infrastructure in India followed economic liberalization that took place in 1991. Private

BOX 2.1 INTERNATIONAL EXPERIENCE WITH WATER PPPS

Recent studies of water PPPs in developing countries across Africa, Latin America, East and Central Asia, show the increasing use of hybrid PPP models, including those in which investment is largely funded by public money, with the private operator focusing on improving service and operational efficiency. A number of approaches have been attempted, in what has practically been a market test of a wide variety of contractual designs, in order to respond to the requirements of the very challenging environments in the respective countries. Setting a reliable baseline to study the effectiveness of the arrangements has been an issue, making levels of investment difficult to determine and contractual targets complex to establish. Moreover, poor levels of operational efficiency at inception, with tariffs well below cost recovery, and weak regulatory frameworks introduce further complexities in ensuring sustainability.

Thus, of 65 developing countries that attempted PPPs in urban water supply after 1990, only two-thirds, or 41, still had private water operators by end 2007. Moreover, a high proportion of water PPPs ended up being renegotiated shortly after the start of the contract—on average, 1.6 years after award. PPPs are seen to be incomplete contracts, naturally requiring adjustment over time to changing conditions in the volatile environment of developing countries. Despite this, 84 percent of all contracts awarded were still active, and 50 million (of 70 million served by projects for a duration sufficient to demonstrate results) were assessed to be served by PPP projects that could be classified as broadly successful—suggesting that the overall performance of water PPP projects in developing countries has been generally satisfactory. The major determinants of final outcome have been the choice of contractual design and the willingness of public and private partners to make it work during implementation. These and other lessons learned are elaborated further in chapter 4, in the light of analysis of the Indian case studies.

Source: Marin, Philippe, Public-Private Partnerships for Urban Water Utilities: A Review of Experiences in Developing Countries, A World Bank Publication, Washington DC, World Bank 2009; Gassner, Katharina, Popov, Alexander Pushak, Nataliya, Does Private Sector Participation Improve Performance in Electricity and Water Distribution? A World Bank Publication, Washington DC, World Bank, 2008.

sector investment was considered as a significant requirement to upgrade infrastructure in the country, and it began in the telecom and power sectors. A few cities experimented with private sector investment in water sector to meet the increasing demands for water supply infrastructure resulting from rapid urbanization. Prior to this, the involvement of the private sector in the water sector had been limited to conventional areas such as supply of materials and equipment and construction—either on item rate basis or within turn-key engineering contracting frameworks.

Mid-1990s

Early attempts at PPPs in the mid-1990s were focused on investment for bulk water projects and industrial cum bulk water supply. Failure rates were high because of poor enabling frameworks for private investment, poor project preparation, and opposition to private sector participation. To some extent this approach was similar to the experience in the power sector, where early policies focused on

private investment in generation, ignoring opportunities to improve distribution.

Late 1990s

In the late 1990s, European companies tried to establish a presence in Goa, Bangalore, and smaller cities in Karnataka State with a focus on distribution services. The efforts were handicapped by stakeholder opposition to privatization and to some extent by a perception that PPP models were being forced by international operators and multilateral agencies. This perception was reinforced by unsolicited proposals with no competition and limited transparency.

A New Focus on Distribution

More PPP projects were proposed in early 2000 with a focus on management contracts involving operations and management improvements that were more consistent with sector priorities. Because public utilities were not recovering operations and maintenance costs fully through tariffs, governments started providing public funding to meet a

TABLE 2.1 PPP PROJECTS CONTRACTED FROM 2005 THROUGH 2011

Project	Distribution focus ⁶
KUWASIP: 24/7 water supply pilot for Belgaum, Hubli-Dharwad, and Gulbarga (Karnataka)	✓
Dewas industrial water supply (Madhya Pradesh)	
Chennai desalination plant (Tamil Nadu)	
Contract for water supply system, Sector V, Salt Lake, Kolkata (West Bengal)	
O&M contract for pilot zone, Nagpur (Maharashtra)	✓
Management contract for O&M, Latur (Maharashtra)	✓
Industrial water supply contract, Haldia (West Bengal)	
Bulk water supply project, Bhiwandi-Nizampur city (Maharashtra)	
O&M contract for water supply system, Mysore (Karnataka)	✓
O&M contract for water supply system, Madurai (Tamil Nadu)	✓
Concession agreement: distribution system, Khandwa (Madhya Pradesh)	✓
Concession agreement: distribution system, Shivpuri (Madhya Pradesh)	✓
BOT agreement: bulk water supply, Naya Raipur (Chhattisgarh)*	✓
Nagpur full city concession (Maharashtra)	✓
Aurangabad concession agreement (Maharashtra)	✓

* Note: The project was initially designed to include distribution, but during bidding, the scope was limited to bulk water supply to specific storage reservoirs.

significant part of the investment requirements to bring in the private sector to leverage their abilities to create efficiencies.

Starting in 2005, a significant number of small and large PPP projects reached the contract award stage, and a mix of new PPP arrangements for both industry and consumers started showing improvements, including concession agreements, management contracts, and build-operate-transfer (BOT) projects. Unlike the earlier PPP projects, which saw an active engagement of mostly international private operators, more and more domestic national and provincial operators started bidding on projects. Of the 15 projects contracted between 2005 and the end of 2011, 12 are at various stages of construction or operation; three are nonoperational. Ten addressed distribution improvements (Table 2.1). Together, the 15 projects addressed services to about 8.5 million people.⁵

Two projects in particular have had a positive impact on the perception and trajectory of PPPs in India: the Karnataka Urban Water Supply Improvement Project (KUWASIP), a demonstration project for 24/7 water supply through a PPP, and the Latur project, which helped increase domestic operator interest. The KUWASIP four-year performance-based management contract was awarded in 2005 and targeted 24/7 continuous water supply for some 22,000 connections (about one-tenth of total connections) in five demonstration zones across three cities. The operator was provided a fixed capital investment threshold. The operator was responsible for preparing a capital investment plan within this threshold after studying the existing water distribution system. The operator was also responsible for implementing the plan with public funding to achieve a set of performance targets and operating and maintaining the services for two years. The KUWASIP project had an appropriate mix of ingredients: a focus on distribution, use of public funding to keep costs low, and restricted risk exposure for the operator while maximizing gains from private sector expertise. This allowed a focus on achieving stated objectives to be maintained and efficiencies to be maximized.

The KUWASIP experience demonstrated that it was possible, through a transparent PPP process, to achieve continuous pressurized water supply in Indian cities (Box 2.2). This

in turn encouraged many cities to opt for a PPP arrangement to improve services either in a pilot zone (Nagpur) or an entire city area. This project was critical because it also created a precedent through which public funding could be provided to a PPP project.

Since 2005, a total of 10 projects have been awarded involving distribution of water to domestic consumers. Several more projects are at different stages of procurement. In addition, at least five projects involving bulk water supply to utilities or industrial water supply projects have been awarded using the PPP model.

Achievements in Water PPPs So Far

A study was carried out by WSP, *Trends in Private Sector Participation in the Indian Water Sector A Critical Review* (WSP 2011), of 12 PPP projects in India. Drawing upon this review, as well as the case studies that follow, the achievements of Indian urban water PPPs are summarized below.

Focus on 24/7 supply and service delivery: All water supply projects with the exception of Latur clearly targeted 24/7 supply and/or other service delivery parameters. This focus and the early results in the Karnataka and Nagpur pilot projects significantly contributed to mainstreaming service delivery objectives—and hence end user satisfaction—in the water sector in India, and specifically among PPPs. This is a significant shift from the overriding focus on asset creation prevailing in the 1990s.

Cities' willingness to explore and design solutions that suit their needs: During the 1990s, the majority of projects were primarily based on BOT models with 100 percent private financing. This changed to a scenario in early 2000, when the majority of O&M improvements were sought through management contract-based interventions. Currently, the operational contracts are a mix of management contracts, concessions, and annuity-type contracts. Often, two cities in the same state have made varying choices regarding the PPP model. Moreover, hybrid models have been attempted—drawing upon public as well as private sources and user tariffs to finance initiatives—in a move beyond conventional arrangements. Thus, cities are open to designing PPP structures that suit their context, signaling an acknowledgement

of sector realities in India and willingness to work in a realistic manner through PPPs in addressing these.

Recognition that PPPs can be pursued for efficiency gains: Water PPPs in recent years have been backed by

strong public funding compared to earlier years. The Jawaharlal Nehru National Urban Renewal Mission (JNNURM) explicitly encourages PPPs and makes public funds available for PPP projects (Box 2.3), whereas in the past, public funds were available only if projects were

BOX 2.2 THREE KARNATAKA CITIES ACHIEVE FIRST 24/7 CONTINUOUS WATER SUPPLY IN INDIA

In 2003, the Government of Karnataka (GoK) set out to achieve 24/7 continuous water supply in five demonstration projects (zones) in three cities. The focus for this demonstration project—Karnataka Urban Water Sector Improvement Project (KUWASIP)—were the three cities of Hubli-Dharwad, Belgaum, and Gulbarga in northern Karnataka with a total population of about 2 million people.

A two-year performance-based management contract was awarded to Veolia in April 2005 to manage implementation of the improvements and to operate the upgraded system. The total funding for the project was US\$52.7 million. The World Bank provided a US\$40.4 million dollar loan for the project and the GoK provided the additional US\$12.2 million. The majority of the funds went into physical investments (\$48.3), followed by development and technical assistance (US\$2.6) and project implementation support (US\$1.8).

A vital element of success was the creation of the Social Intermediation and Communication Strategy, which carried out baseline surveys to understand the environment for reform and concerns around the project. Another component was the creation of water user committees, which helped coordinate local citizen meetings and raise awareness because of the initial resistance and skepticism to the project.

All five zones met the objective of continuity of supply, and connections increased by 50 percent. Overall, there was a five-fold increase in revenue billed and approximately a seven-fold increase in revenue collected. Households are now consuming an average of 91 liters per day per person, a significant increase over previous levels of consumption, which is expected to improve household hygiene.

Source: WSP-South Asia Region 2010.

The amount of water being supplied was reduced by 10 percent because of the dramatic improvement in water losses in the old system. Nonrevenue water, which was above 40 percent in the demonstration zones, was reduced to between 6 and 18 percent. The demonstration zones recover 80 percent of the operating costs, well above the cost recovery levels in the city. The capital cost of delivering an entirely renewed distribution network and the initial 22,450 new connections was Rs 11,635 (US\$212) per connection, or about Rs 1,430 per person served (US\$25). Good customer service was made an obligatory, and the operator was required to redress customer complaints within the contractually stipulated time.

Customers also received an indirect economic gain through an increase in their property values, ranging from 40 to 60 percent for the properties located in the demonstration zones when compared to the value in the adjacent localities.

Special focus was given to service delivery for the poor. All households were provided direct service connections. Poor households, defined as those living in houses of less than 600 square feet of built space, were not required to pay any deposit for availing a water connection. The volumetric tariff for lifeline consumption of 8 kiloliters per month was also kept well below average costs.

The demonstration project proved that with a significant change in the management approach to consumers, to billing, and to revenue collection, 24/7 continuous and metered water supply is achievable even in the poorest areas. These shifts can be seen as a utility becomes more consumer and commercially oriented.

BOX 2.3 JAWAHARLAL NEHRU NATIONAL URBAN RENEWAL MISSION (JNNURM)

All the projects reviewed in this paper received funding from the Jawaharlal Nehru National Urban Renewal Mission (JNNURM), a city modernization program launched in 2005 by the Government of India under the Ministry of Urban Development.

The \$20 billion reform-linked investment program, named after the first prime minister of India, aims to improve the quality of life and infrastructure in select cities. A key objective is the operational and financial sustainability of assets created. Funds are channeled to cities through state-level nodal agencies to cover a significant percentage (70–90 percent) of project costs, as established through Detailed Project Reports prepared by the cities and scrutinized and approved by a Central Sanctioning and Monitoring Committee in the ministry.

Disbursal is made in tranches over the project implementation period but is conditional upon the achievement of specific governance reforms at state and city levels, which may not always be in alignment with requirement of funds during the implementation cycle. The program also seeks to leverage PPPs for financing and implementation.

implemented through the public procurement route. Thus there is a clear recognition that private finance need not be the primary or only reason for pursuing PPPs; efficiency, arising both from efficient use of public funds and efficient private sector management, are recognized as reasons for supporting PPPs. Thus, in a context where public sector reform has proved difficult, PPPs are seen as a catalytic mechanism.

A recognition of the sensitivities regarding tariffs: Indian water PPPs have recognized that tariffs or cost recovery is a sensitive issue that often derails PPP initiatives, particularly in a situation of poor service levels prior to improvements being implemented. They have addressed the tariff issue in several ways while designing PPP projects. In no

case have tariffs been left open for determination during the term of the PPP project. In some cases, the PPP is delinked from tariff and the operator is compensated through a fee; in others, the tariff has been revised upfront and predetermined escalations have been approved. Any resulting viability gap is provided as an operational subsidy to the project. In a few cases, the tariff has been used as a bidding parameter upfront. The design of projects involving fee-based compensation, operating subsidies, upfront public funds, and so on, shows that cities are willing to develop contextual solutions to side step these sensitivities.

Attracting both domestic and international operators:

Indian water PPPs have attracted participation from the domestic private sector, international operators, and joint ventures. Though the level of interest and participation has varied across projects, the sector as a whole has attracted interest from a diverse cross section of operators. This may be a reflection of the potential for PPPs that the operators see in the Indian water sector. It also underscores that the sector is not averse to adopting international experience or experimenting with willing but inexperienced domestic investors. It also reflects the perception that, amid the challenges, some projects are adequately well structured to attract competition.

Competitive bidding for projects: Without exception, all the water PPP projects have been competitively bid. There are residual concerns about the reasonableness of prequalification process, but competitive procurement has been established as a rule and there are no tendencies for directly negotiated water PPPs—signaling intent to focus on the most technically appropriate and financially attractive solutions.

Local demand for PPPs: Cities have chosen to pursue PPPs due to a bottom up recognition of the need for PPPs. There is no explicit mandate either from the JNNURM (or) from donors to exclusively pursue PPPs. Even though public funding has helped PPPs, the cities still had the freedom to pursue traditional methods; several states and cities have chosen the PPP method instead. The ownership that cities have toward PPPs augurs well for the potential of PPPs in the sector.

As a result of these positive trends, the success rate of projects reaching the award stage has significantly increased, from 40 percent for projects attempted prior to 2005 to around 80 percent for projects since 2005. The number of projects achieving financial closure has also gone up considerably: of the 15 projects awarded in the period 2005–11, 10 involved private finance and 8 achieved financial closure. One failed to achieve closure, and one project is still in the preparatory stage. The remaining five projects were funded fully through government.

A Deeper Look

While the above provides an overview of the progression and achievements to date in Indian urban water PPPs over the past two decades, more projects are in motion. Projects have demonstrated a distinct shift in focus to service delivery. However, this is meaningful only to the extent that objectives are achieved through the arrangement, which is closely linked to the manner in which projects are structured, and contracts designed. This report thus takes a more in-depth look at five PPP contracts: in Khandwa,

Madhya Pradesh; Mysore, Karnataka; Latur, Nagpur; and Aurangabad, Maharashtra. The objective is to assess the underlying rationale of the initiatives, the preparatory and bid process, key contract provisions, and related issues that may have a bearing on the operational trajectory and influence the achievement of objectives.

These projects represent all PPP initiatives in urban water supply undertaken in the country between 2005 and the end of 2011 with a full city distribution focus (see Table 2.1).⁷ As noted, of the 15 projects awarded between 2005 and 2011, 10 involved a distribution focus; of which eight were full city initiatives. Of those eight, Madurai and Bhiwandi did not progress after the contract was signed; and Shivpuri was identical to Khandwa, and so studies of these were not undertaken. The remaining five projects are presented in the section that follows. The appendix captures information relevant to each in a project sheet format. The key observations and lessons learned are highlighted in the executive summary.

III. Case Studies

KEY POINTS

- These five cases represent urban water PPP projects undertaken in India between 2005 and end of 2011, with a full city distribution focus
- Aspects assessed include the underlying rationale of the PPP project; the preparatory and bid process; and key contract terms that may impact the operational trajectory and achievement of objectives

Khandwa 25-Year Concession Contract

In early 2008, the Khandwa Municipal Corporation (KMC) bid out a PPP project that resulted in a 25-year concession agreement with the Vishwa Infrastructure Ltd. The private operator is responsible for investing in bulk and distribution assets and operating and maintaining the system from source to customer, including providing adequate water, collecting tariff revenues, ensuring cost recovery, and improving customer service. The contractor is also responsible for doubling the number of households connected, to reach 100 percent coverage; doubling the per capita water supply to 135 liters per capita per day (lpcd), and achieving continuous water supply.

Ninety percent of the upfront capital costs are financed through a grant from the federal and state governments. The operator is responsible for arranging the residual financing needs and has secured a loan from the International Finance Corporation (IFC) as well as arranged equity contribution. The total agreed capital cost of the project was Rs 115.32 crore (US\$21 million) and the annual operations and maintenance cost was estimated at Rs 7.62 crore (US\$1.4 million).

A major challenge of the project is a large financing gap in the estimates for rehabilitation. The operator says the city underestimated the existing distribution system by nearly 50 percent and that it will not be able to meet service standards and revenue targets without the expanded rehabilitation. Construction has begun, but the financing of additional rehabilitation is unresolved.

Overview

Khandwa is a small-sized city in Madhya Pradesh in Central

India, with a population of 200,000 spread over 35.8 square kilometers (km). Approximately 20 percent of the population lives below the poverty level. There has been no significant capital expenditure in water supply for about 40 years and assets are in poor condition. Approximately half the city has piped water supply, which is provided two to three times per week for approximately half an hour. The city relies on limited surface and groundwater resources. Nonrevenue water (NRW) is estimated to be approximately 42 percent. Water shortages are an issue, and city officials have reported that economic growth was constrained as a result.⁸ Table 3.1 provides additional information on service levels and efficiency.

TABLE 3.1 SERVICE AND EFFICIENCY PARAMETERS, WATER SUPPLY, KHANDWA CITY

Indicator	Status for Khandwa
Coverage	51%
Per capita supply	60–70 lpcd*
Continuity of supply	Two to three times a week, for 30 minutes at a time
Operating cost recovery	13.3%
Collection efficiency	50%

*lpcd = liters per capita per day.

In accordance with the 74th Constitutional Amendment Act (1994), the responsibility for operation and maintenance and tariff setting was handed solely over to the Khandwa Municipal Corporation. Earlier this responsibility was with the Public Health Engineering Department.

When the Urban Local Body (ULB) took over, the infrastructure was in poor condition, the utility lacked qualified technical staff, and because services were not dependent on revenue from consumers, customer orientation was weak.

Compared to other southern and western Indian states, the State of Madhya Pradesh was not seen as pro private sector. However, the state introduced a successful highway program and has an active PPP cell, which promotes and supports private sector initiatives and provides training programs to help officials better understand and engage in PPPs.

Stakeholder Environment

There was already significant public support for the initiative, particularly since it had the backing of the (then) mayor, who enjoyed widespread respect. The state government organized consultations with the mayor and opposition leaders from the city to explain the PPP options. Citizens, customers and other stakeholders have been open to PPPs because of such poor services so there had been no significant opposition to the PPP project in the initial stages. Citizen opposition has been reported lately (mid-2012), due to apprehensions that traditional water sources of citizens, such as wells within households will also be disallowed.

Rationale for a Public-Private Partnership

Economic growth in Khandwa was slow due to water constraints, and dissatisfaction with water supply was acute, but the city did not have the financial capacity to invest in the system. In 2006, the Government of India (GoI) launched an Urban Infrastructure Development Scheme for Small and

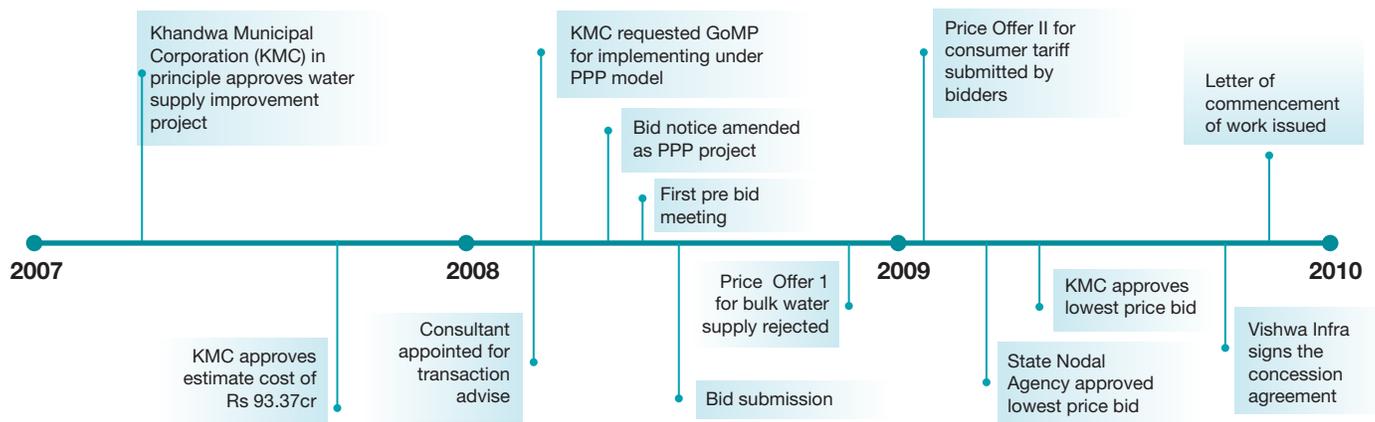
Medium Towns (UIDSSMT), which offered the town an 80 percent grant from GoI and another 10 percent grant from the state government. The city was unable to secure the residual financing from its own sources which prompted it to explore options for a PPP to bridge the financing gap. The state government was also convinced that any capital expenditure under the existing institutional set-up would not be productive, as tariffs would not be revised in time and service improvements would not be made.

The PPP Process

The city considered two PPP options: a bulk supply option where the operator would develop upstream assets and deliver bulk water to the ULB and an integrated PPP where the operator would be responsible from source to customer service and would recover the investment through tariff revenues. The city was convinced that investments would not be sustainable without tariff revisions and that an upfront political commitment for tariff reforms would be possible only with private sector participation. Therefore, the city chose a model in which private sector revenues are based on user charges. The bulk supply option would have insulated the operator from tariffs and therefore would not have secured the necessary political commitment for tariff reforms.

Support by the then chief engineer in the state's Municipal Administration Department and the mayor, who was well respected, helped secure backing for the PPP from the city council and senior administration and citizens. Overall poor services and the availability of grant funds helped build support for the project. Citizens were reported to be

FIGURE 3.1 KHANDWA PPP TIME LINE



willing to pay the projected monthly bills, which would be approximately three to four times the existing tariff, for an improved level of service: they were about three times less than what customers were paying to private vendors to supplement existing services.

Technical Preparation: A Difference of Opinion

A substantial part of the preparatory work for the PPP was done by the state's chief engineer and the PPP cell. An Indore based consultant (Mehta Associates) was engaged to prepare the Detailed Project Report (DPR) and the transaction documents. The DPR includes provisions for augmenting the water supply from a reliable surface water source and new bulk water supply infrastructure capable of providing 56 million liters per day (mld) to meet long-term demand. It also included water treatment and pumping machinery sized to deliver 45 million liters per day (mld) intermediate demand.

The existing bulk infrastructure depends upon an unreliable irrigation reservoir that is more than 40 years old. The sizing of new infrastructure components was fixed in the DPR and the concessionaire was required to undertake detailed hydraulic and structural design of each of the components and obtain approval before construction.

The DPR initially estimated the existing length of the distribution network as 195 km. It proposed to utilize some of the existing service reservoirs and to re-engineer the networks with additional service storage as well as 120 km of new networks (rehabilitation as well as for network expansion). But before the bid submission, due to cost revisions resulting from final sizing of bulk infrastructure, the distribution improvements were limited to only 60 km. The operator subsequently surveyed the existing infrastructure and found that the city required 290 km of network and that 230 km of refurbishing/ new construction is required, or nearly double the estimates.

Bid Process: Overcoming the Disadvantages of Small City

The city officials were aware of the disadvantages that a small city would face while pursuing a PPP option and undertook an extensive program to convince bidders to participate. The private sector had not invested in cities of this size, and a

revenue model relying on tariff revenues from customers has inherent risks, so the bidders sought revenue guarantees from KMC and the state government (which was not agreed to). Bidders also opined that unless they were provided flexibility in the choice of pipe material, they would not be able to control costs within the limits of financial viability. KMC acceded to their request for flexibility in the pipe material. The city also agreed to partially cover the financial risk and pay the operator 50 percent of domestic customer dues that are overdue for more than a year. This provision is valid throughout the duration of the contract.

The government carried out a single stage, two cover bidding process. Qualification norms for eligibility for the financial bid were listed. The bidders were required to provide their financial bids under two options: (i) bulk water supply to the town and (ii) integrated operations including revenue collection from consumers as part of one contract. The full service PPP option was selected.

KMC received four eligible financial bids. The qualification criteria permitted construction contractors to participate, which helped increase bidder interest. However, well known domestic and international operators chose to stay out of the process, possibly anticipating revenue collection risks. Vishwa Infrastructure was chosen as the preferred bidder based on the lowest proposed tariff.

Contract Terms

A. Scope of Contract

The PPP contract is for a duration of 25 years, including the construction period. The operator is fully responsible for the water supply system from source to customer service, including financing of residual capital costs, construction of bulk water off-take, the treatment plant, transmission system, and distribution network; operation and maintenance of the entire system; and service provision, billing and collection, and customer service, including new customer connections and customer complaint redressal. Any extension of the project, including new distribution lines, is the responsibility of Khandwa Municipal Corporation.

Flow of Funds: The operator is responsible for establishing an escrow account into which all receipts (capital as well as

revenue) are credited. The escrow agent permits the operator to use the funds in the escrow account as per a contractually established priority. Khandwa Municipal Corporation is responsible for securing all clearances in time for construction but has not been able to secure disbursement of public grants in time. (see Figure 3.2).

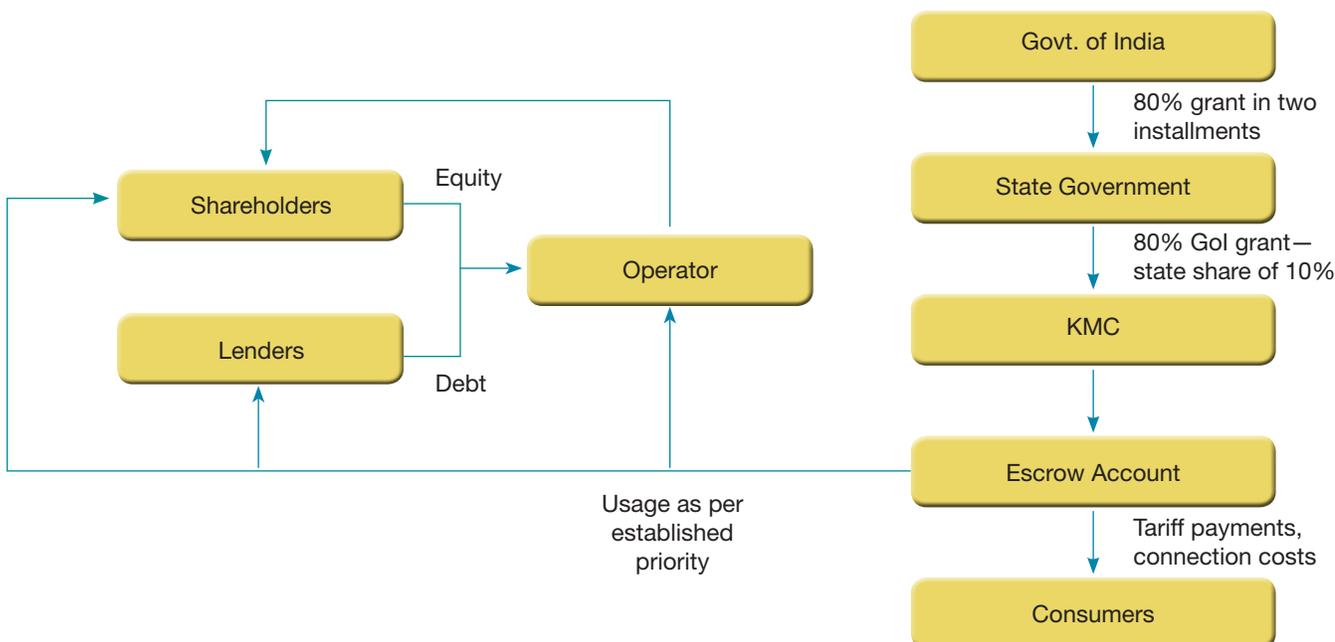
Financing: The project includes construction of new assets as well as rehabilitation of the existing distribution network. Upfront capital costs are financed through the grant money (90 percent) from the Government of India and the state government.⁹ The operator arranged the residual financing needs through a loan from the IFC and from promoter equity contribution. The total agreed capital cost of the project was Rs 115.32 crore (US\$20.96 million) and the estimated annual O&M cost was Rs 7.62 crore (US\$1.4 million) with tariff at Rs 11.95 per kiloliter (US\$0.22/kl). Out of the total capital cost the KMC provides Rs 93.25 crore (US\$17 million) and the operator provides the balance of investments. The operator also raised debt funding of US\$5.5 million¹⁰ from the IFC to cover its investment for the project as well as for a wastewater PPP project in Maharashtra State.

B. Regulation and Contract Management

Contract Management: Any dispute resolution is primarily based on arbitration as per the Indian Arbitration Act. However, the sole arbitrator is the commissioner of the state's Urban Development Department, which potentially has significant implications in case disputes require the state government to financially support the municipal corporation. A state-level steering committee comprising municipal officials and the design consultant has been established to provide overall support on contract interpretation and in securing approvals. Events of force majeure, change in law, and termination are consistent with industry practice. The only remedy for force majeure and change in scope is an extension of the concession period, which may not fully address the impact.

This mechanism has not been able to resolve the issue of expansion of scope (the need to replace additional pipelines). This led to a stalemate, and decision making has been slow, partly due to the fact that the city cannot finance the additional scope. The operator would not have been able to resolve this through arbitration since the sole arbitrator is a government functionary. Similar decisions will be required

FIGURE 3.2 KHANDWA PPP PROJECT FLOW OF FUNDS



in the future as the city expands and the contract management structure could be put to test.

Revenue Model and Incentives: The revenue model relies on tariff collection from consumers. The key incentive and penalty for poor service (at least for quantity of supply) is loss of revenue. For other performance parameters, any shortfall in service levels leads only to a reduction of the concession period, and hence operator revenues, with an implied liability loss of three to three-and-a-half years.

Staffing: The operator is not required to absorb any of the city's utility staff.

Performance Standards and Linkages to Revenue: Specified service standards include continuity of supply (24/7), pressure (12 metres), and volume of water supplied. There are no measurement systems specified for actual delivery. The operator is also required to reduce NRW by 10 percent each year. Performance standards include a target of 100 percent of households connected and 100 percent of customer complaints responded to within 24 hours.

Tariff Mechanisms and Revenue Collection: The operator remuneration is solely through tariff collection as determined through the bid process. Tariffs for higher consumption slabs and commercial consumers are specified as a predetermined multiple of the base tariff. The minimum base tariff is Rs 11.95 Rs per kiloliter. Based on this tariff the average monthly household bill is in the range of Rs 150–200¹¹ (US\$2.7–3.6). The escalations in raw water and electricity costs are automatically passed along to the consumer. In addition, tariffs are adjusted periodically by a Price Review Committee for other cost escalations based on a previously agreed upon mechanism.

Universal Coverage and Tariff Considerations: The project targets universal service delivery for all consumers and common service standards. The tariff determined through bidding is discounted significantly for urban poor customers. The operator is also permitted to provide group connections to urban poor consumers, reducing their connection costs.

Revenue Risk: Any shortfall in performance leads to shortening of concession period and this implies a back-ended

revenue risk. The operator is exposed to significant revenue collection risk, especially since the city would be implementing metering and volumetric tariff for the first time. In addition, the Operator also is exposed to the risk of the city not notifying agreed tariff revisions and being unable to compensate the operator for such default.

Contingency Management: There are no explicit provisions for true up of tariff, except for predefined tariff adjustments for cost escalations; however, the project scope allows for negotiations when the scope increases. The KMC is partially financing the construction costs and must compensate the operator for persistent customers defaults (50 percent under recoveries that remain pending for a year). They also assume responsibility for change in scope, including expansion of facilities.

C. Financial Sustainability

The PPP project is designed to be viable on a standalone basis through user charges alone with no recourse to the city. Thus, the project is anticipated to be operationally sustainable and not expected to strain the city financially. The risks to achieve financial sustainability are (i) the acceptability of consumer tariff, which will be tested only when the project commences operations, (ii) the ability of the city to implement tariff revisions as per the price escalation formulae agreed in the contract, and (iii) the ability of the city to finance changes in scope and future capital expenditure needs. This last risk is significant because the city was unable to fund the increased scope of the distribution network rehabilitation that led to a stalemate, which is not fully resolved. The financial strength of the city is also weak and careful planning will be required to meet future needs.

D. Project Status

The contract is still in the construction stage and therefore no final assessment of the results is available. The key issues from the construction phase are related to the change in scope of rehabilitation and a delay in receipt of grants from the Government of India. Both parties have dialogued to resolve these issues, for which there is no practical solution under the contract structure. The KMC has advised the operator to start operations after implementing the rehabilitation as covered under the contract and the operator does

not appear to have escalated this issue further. At this stage, the city and state government officers see early gains in the operator's concern regarding the quality of assets and their operability, which was so far unseen in traditional construction contracts.

Currently,¹² construction of the bulk water off-take, treatment plant and transmission line have been completed; and new distribution pipelines have been extended to two

out of ten zones. Over a period of two months, in July and August 2013, the operator supplied water to a few zones in the city on a daily, but intermittent basis, to demonstrate system improvements. Meanwhile, contestation of the tariff and resolution of this issue has held up commissioning of the new system. Water supply operations continue under the KMC in all but two zones, with the operator hopeful of extending services on a city wide basis by March 2014.

A 25-Year Performance Improvement Project in Nagpur

After a pilot management contract to achieve continuous water supply for 175,000 residents (about 10 percent of connections) in 2009 was deemed successful, the city of Nagpur decided to scale up the initiative. They secured a grant, from JNNURM, for the rehabilitation of water treatment and distribution assets, which will cover 70 percent of the project costs.

To secure the remaining 30 percent, the Nagpur Municipal Corporation (NMC) awarded a 25-year performance contract to a consortium of Vishwaraj and Veolia, which also ran the previous management contract. Shortfalls between tariff and operator remuneration are anticipated and must be covered by the NMC's general budget.

The project includes operations and management of the existing distribution system (treatment plants and distribution networks) and rehabilitation of a significant part of the network including replacement of customer connections and meters. The performance obligations of the operator begin five years after takeover of the assets in November 2011, and the linkages between performance standards and operator revenue is weak.

Overview

Nagpur is located in central India in the western State of Maharashtra. The city is home to 2.5 million¹³ people with approximately 850,000 (35 percent) living in slums. The Government of Maharashtra decentralized responsibilities for water supply services in early 2000s. The city took ownership of the entire water supply value chain and since 2002 has initiated a series of outsourcing contracts for supply of labor, small maintenance activities, and so forth. The city also built two water treatment plants on a partial financing cum operations basis. The water supply function enjoys a relatively higher level of autonomy as compared to other cities with similar institutional structures, and the city's technical capacity is strong.

The city has daily but intermittent supply of 2 to 12 hours (Table 3.2). About 80 percent of citizens have access to piped water supply and about 77 percent of connections are metered. The city recovers about two-thirds of its operation and maintenance expenses through water tariffs. The

operating losses are met through the general budget of the NMC. The percentage of NRW due to commercial losses alone is at approximately 23 percent.

TABLE 3.2 SERVICE AND EFFICIENCY PARAMETERS, WATER SUPPLY, NAGPUR CITY

Indicator	Status for Nagpur
Coverage	80%
Per capita supply	135 lpcd*
Continuity of supply	2–12 hours per day
Operating cost recovery	59.7%
Collection efficiency	73%

*lpcd = liters per capita per day.

The state government has formally supported the PPP project and provided all the clearances necessary to help facilitate the process. The pilot project also helped build support among a segment of customers and NGOs who did not initially support the project. A very visible successful concession of the city buses helped build support as well.

Concurrent with the PPP, the city also incorporated a fully owned company called Nagpur Environmental Services Limited (NESL). The water supply functions have been transferred to NESL. Key elected officials and executives of NMC constitute the board of NESL. The PPP contract is signed and supervised by NESL.

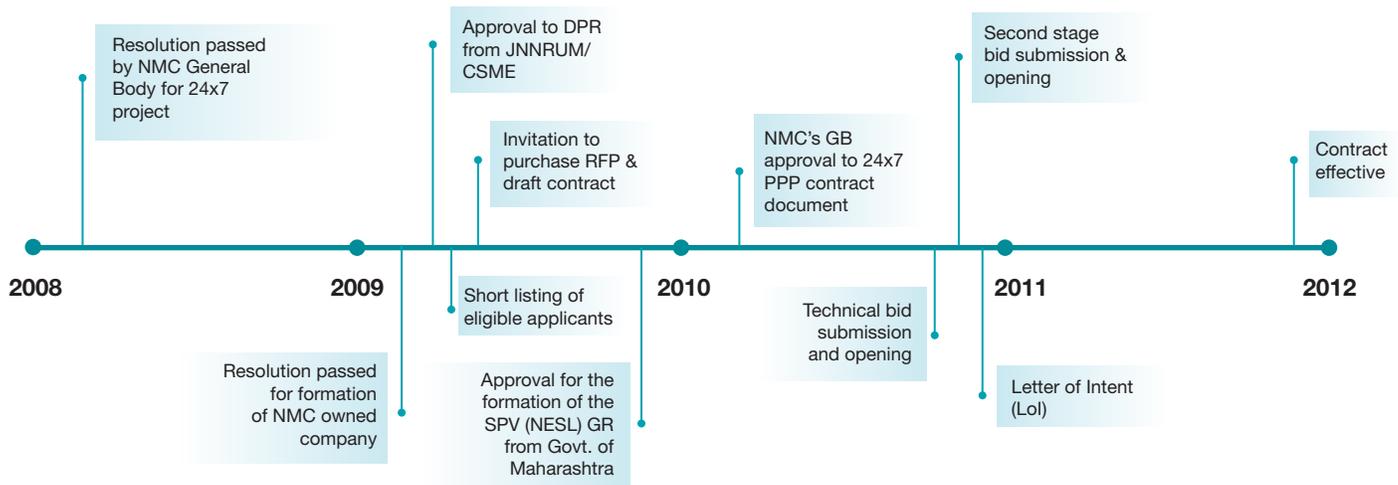
Stakeholder Environment

Since the scope of the project was complex, several meetings were held with citizens, editors, NGOs, and elected officials to discuss the PPP contract in detail and explain the core benefits to citizens. Draft PPP contracts were made available on the city website, and in-depth discussions helped clarify the proposed outcomes and the technical, financial, and social aspects of the project. In spite of this, pockets of resistance to the project persist.

Rationale for a PPP: Improved Performance

For some years, NMC had been pursuing outsourcing of operations in the water supply function and was aware of

FIGURE 3.3 NAGPUR PPP TIME LINE



the difficulties in managing multiple fragmented contracts, in particular where maintenance responsibilities were outsourced in addition to routine operations. The key reasons for pursuing a PPP were to ensure a single point of accountability and to improve performance and the quality of infrastructure in a context of staff reluctance to be deployed in water supply operations, which were perceived as difficult. Sufficient water resources were also available, which reduced the risk to the Operator. The decision was backed by a strong political will at the local level. Both the political stakeholders and NMC officials were unanimous in pursuing the PPP, which was subsequently ratified formally by the city council.

Technical Preparation

The detailed project report (DPR) was prepared by DRA Consultants. The estimates in the report call for replacement of 429 km of pipeline and replacement of all 320,000 service connections. Under the PPP contract, the city would reimburse additional costs if the scope of rehabilitation increases in order to achieve the performance standards.

The total investment for the project was estimated at Rs 387.86 crore (US\$70.5 million). Considering the total investments estimated as per the DPR, the service improvement cost works out to about Rs 21,300 per connection (US\$387) at 2009 prices.¹⁴

The Bidding Process

The city carried out a two-stage bidding process that was open to international companies. The first phase prequalified three bidders based on experience and financial strength. The second phase included an assessment of the qualifications of the technical proposals followed by a series of meetings to seek clarifications or amendments. The bidder with the lowest evaluated bid price (a term not defined in the request for proposals)¹⁵ that was consistent with technical and financial requirements was awarded the contract. The operator was selected based on a bid price, which is the per unit (cubic meter) remuneration to the operator for water that is billed and collected.

Eleven bidders participated in the first stage of prequalification, and only three were qualified, including the Veolia-Vishwaraj consortium, IVRCL-Aqualia, and Cascal-Nagarjuna Construction. In 2010, the city concluded the procurement and awarded the project to the Veolia-Vishwaraj consortium. The winning financial bid was marginally lower than the estimated base price (0.625 percent). One of the possible reasons could be limited competition at the stage of submitting financial bids.

To build political and civil society support during the bid process, NMC asked the Administrative Staff College of India (ASCI) to organize a stakeholder workshop with key policy makers. A key outcome¹⁶ of the workshop was

a request for NMC to assess the impact of the pilot 24/7 project. ASCI, at the request of NMC, undertook an impact study, and assessed that the key performance indicators “moved favorably” with about 50 percent of targeted consumers provided with 24/7 water supply.¹⁷

Contract Terms

A. Scope of Contract

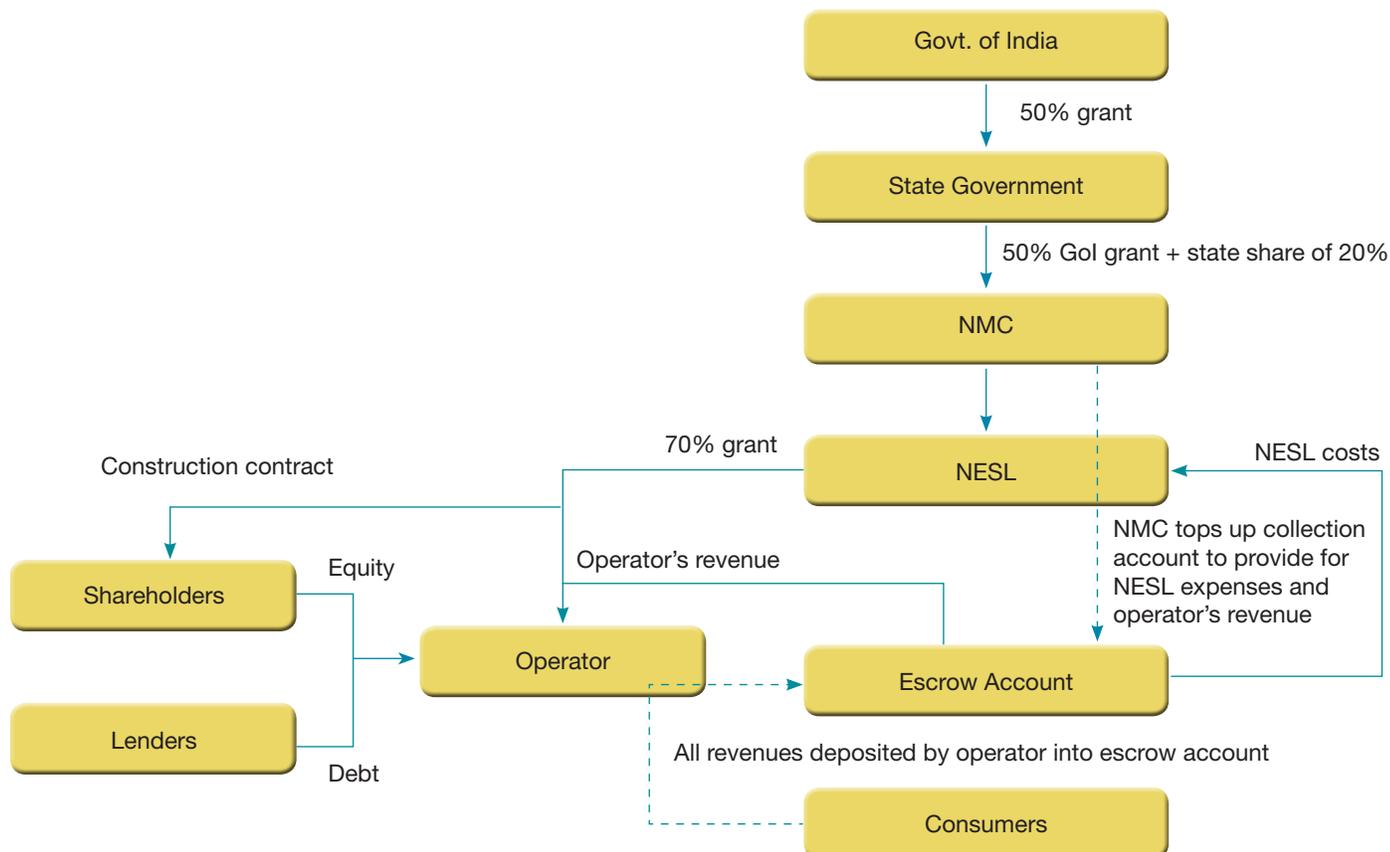
The contract is a 25-year performance improvement contract with a clause for extension based on mutual consent for up to another 25 years. The operator is responsible for billing and collection of revenue. The project includes the O&M of the existing distribution system (treatment plants and distribution network) and rehabilitation of a significant part of the network, including replacement of customer connections and meters. The operator is required to implement an initial performance improvement project in five years, under a bill-of-quantities-based

contract. Though stylistically referred to as a *concession*, the contract is a hybrid of several contractual arrangements, including an annuity. The operator’s performance obligations start only five years after contract signing, which was November 2011.

Flow of Funds: The revenues from user charges collected by the operator will be transferred to an escrow account, which is used to make payments for the cost of electricity, raw water, and so forth) and for payments back to the operator (figure 3.4). Any shortfall in collections, which is anticipated since costs exceed current revenues, are covered by NMC from the general budget.

Financing: Seventy percent of the initial capital investments are financed through JNNURM, and the operator is expected to invest the residual 30 percent. Future capital expenditure remains the responsibility of the city.

FIGURE 3.4 NAGPUR PPP PROJECT FLOW OF FUNDS



Investment commitments from the operator are not significant compared to the committed revenue flows to the operator. The operator receives revenue from the city four times greater than its investment obligations in the first five-year period, and so the operator's financial risk is effectively minimized. The performance requirements begin only at the end of the performance improvement project period (first five years) and are further phased during the first twelve years. The operator is required to finance 30 percent of the initial capital investments.

B. Regulation and Contract Management

The operator has the obligation to treat and distribute water, bill, and collect revenues. As part of separate works contract, the operator is also responsible to execute rehabilitation and performance improvement works estimated in the DPR. NMC has three obligations under the contract: completion of a parallel investment program, arranging 70 percent of the financing for rehabilitation programs, and the supply of raw water.

NESL, the subsidiary of NSC, is responsible for contract supervision. However, the contract places limitations on the liability to the operator (at 5 percent of revenue) and also requires periodic rate revisions, substantially as per the determination of the operator. Therefore, the ability of the NESL to ascertain expenditure and calibrate the rates with service standards is contractually limited and is not linked to its capacity. The project is in the early stages of implementation, and no serious issue appears to have arisen so far.

Revenue Model and Incentives: The operator is compensated through a fee per unit of water billed and collected while tariff setting remains under municipal control. The operator rate is revised automatically every year for changes in price indices termed as *standard adjustment*.

The operator is assured of a minimum guaranteed revenue in the first five years if the billing is less than the stipulated threshold of 250 million litres per day (mld). The rate is also subject to extraordinary rate adjustment. The events triggering such adjustment include change in the operator's obligations, change in law, force majeure, variation in business planning assumptions, and increase in the operator's

costs due to overrun or delay in commencement of operations.

The rate is subject to a periodic rebasing every five years, which takes into account all costs and expenditure and revision of performance standards as determined by the operator. Thus, while operating expenses are nominally the responsibility of the operator, due to the rebasing clause, every five years the operator has the right to determine a rebased rate.

The operator is compensated for rehabilitation works based on an item rate contract, which provides for escalations in costs linked to price indices. Moreover, capital expenditure estimated during the time of bidding is subject to revision by the operator, so as to meet the performance standards.

Staffing: Under the PPP contract, staff have an option to be transferred to the operator, become familiar with the operator, and then decide if they would like to become an employee of the operator. The operator also has the choice to select the staff to which it wishes to offer employment. Staff who choose to stay with NMC or those not selected by the operator will be redeployed by NMC in other functions.

Performance Standards and Linkage to Revenue: The operator is given 60 months to achieve continuous water supply, and there are no intermediate targets within this period. The operator is not required to meet either raw water consumption norms or electricity consumption norms in the first 48 months. The operator is required to achieve NRW of 40 percent after 60 months of commencement, reaching to NRW levels of 25 percent progressively within 120 months. Similarly, the operator is required to reach a collection efficiency of 75 percent after 60 months of commencement, rising to 98 percent progressively within 120 months.

In the first five years of operations, the operator has been assured a return, as he is compensated on the basis of a minimum volume of 250 mld or actual volume, whichever is higher. There are no service standards during the transition period of five years and therefore no incentives or penalties. Specific performance targets include a 20 percent increase of households connected, to reach 100 percent coverage,

24-hour continuous supply of water; a 50 percent increase in the number of complaints addressed (to reach 100 percent); and a water quality target of 96 percent, which is an 18 percent increase in the number water samples meeting quality targets.

From the fifth year of commencement, the operator's remuneration is automatically reduced for excess raw water consumption and electricity consumption. From the sixth year onward, the operator assumes the collection efficiency risk as the operator's rate is payable only for water billed and collected. There are no quantified incentives or penalties for shortfall in performance in other areas, including in continuity of supply. There is a provision for liquidated damages for shortfall in performance persisting for 60 days, which is capped at 5 percent of annual revenues. Thus, even though performance standards are applicable from the sixth year onward, the consequences for failure are not high for the operator. The maximum revenue that can be withheld through liquidated damages for failure to perform is only 5 percent of annual revenues.

The operator has the right for a rate revision if it finds excessive costs are required to achieve or maintain performance parameters.

Tariff Mechanisms and Revenue Collection: Tariff fixation will remain the responsibility of the city and is independent of the PPP contract. The operator is paid a per-cubic-meter fee for water that is billed and collected. Prior to the conclusion of bidding, the city undertook a tariff revision exercise to narrow the cost recovery gap.

Universal Coverage and Tariff Considerations: The project aims to provide universal coverage. Service standards are the same for all classes of consumers. The water tariff is fixed by NMC and includes a subsidized rate for consumption below 8000 litres per month per connection. The operator has an additional mode of service provision to poor customers; group connections to poor customers are permitted in the contract, thus reducing the initial connection costs for the poor.

Revenue Risk: The operator carries minimal revenue risk for the first five years of the contract, since the operator

would receive payments based on a normative billing and collection of 250 mld. After the five-year period, the operator assumes the risk of demand, collection efficiency, energy consumption, and raw water consumption. Liquidated damages for not meeting performance standards (continuity, pressure, etc.) is limited to 5 percent of annual revenue. Operator revenue is revised every five years through a rebasing and is also subject to regular escalation and open to an extraordinary rate adjustment. Thus the revenue risk is low.

Contingency Management: An amicable settlement is the first step to resolve disputes. This is followed by arbitration in Nagpur under the Indian Arbitration Act. The choice of the arbitrators would be by the Bombay High Court, which is required to choose retired Supreme Court judges. Both NMC and NESL have agreed to waive the legal immunity on sovereign rights. Termination is provided for in the event of force majeure or default of NMC, NESL, and the operator. Termination due to defaults attributed to the operator is restricted to abandonment of the facility and a determination that liquidated damages are not adequate remedies for operational default that persists beyond 180 days.

C. Financial Sustainability

The city implemented a tariff revision along with the project, which improved cost recovery levels. The operator's revenue model is a per unit fee, which is distinct from the user charges. The city bears the cost of raw water supply, electricity, and water supply staff retained with the city. User charges will not recover costs, and the city will need to provide a subsidy through the general budget, though in this case the subsidy is not capped. The project design does not address financing needs for change in scope or future expansions.

D. Project Status

NMC and NESL handed over operations to the Operator in November 2011. In August 2012, rehabilitation work for conversion of the first zone into 24/7 had commenced. Currently¹⁸, rehabilitation work is on-going in six of ten wards and over 30,000 house service connections have been replaced. Additionally, a 24/7 call center, with a toll free number has been in place since a year.

Consensus Eludes the Latur PPP Project

In 2008, the Latur Municipal Corporation (LMC) and Maharashtra Jeevan Pradhikaran¹⁹ (MJP), signed a tripartite 10-year lease contract with SPML consortium to operate, meter, and collect revenues for the city. The lease officially commenced 2.5 years later, in January 2010, because conditions could not be met in the period initially set. Less than six months later, the operator “communicated intent” to withdraw, and by December 2011 it had reduced its staff to one.

The project failed because of political opposition that arose out of metering and customer billing in the context of system deficiencies. Delays in the project put the forecasted revenues in jeopardy, so the operator requested a change to a management contract contractor on a fee basis to eliminate its commercial risk. This proposal was accepted by LMC but not by MJP. In January 2012, MJP stepped into the contract in place of the operator and is operating the assets.

The contract is technically alive while MJP contemplates termination and the SPML consortium continues to pursue the alternative contract structure. The original objective of achieving commercial improvements has not been realized and several years of political opposition have resulted in losses to all stakeholders, including the LMC, the MJP, the operator, and the customers.

Overview

Latur is a medium-sized city in the State of Maharashtra with a population of 0.38 million.²⁰ Prior to the PPP contract, water supply operations were managed by the Latur Municipal Council (now a municipal corporation), while capital investments were planned and implemented by MJP. With access to only 35 mld of bulk water, Latur faced drinking water shortages and acute scarcity in the summer months. Less than half of households had water connections and received water only two times per week for three to four hours each time (see Table 3.3). The number of legal connections was only 26,000 though there are an estimated 55,000 connections. Only 199 connections were metered, but even these meters were largely nonfunctional. The average cost recovery was only 34 percent.²¹ LMC was also in default to MJP, to the power utility, and to lenders. The total outstanding liabilities of LMC by September

TABLE 3.3 SERVICE AND EFFICIENCY PARAMETERS, WATER SUPPLY, LATUR CITY

Indicator	Status for Latur
Coverage	47%
Per capita supply	100 lpcd*
Continuity of supply	Twice a week, 3–4 hrs each time
Operating cost recovery	34%
Collection efficiency	NA

*lpcd = liters per capita per day.

2005 were Rs 133 crore (US\$24.1 million), more than 100 years of water supply income.

Capital investments in the city’s water supply systems have traditionally been made by the MJP, which had a statewide monopoly over this function until 2001. Subsequently, Latur, like other financially constrained small and medium cities, continued to rely on MJP to raise finances for capital expenditure.

In 2005, MJP carried out a bulk water augmentation that improved bulk water availability to 80 mld but increased operating costs. The liability for servicing the loan rested with LMC. With the completion of the project, the city was able to supply 100 lpcd of water twice a week, for three to four hours each time. The LMC took over the new project assets from MJP but was unable to operate them due to technical deficiencies.²² Moreover, the operating costs of the upgraded bulk water supply system were expected to go up significantly.

Rationale for the PPP

With the debt from the bulk water project and increasing energy costs, LMC submitted a proposal to increase tariffs, but this was rejected by the elected members of LMC, which then requested MJP to take over the water supply operations because it was not in a position to absorb the costs and did not have the capacity to operate the system. A resolution to transfer operations was finalized in September 2005 and the board of MJP approved the takeover in January 2006. The agreement also specified that MJP would engage a private operator.

In other cities that MJP oversees, it typically adopts metering and a volumetric tariff. It estimated that with the state-wide tariff structure, Latur city water supply services could have an operating surplus by the year 2007–8, if metering and volumetric tariff are introduced; the number of legal connections is increased up to 44,150; and the collection efficiency is increased to 80 percent. These forecasts included fixed payments to MJP to cover staff costs and the servicing of the loan that was required to remedy technical deficiencies in the project.

Thus, the PPP decision was taken by LMC and MJP to address constraints largely related to technical capacity and cost recovery. MJP commenced procurement soon after the decision to adopt the PPP was ratified by LMC. There was little technical preparation of the project, and, significantly, no diagnosis was made on whether the private operator could deliver at least daily water supply (a service standard under the contract) with the existing assets.

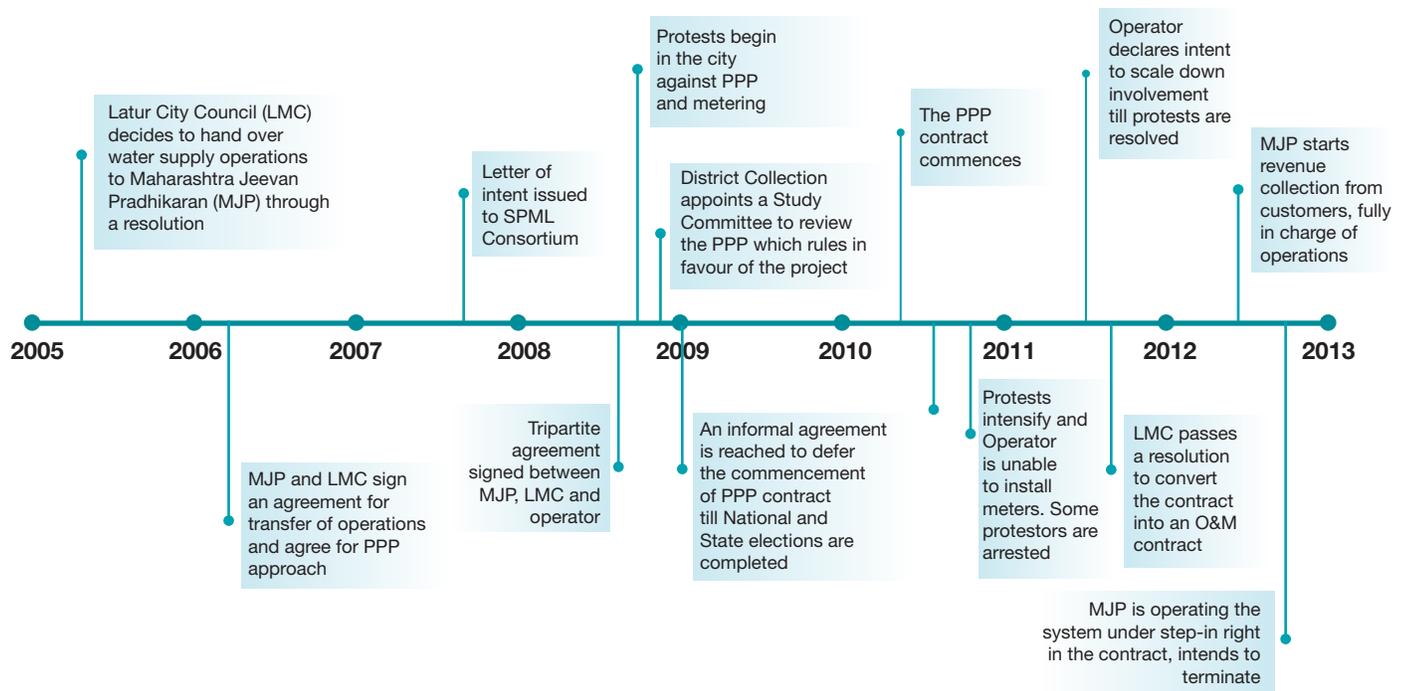
PPP Process

The MJP issued a Request for Qualification (RFQ) for the project in March 2006 for a five-year “lease” contract. Six consortia were shortlisted in the RFQ stage, and a Request

for Proposal (RFP) was issued to the short-listed bidders in December 2006. The first prebid meeting was held in January 2007, in which all the short-listed bidders participated, followed by another prebid meeting in which only three short-listed bidders attended.

During the prebid discussions, several amendments were made to the draft contract. The contract duration was extended from 5 to 10 years since the operators provided feedback that 5 years is inadequate to stabilize the system and to improve cost recovery. The draft contract had a “Conditions Precedent” period during which MJP agreed to assist the operator to achieve a target of 25,000 metered connections, which will reduce the commercial risks in the contract. Both parties agreed to reduce this target from 25,000 to 10,000 connections. Three financial bids were received, and SPML Consortium emerged as the highest ranked bidder. In August 2007, LMC passed a resolution agreeing to transfer the function to a private operator through MJP for a period of 10 years. Thereafter, the financial bid of SPML Consortium was accepted by MJP on the basis of the highest payment committed, and a Letter of Intent (LoI) was issued in September 2007. The contract with SPML was signed in June 2008.

FIGURE 3.5 LATUR PPP TIME LINE



Soon after the financial bids were submitted, LMC expressed interest in being a part of the contract. The city wanted to share in the estimated revenue “committed” (projected) by the operator. After prolonged negotiations, MJP agreed to share 50 percent of the surpluses from the contract with LMC at the end of the contract period. MJP and the operator signed a management contract, which was followed by a tripartite agreement between MJP, LMC, and the operator. By this route, LMC avoided taking responsibility for PPP decisions but ensured that it had a stake and share in the PPP arrangement.

Stakeholder Environment

The profile and visibility of this project were elevated because of the city’s complex institutional and political context. Latur is a politically significant city. The former chief minister of Maharashtra was, at the time, a legislator from Latur, and decisions such as the PPP were thus endorsed at the highest political level in the state.

However, the state government itself was a coalition, and coalition partners were often targeting the same political base. At the time, MJP was among the ministerial portfolio of a coalition partner. Thus, Latur would face the spillover of high-level coalition dynamics, which overlaid the technical complexities of the project, resulting in a volatile situation. The events that impacted the contract are described below.

Local political opposition started as soon as the contract was signed in 2008. One of the reasons cited is that locally available meters did not meet the specifications, and so the operator had to import meters. Consumers felt that they were being forced to incur high costs for imported meters (even though the costs were predetermined during bidding) and were unable to verify actual costs. The opposition to meters was further fuelled by the fact that existing system deficiencies did not permit for even one hour of daily supply to all households. This was seized upon by opponents to argue that the arrangement was prioritizing commercial aspects over service delivery.

As the opposition hardened, the Latur Water Supply Opposition Committee was formed. Impending elections put it high on the political agendas. The operator’s office in Latur was ransacked in August 2008. At this stage, the state

government constituted a Study Committee headed by the district collector to review the PPP project, understand stakeholder concerns, and provide its recommendations. The Opposition Committee made written submissions to the Study Committee. MJP and LMC were requested to respond to the submissions. The Study Committee conducted several meetings and submitted a report in September 2008 giving the project the go ahead on the basis that concerns had been satisfactorily addressed by MJP and LMC and that the contract safeguards the interests of LMC and is beneficial to the citizens of Latur. The report was accepted by the state government.

Elections Slow Down the Process

In early 2009 the chief minister and the city mayor asked the operator to slow field activities in view of the impending national elections in early 2009, followed by state elections in late 2009. At the same time, the technical partner to the consortium, Hydro-Comp, withdrew from the project. This was followed by the resignation of the project manager.²³ While the operator interpreted the slow-down advice as a delay in formal takeover of the project, MJP interpreted this as a mere extension of the Conditions Precedent period. From the operator’s perspective, commencing the contract without the ability to do field work (surveys, metering, repairs) would not be productive, but the MJP maintained that contractual responsibilities had already commenced.

Subsequent to the national elections, asset transfer from LMC to MJP and transfer of LMC workers to the operator were completed; and the take-over of assets by the operator was effected from April 1, 2010. The period for satisfying the Conditions Precedent is deemed to have commenced at this time. However, the operator still maintained that MJP had not completed preparatory activities as agreed, including major repair works in the system and rehabilitation of the bulk water supply system, as proposed by the operator; transfer of MJP employees; and updating of the customer database. MJP maintained a stand that no technical inputs were received from the operator for rectification and efficient operation of the network.

The Project Continues to Face Opposition

Meanwhile opposition escalated, resulting in violence and vandalism of the operator’s office. Consumers opposed the

distribution of bills in August 2010. This also led to a delay in metering. The operator appears to have ordered meters only in July 2010 and had installed only 450 meters by December 2010. By this time, nine months of the Conditions Precedent period had lapsed, but no significant progress had been achieved on the ground. However, both the operator and the MJP passed on an opportunity to terminate the contract at the end of the Conditions Precedent period.²⁴

Metering could not progress significantly in the face of ongoing violent protests. By February 2011, it had become clear that the financial projections of the water supply operations were unlikely to be achieved. Up until January 2011, the operator had not been entitled to any revenue from the system. Having taken over the assets in February 2010, the MJP was incurring operational liabilities, which, in the absence of proper billing and collection, far exceeded collections. The financial situation could not be resolved without political consensus on metering, which was still elusive.

By May 2011, the operator appears to have concluded that the PPP arrangement is not enforceable on the ground and proposed to convert the PPP arrangement into a fee-based management contract where the operator would be responsible for operations, billing, and collection. Though the project continued to receive support from the chief minister, local opposition does not seem to have waned. The operator eventually wrote to the MJP in November 2011 indicating its intent to scale down operations by December 31, 2011, and withdraw all but one staff member.

Contract Terms

A. Scope of Contract

The following functions were set out over the period of a 10-year contract for the private operator: recommending measures to remedy technical deficiencies in the system; operating and maintaining existing assets; distributing water; introducing metered connections and volumetric tariff; and billing and collection. MJP is responsible for assisting the operator in all commercial functions: new assets, major repairs, and transfers to the operator.

Both MJP and the operator are responsible for identifying and metering at least 10,000 connections as part of a

Conditions Precedent period. If this goal is not met, both the operator and the MJP have an option to terminate the contract. This safety clause ensures that the basic assumption underlying the contract structure (metering) is tested before the operator starts taking financial liabilities under the contract.

Flow of Funds: No financing was expected from the operator under the contract, and all asset additions are the responsibility of the MJP. The contractor collects all revenues from the customers, meets all operating expenditure, and makes lease-like payments to MJP. Arrears due to LMC/MJP from the precontract period and security deposits from customers are collected by the operator, but deposited to MJP. (See figure 3.6).

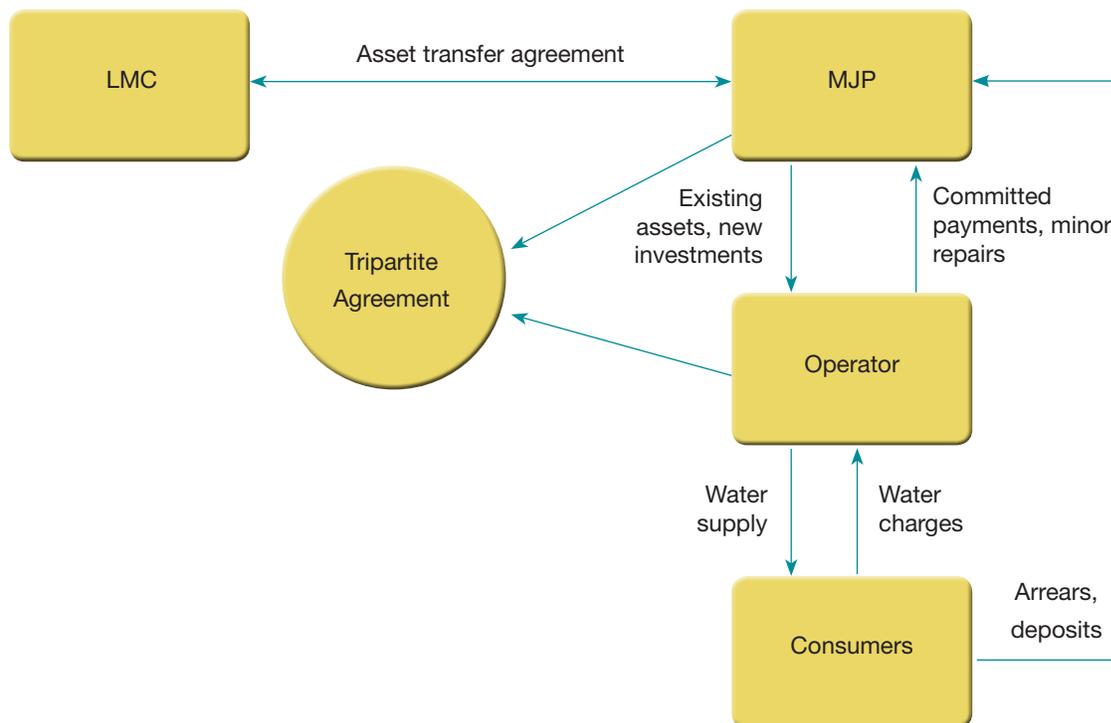
Financing: The PPP arrangement does not include significant investments. The obligation for major repairs and system expansion is that of MJP. The operator is required to carry out minor repairs (which are defined in the contract) at his own cost. This was based on the assumption that the existing network can deliver daily water supply with minor and immediate improvements. This assumption may have been misplaced, since the operator was unable to provide daily supply without significant corrections to the system, which he found difficult to undertake.

B. Regulation and Contract Management

Contract Management and Structure: The tripartite agreement provides for dispute resolution by the chairman of the steering committee (district collector), which would be binding. No arbitration is provided in the tripartite agreement. The steering committee was not equipped to handle the intense political opposition to the project. When it was clear that service improvements would be required before implementation of metering, the steering committee mechanism was unable to resolve this issue among the three parties. Lack of independent arbitration may have been an additional constraint in resolving this issue.

Since the contract does not envisage any asset construction by operator, the treatment of extraordinary events is elementary. Upon termination, the operator is compensated for book value of assets built, if any, and the cost of meters not recovered from consumers. Obligations are suspended

FIGURE 3.6 LATUR PPP PROJECT FLOW OF FUNDS



during force majeure and the contract is extended by the duration of force majeure.

Revenue Model and Incentives: The revenue model is based on the collection of user charges on the basis of metering and MJP's statewide tariff. The operator is responsible for meeting all operating costs and is expected to absorb augmentation in energy unit rates up to predetermined rates for each year during the contract. Escalations in unit rates beyond the prespecified limits would be borne by MJP. The operator was expected to make monthly predetermined payments (based on the financial bid) to MJP. These payments were expected to cover the administrative costs of MJP and the cost of servicing loans required for additional expenditure in the project area.

Surpluses from tariff income, over and above the operating expenditure and the payment to MJP, constitute the profits to the operator. Incentives to the operator are built into the revenue model, since the upside of any commercial or operational improvement accrues to the operator. MJP receives only a fixed payment during the contract period and does

not have a share in any upside accruing to the operator.

Staffing: LMC and MJP transferred their existing employees (55 and 15, respectively) to the operator. The operator pays the monthly salary termed as a service charge (prespecified in the contract). LMC and MJP will bear other compensation related liabilities like pension benefits. The operator has the flexibility to repatriate a maximum of 10 percent of the transferred employees during the entire duration of the contract for insubordination, nonperformance etc.

Performance Standards and Linkage to Revenue: Key service standards for the operator set under the contract are as follows:

- Provision of daily water supply, of potable quality standards, for at least one hour.
- Supply of 100 lpcd on average and a minimum of 80 lpcd.
- Maintenance of enough pressure to fill a 10 liter bucket within 30 seconds at customer premises for all customers.
- Provision of new connections within 15 days of

approval by LMC.

- Provision of a customer service and complaint center; redressal of customer complaints relating to pressure and quality within 24 hours and other complaints within seven days.
- Reduction of nonrevenue water by 15 percent each year.

The operator is also required to maintain water losses within specified levels in each stage of the water supply network. Time limits for repair of surface leaks are also specified in the contract.

Damages for each default incident with respect to service standards and operating requirements (loss levels, leak repairs) range between Rs 500 to Rs 2000 (US\$9–36) per incident. The contract is liable for termination by MJP if the damages in any month accrue to Rs 20,000 (US\$364), implying that 10 to 20 incidents in a month (across all operational parameters) may result in termination.

The operator is required to maintain a performance security of Rs 42 lakh (US\$76,360) with MJP and a Letter of Credit amounting to two months of fixed payment due to MJP. These are liable to be cashed in the event of termination or nonpayment to MJP.

Tariff Mechanisms and Revenue Collection: The operator is responsible for metering all existing connections, detecting and regularizing illegal connections (with the help of MJP), and providing new connections to customers.

A volumetric tariff was prespecified in the bid document for the entire duration of the contract. For domestic connections, a flat monthly rate of Rs 78 per month (US\$1.4) would be applicable for the first three months of the Conditions Precedent period. Connections that remain unmetered after this period will pay a higher flat monthly rate: Rs 120 per month (US\$2.2) for the next three months and Rs 300 per month (US\$5.45) thereafter escalated at 18 percent per annum.

Slum dwellers receive concessions in the tariff structure. For the first nine billing cycles after commencement, unmetered slum connections would be charged only at Rs 150

per month (US\$2.7) instead of Rs 300 per month. Metered slum connection would receive a discount of Rs 2 per kl if the monthly consumption is below 12 kl. If the monthly consumption is above 12 kl, normal rates would be applicable.

Universal Coverage and Tariff Considerations: The tariff structure provides concessions for slum dwellers if their monthly consumption is below a threshold. There are no special provisions related to service delivery, but the contract design encourages the operator to connect all customers.

Revenue Risk: The operator bears both the upside and downside revenue risk, which may arise due to less than the anticipated number of connections, lower consumption, increase in costs, and so forth. The revenue of the operator is also reduced per incident of default in performance as described earlier. Since there is no capital expenditure, the operator does not bear any investment risk.

C. Financial Sustainability

The main objective of the PPP project is to achieve operating surpluses by introducing metering and a volumetric tariff. The project design did not address the need for immediate capital investments or expansions. The Water Board was responsible for investments but was unable to make them in the absence of an operating surplus accruing from the project. The operator was unable to implement commercial improvements when service delivery continued to be poor. Therefore, while the project envisaged financial sustainability for operations, lack of a clear plan for overall financeability and viability affected project implementation.

D. Project Status

MJP has taken over the water supply system under the step-in clause as per the contract since January 1, 2012. Though alternate day supply had been achieved by the operator, service levels appear to have slipped gradually after the operator withdrew.²⁵ The operator is awaiting a response to its offer to convert the PPP contract into a fee-based management contract. While LMC has agreed to this, MJP appears to be contemplating termination. This situation remains unresolved to date.

Aurangabad 20-Year Concession Contract

In 2011, the City of Aurangabad awarded a 20-year concession to a consortium led by SPML Ltd²⁶ to operate and maintain its water system, including bulk water systems, and reconstruct the distribution infrastructure with an aim of 24/7 continuous water supply. The private operator is expected to finance approximately 50 percent of the cost, making it the largest private sector investment project for water distribution in India. The national government is financing approximately 36 percent of the project cost, and the state government is financing 14 percent through grants. Total investments for the project are Rs 7.92 billion (US\$144 million), which is 36 times more than the current annual water supply revenues of the city. Cost recovery is through predetermined end-user tariffs.

The city will subsidize water operations from the general municipal account through an annual operating subsidy. The objectives of the proposed investments are to increase bulk water capacity and reduce distribution losses, thus improving the overall availability of water to the citizens.

This PPP project is considered high risk and high gain for both the private operator and the government. The private operator is exposed to significant investment and cost risks, such as escalation in electricity costs and raw water costs. The city has the benefit of achieving significant service improvements without bearing operational or financial risk. In turn, it faces the political challenges of convincing citizens to accept the revised volumetric tariff as well as managing its finances prudently to be able to contribute significantly high levels of subsidy (through the annual grant).

Overview

The city of Aurangabad, in Maharashtra state, is a medium-size city in India with a population of 1.2 million. Aurangabad Municipal Corporation (AMC) manages the water supply as well as other urban services for the city. Aurangabad receives water from a dam which is 45 kilometers away from the city and 159 metres below the city elevation, requiring pumping over a long distance. The bulk water off-take and transmission facility has a capacity of 156 mld. Leakages in raw water transmission pipes lead to a loss of 15 mld of raw water. Distribution system leakages

lead to further losses of 44 mld of treated water. As a result, the city supplies only 88 mld to consumers, which results in a per capita supply far below the recommended supply level of 135 liters per day.

TABLE 3.4 SERVICE AND EFFICIENCY PARAMETERS, WATER SUPPLY, AURANGABAD CITY

Indicator	Status for Aurangabad
Coverage	NA
Per capita supply	110 lpcd*
Continuity of supply	45 minutes every second day
Operating cost recovery	48.5%
Collection efficiency	NA

*lpcd = liters per capita per day.

Consumers receive water for a duration of 45 minutes every second day (Table 3.4). An estimated 85 percent of the households have a direct service connection. The city levies a flat monthly tariff, and cost recovery is approximately 48.5 percent.

Because of the shortfall in service levels, AMC prepared plans to build a parallel bulk water supply line and invited private participation in the year 2006 under a build-operate-transfer (BOT) arrangement. The city received several responses, but the financial bids were deemed unaffordable. Moreover, without rehabilitation of the distribution network, the benefit of increased bulk water would not be realized because of high distribution losses. Therefore, AMC decided to pursue both bulk supply augmentation and partial rehabilitation of distribution network and sought government grants for the project under JNNURM.

Commitment to the project from the stakeholders is high, since having the city continue with current levels of service was not an alternative.

The Rationale for PPP: A Financing Gap

Between the submission (2006) and the approval of the project (2009) under JNNURM, the project cost appreciated

significantly, from Rs 3.6 billion to Rs 5.1 billion (US\$66.6 – 92.7 million). Under the terms of the JNNURM funding, Rs 3.24 billion, (US\$58.9 million), or 90 percent of the original project cost, would be provided as grants from national and state governments. AMC will have to finance 10 percent of the original project cost and 100 percent of cost escalations.

AMC was unable to meet its share of financing, which amounted to Rs 1.86 billion (US\$33.8 million) (51 percent of the original project cost) and decided to seek private investment to meet the financing gap—initially including only the bulk water supply component. AMC later decided it lacked the capacity to rehabilitate the distribution network and decided to make the private operator responsible for rehabilitation of the entire distribution network (instead of the partial rehabilitation envisaged earlier). Full replacement increased the project cost to Rs 7.92 billion (US\$144 million).

The state government agreed to finance 50 percent of the cost escalation in the original project proposal, which amounted to Rs 0.75 billion (US\$13.6 million). Thus, the private investment required in the project was Rs 3.92 billion (US\$71.2 million)

Technical Preparation

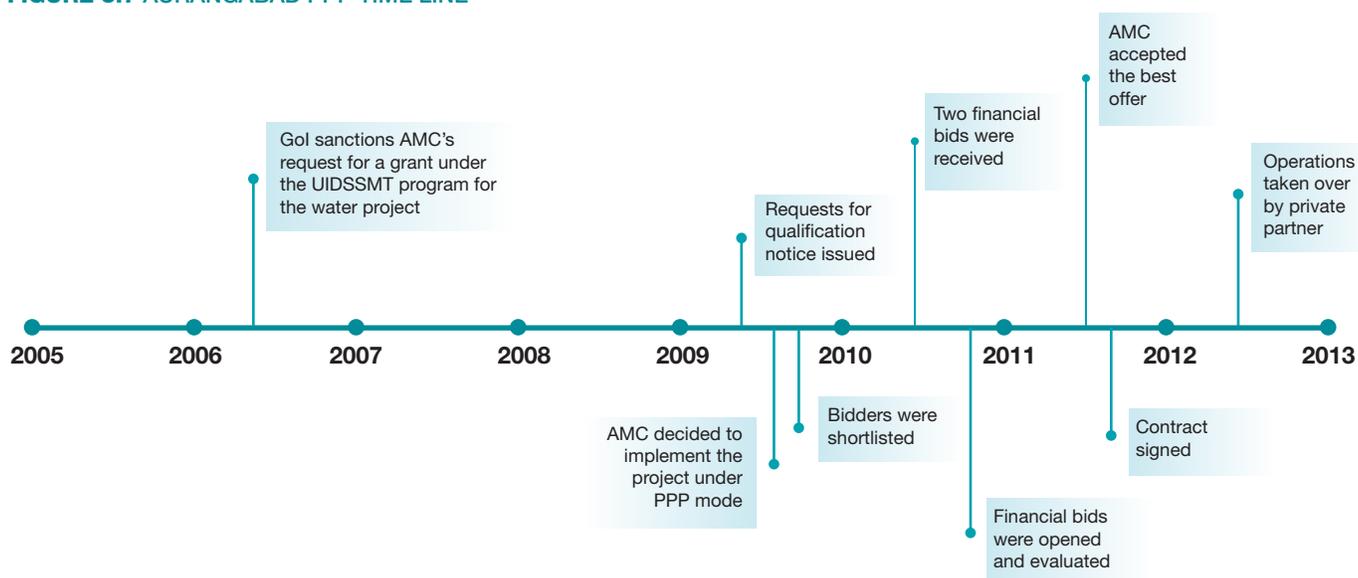
AMC received project development assistance from the India Infrastructure Project Development Fund (IIPDF) administered by the Department of Economic Affairs (DEA), GoI. DEA approved the project under their Pilot Projects Initiative,²⁷ which fully funded the cost of transaction advisors. AMC appointed CRISIL Risk and Infrastructure Solutions as the transaction advisors for the project.

Based on the preparatory work, AMC decided to pursue a concession model in which the operator would have end-to-end responsibility to source and distribute water. The end-user tariff would be fixed by the AMC upfront and escalated during the term of the contract at a predetermined rate. The operator would be provided an annual grant to bridge the gap between cost recovery tariff and that fixed by AMC. This would also be the bidding parameter and the operator requiring the lowest annual grant would be selected. The General Body of AMC formally resolved to pursue a PPP arrangement in August 2009.

The Bidding Process

A Request for Qualification (RFQ) was launched in end of August 2009. Eleven consortia submitted RFQs and nine were shortlisted for the proposal stage. Three pre-bid

FIGURE 3.7 AURANGABAD PPP TIME LINE



conferences were held with the bidders to discuss the RFP documents, provide clarifications and agree on amendments. Bidder interest was high since this was a large PPP project (in terms of investment), but the bidders had many concerns with the initial contract package, which they said put all the risks on the operator, contained unrealistic performance expectations, imposed high penalty/loss clauses, and had nonstandard/un-bankable concessions terms.

AMC agreed to some of the requests, but many issues remained outstanding including unrealistic service standards, especially with nonrevenue water, termination payments that were inconsistent with national practices, and severe performance security and penalties. Only two companies submitted bids. The financial bid of one of the consortiums was not accepted since it was conditional;²⁸ so the remaining bidder, a consortium led by SPML Ltd., was accepted in March 2011. A Letter of Intent was issued to the preferred bidder in April 2011 and the concession agreement was signed in September 2011. Preparatory period activities are under way at this stage.

Contract Terms

A. Scope of Contract

The 20-year concession contract requires the operator to manage the entire water supply chain, including constructing new assets, rehabilitating the existing distribution system, and making significant service improvements. The contract can be extended by a maximum of ten years to accommodate increase in the share of private financing and/or changes in scope of the project.

Flow of Funds: The operator will establish a collection account into which all the user charges collected from the customers are deposited. This account is used to make predetermined payments such as electricity payments, raw water payments, and salaries to employees deputed from AMC to the operator. The surplus after these payments is transferred on a monthly basis to a water payment account for use by the concessionaire.

AMC will provide an annual grant to the operator from the first year of the contract. This is increased at the rate of 6 percent per annum during the term of the contract. AMC will deposit this grant into the water payment account. In addition, AMC will also maintain a water payment reserve account in which 1.5 times the annual grant will be maintained throughout the duration of the contract as a payment security to the operator.

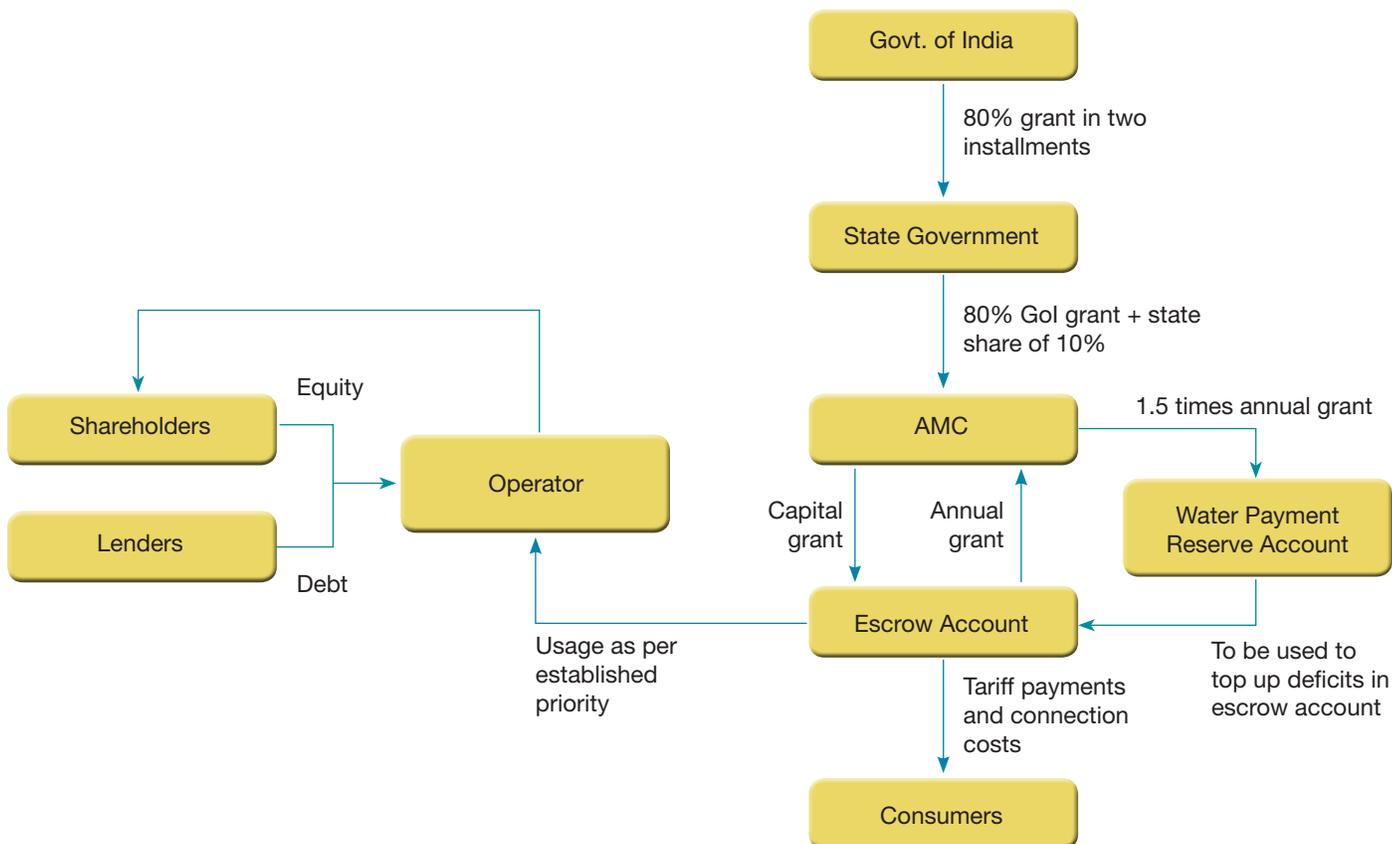
Financing: The national government finances 80 percent of the original project cost (figure 3.8 and Table 3.5). The state government is financing 10 percent of the original project cost and 50 percent of the cost escalation. The private operator is required to finance the residual costs.

AMC has secured approval of grants from the JNNURM and from the state government. The grants will be provided in prespecified installments by the national and state governments. If the grants are delayed or withheld for any reason, the operator has the responsibility to mobilize additional financing, which would be compensated by AMC. The annual grant by AMC is also a source of financing since it is available upon the first year of contract. A part of this grant could be used to finance

TABLE 3.5 BREAKDOWN OF FUNDING SOURCES, WATER SUPPLY, AURANGABAD CITY

	Value (Rs billion)	National Govt. Share (Rs billion)	State Govt. Share (Rs billion)	Operator Share (Rs billion)
Original project cost	3.60	2.88	0.36	0.36
Escalation in original scope	1.50	-	0.75	0.75
Increased scope	2.81	-	-	2.81
Total cost	7.92	2.88	1.11	3.92
% of total cost		36.32	14.11	49.57

FIGURE 3.8 AURANGABAD PPP PROJECT FLOW OF FUNDS



operating expenditure, since the existing water operations are in deficit. The residual amounts are available for the incremental expenses the operator may incur in O&M of the existing system or to partially finance capital expenditure for new assets.²⁹

In the year 2012, the operator inducted another member into the consortium by diluting the equity stake of the lead consortium member (SPML Ltd). This conforms with the terms of the concession agreement. The new consortium member has taken the lead in arranging financing for the project.

B. Regulation and Contract Management

The obligations of the operator include construction of bulk water off-take and transmission systems; rehabilitation of the distribution network; part financing of investment requirements; service delivery to customers; and billing and revenue collection.

AMC’s obligations are to secure the release of grants from the national and regional governments; secure raw water allocations from the dam; provide an annual grant to the operator; and implement the tariff structure and its revision.

The concession agreement provides for an independent auditor and engineer for providing advice and determining costs on technical and financial issues, respectively, in events such as expansion of scope. They are appointed jointly and the costs are shared equally. It also provides for amicable resolution of disputes through dialogue within a period of ninety days. If an amicable resolution is not reached, arbitration as per the Indian Arbitration and Reconciliation Act is triggered. The terms of arbitration are based on industry standards.

The project is in the preparatory stage and no issues have arisen so far. The city needs to ascertain actual performance and make performance grant payments accordingly. The

capacity of the city to do this may be limited at present and will need strengthening.

Revenue Model and Incentives: The revenue model is based on user charges and the AMC annual grant. The operator levies and collects user charges based on the prespecified tariff that differentiates between domestic and nondomestic consumers. During the construction and rehabilitation phase, the tariff structure is on a flat monthly basis. On completion of this phase, the tariff structure turns volumetric. Consumers in the higher categories of consumption are levied a higher per unit rate for the entire consumption. The tariff is indexed every three years at an average rate of approximately 7 percent per annum during the term of the contract.

The annual grant is escalated at the rate of 6 percent per annum. In effect, the revenue base of the operator will grow in the range of 6–7 percent, excluding the effects of increased customer base and consumption.

The concession agreement limits the operator's revenue in two ways because the annual grant and the tariff structure are predetermined. The operator has commercial freedom in all other respects and retains the upside of (i) optimization of capital expenditure, (ii) operating efficiencies, and (iii) commercial efficiencies such as maximizing connections, consumption, and collections. There are no other specific incentives provided in the contract

Staffing: AMC will depute its existing employees to the operator throughout the term of the contract after obtaining their consent. The existing terms of employment will be preserved while they are on deputation. All employee liabilities after the contract comes into effect will be borne by the operator, including salary increments and promotions, and the operator will have to bear the cost impacts of such decisions. Although the employees will be under the day-to-day control of the operator, their terms of employment and increments will continue follow government law. This decreases the degree of control the operator has over the employees. It also increases the cost risk of the operator since the employee overhead becomes an uncontrollable cost.

Performance Standards and Linkages to Revenue: The concession agreement contains three sets of performance

standards, including a schedule for completion of construction and rehabilitation and achievement of continuous water supply in the city; service delivery standards during the period of construction and rehabilitation; and service delivery standards after rehabilitation.

The service standards are weighted and include 100 percent coverage, 24 hour continuity of supply, water loss (15 percent in the entire chain), complaint redressal (at least 80 percent within 24 hours), water quality (potability), and at least 95 percent functional meters.

Twenty-five percent of the annual grant is linked to the achievement of service standards. If the operator is unable to maintain a service standard above the requirements, the annual grant is reduced by a proportion equal to the weightage of the service standard. Some of the parameters such as continuity of supply are unlikely to be met all the time.³⁰

Tariff Mechanisms and Revenue Collection: The operator is compensated through user charges that are levied by the operator as per the tariff predetermined by AMC and an annual grant from AMC.

Universal Coverage and Tariff Considerations: The contract does not envisage any special provisions on tariffs or service delivery mechanisms for the poor. However, it targets common service standards for all consumers and universal coverage.

Revenue Risk: In addition to service standards, the operator is also exposed to significant cost risks. The operator is required to bear escalation in electricity costs and raw water costs up to 10 percent and 15 percent per annum, respectively. The operator also bears the risk of raw water unavailability up to 50 percent of the allocated quantity as well as revision in salaries of the employees deputed to the operator by AMC.

The operator is required to maintain a performance security of approximately Rs 792 million (US\$14.4 million) during the construction and rehabilitation period and an amount equal to the annual grant during the rest of the contract period. The performance security is cashable at the rate of 1 percent per week in event of material breach during

construction and rehabilitation period; failure to complete construction and rehabilitation within three years, subject to a maximum deduction of 10 percent; and failure to remedy material breach during the operations period. The performance security is also cashable in the event of termination due to operator's default, in order to realize any payments due from the operator.

Termination payments outlined in the contract do not conform to national practices. If the contract is terminated due to the default of the operator, AMC is entitled to receive debt due to lenders from the operator. If termination is due to AMC's default or due to political force majeure, the operator receives debt due to lenders and adjusted equity. If termination is due to other events of force majeure, the operator receives only the debt due. These provisions, especially those related to operator event of default, are not consistent with standard industry practices.

Contingency Management: The contract provides for six types of contingencies: (i) change in scope of the project, (ii) expansion in project boundaries, (iii) non-release of grants by national and regional governments, (iv) change in law, (v) unavailability of raw water, and (vi) cost escalations in electricity and raw water beyond a specified threshold. Adjustments to the contract are provided for each of these events.

Cost escalations in electricity and raw water beyond the threshold are borne by AMC. Unavailability of raw water

beyond 50 percent of allocations is treated as a force majeure event. For the other contingencies mentioned above, the contract provides for remedy through measures (adjustment of tariff, reimbursement of additional financing, and extension of contract period) designed to protect the equity internal rate of return of the operator.

C. Financial Stability

The city implemented volumetric tariff concurrent with the project. Even with the revised tariff, operations will not fully eliminate the need for subsidy from the general budget. Therefore, the city subsidizes the project with an annual operations grant, capped through bidding. This provides predictability to the city budget. The success of the project design depends on the ability of the city to generate additional revenue from other sources to finance this subsidy. The project design envisages financing of future costs through tariff revision or an extension of the concession period, but no clear plan is included.

D. Project Status

The concession agreement was signed at the end of 2011, subsequent to which the operator started carrying out preparatory activities. The contract was to have been effective six months after signing, but this period has been extended. The operator has inducted another partner, Essel Ltd., who has taken charge of financing activities. In October 2013, the project had achieved financial closure, and permission from state government was awaited for hand over of assets to the operator.

Six-Year Operations Contract in Mysore

The City of Mysore signed a six-year distribution contract in 2009 with the private operator JUSCO to rehabilitate the distribution assets and improve operational performance to achieve continuous 24/7 water supply. The contract is a combination of fixed construction payments for rehabilitation and a management fee for operations. The project was financed through a national grant program (JNNURM), which covers 90 percent of the project fees. The Mysore City Corporation (MCC) is responsible for financing the residual costs through its own sources.

The government estimated 1,281 km of existing network and proposed rehabilitation and expansion of approximately 922 km for 1.13 lakh customer connections. The contract made the operator free to study the system and come up with rehabilitation and expansion of up to 110 percent of the sum agreed through the contract. The operator discovered a total of 1,780 km of existing networks that needed to be rehabilitated—nearly double the government's original estimate—and almost two times the original cost.

The operator is responsible for preparing the service improvement plan within one year and taking over operations and maintenance ninety days from commencement. Within four years, it must rehabilitate the distribution network, implement metering, and achieve 24/7 supply; it must operate the system for two years before handing it back to the public sector. The contract gives the operator limited flexibility because the performance standards were fixed up front and the capital expenditure was also capped. The short-term nature of the contract encourages aggressive (and unrealistic) performance setting since significant results have to be demonstrated.

Overview

The City of Mysore has a population of 983,000 and is the second largest city in the southern Indian state of Karnataka.³¹ Eighteen percent of the population is considered poor. The city is a major Indian tourist attraction and hosts a large scale training centre of Infosys, a global IT company.

Water supply services in Mysore have historically been

provided by MCC, while the Karnataka Urban Water Supply and Drainage Board (KUWSDB)³² designed and implemented capital expenditure. But in the 1980s the O&M function also was transferred to the KUWSDB, which absorbed all the employees of MCC. In 1996, a constitutional amendment handed back O&M functions to the Urban Local Bodies (ULBs). While the function was transferred to MCC, the employees remained on KUWSDB payrolls, keeping loyalties to the KUWSDB even though the day-to-day operations are overseen by MCC.

The city has one of the lowest tariffs in the state with sufficient water resources to ensure a daily water supply unlike many other cities in the state, which have limited services. Seventy-nine percent of households are connected to the distribution network and receive water for about 4.5 hours per day (Table 3.6). Customers receive about 135 liters per person per day, and about 81 percent of water samples meet targets for water quality. MCC recovers about 52 percent of its O&M expenses through water tariffs and the operating deficit is met through the city's general budget.

TABLE 3.6 SERVICE AND EFFICIENCY PARAMETERS, WATER SUPPLY, MYSORE CITY

Indicator	Status for Mysore
Coverage	79%
Per capita supply	248 lpcd*
Continuity of supply	4.5 hours per day
Operating cost recovery	51.7%
Collection efficiency	Unclear

**lpcd = liters per capita per day.*

Like many other cities in India, there was a general distrust of private participation in water in Karnataka. However, a dedicated state-level infrastructure development and financing agency, a PPP cell (supported by the Asian Development Bank), and a Transparency in Public Procurement Act have helped foster a climate for PPPs. The state is known for having implemented the first 24/7 pilot initiative (KUWASIP) in the country.

Rationale for a PPP: Continuous Water Supply

MCC sought grant funding under the federal JNNURM Program to rehabilitate its distribution assets. At this time, the city did not envisage continuous water supply. The JNNURM approved the grant in 2006, but it was conditional on the city achieving continuous water supply. This triggered the PPP project since the stakeholders (KUIDFC and KUWSDB) perceived that conventional style of project execution, through construction contractors, could not achieve continuous water supply. The success of KUWASIP also strengthened the case for partnering with the private sector.

Stakeholder Environment

The decision to move forward with the PPP lacked political acceptance as there was no elected body in the city at the time. The city administrator was informed of the decision by the state agencies. Having seen the experience of an earlier PPP project, the city administration concurred. Consultations with city representatives and citizens were deferred to after the election of local government. Consequently, the operator was made responsible for communication with stakeholders.

Public opinion improved after initial opposition, as a result of direct communication by the operator and MCC with citizen groups. The operator also implemented a communication program to keep customers informed about project benefits, to collect feedback from customers and address customer complaints, and to maintain customer satisfaction. The city also maintained detailed fact sheets to respond to concerns and educate customers on contract terms and objectives.

The Process for PPP: Short-term versus Long-Term Approach

The key stakeholders, including the state agencies, the city, and the city administration, considered two broad approaches: a long-term contract for the entire water supply system, including future investment responsibilities, and a short-term approach focusing on rehabilitation and performance improvement. As the state did not foresee tariff and institutional reforms—which were considered essential for a long-term approach—the short-term approach was pursued.

There were prolonged discussions on whether the operator should have execution responsibility for rehabilitation (therefore taking a price risk) or only a project management responsibility (receiving a fee for supervising execution through third party contractors). A combination of fixed construction payments for rehabilitation and a management fee for operations was finally decided upon because of a desire to cap the rehabilitation costs within the available JNNURM funding and to provide procurement flexibility to the operator.

Technical Preparation

MCC appointed the KUWSDB to prepare the Detailed Project Report (DPR), which KUWSDB in turn contracted out to STUP Consultants.

The overall cost of distribution improvements was estimated at Rs 194.54 crore (US\$35.4 million). The Board decided to implement improvements to feeder networks and service storage (costing Rs 71.18 crore, or US\$12.9 million) through a conventional construction contract. The works pertaining to rehabilitation of the distribution network and management system, costing Rs 123.26 crore, were left for procurement through the PPP model, which would include operations.

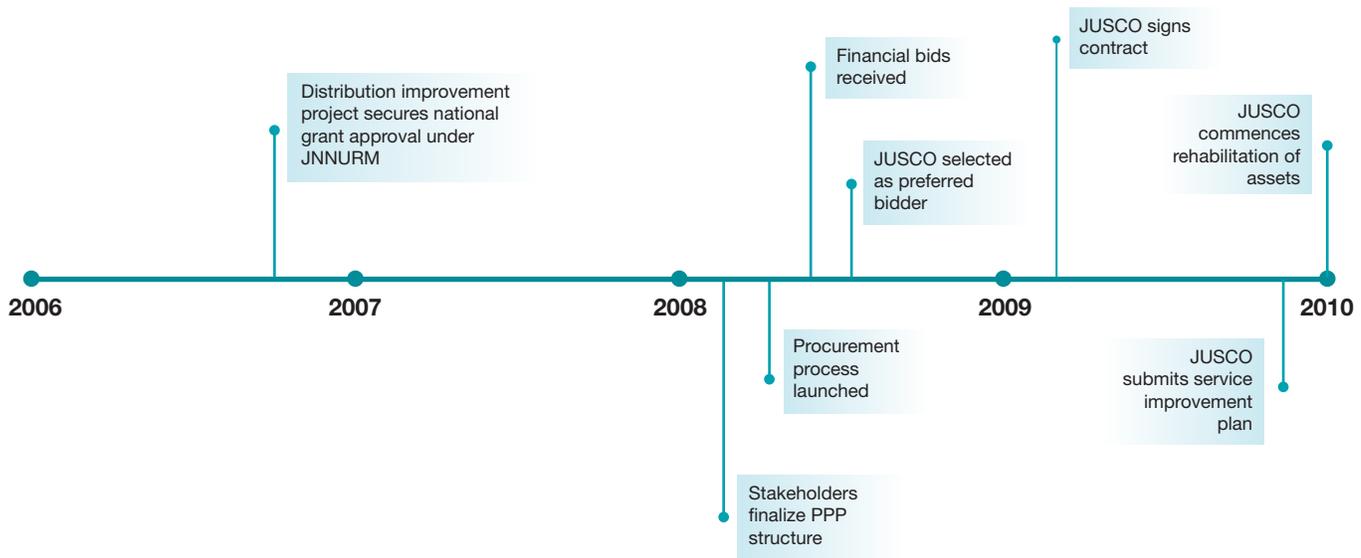
The DPR estimated 1,281 km of existing distribution network and proposed rehabilitation and expansion totaling to about 922 km of network. It also estimated about 1.13 lakh customer connections. The contractor later discovered that the existing network length is 1,780 km and assessed that the entire network needed replacement to achieve performance standards. The number of customer connections increased to 1.7 lakh.

The original DPR limited the scope of improvements to the area within the boundary of MCC and excluded about 15 percent of the city's developed area, which is in the administrative jurisdiction of Mysore Urban Development Authority (MUDA). This had led to differential service levels within the city and also loss of revenue opportunities.

The Bidding Process

The KUWSDB split the city into two geographical zones and invited separate bids from operators. The Board adopted

FIGURE 3.9 MYSORE PPP TIME LINE



a single stage competitive tendering process. During the prebid consultations, the bidders expressed willingness to make partial investment in the facility. There were strong suggestions from the bidders to avoid a Bill of Quantities based approach to bidding and to avoid the responsibility for collection of revenue arrears.

Three bids were received and JUSCO was the lowest bidder for both the zones. The financial evaluation criterion was the sum of rehabilitation costs (construction costs), operating fee, and performance fee, quoted by the bidder. The cost quoted for rehabilitation was slightly lower than original DPR estimates and significantly lower (about two to four times) than that of other bidders. JUSCO was awarded the project even though the financial bid was considered too aggressive and impractical by other bidders.

Contract Terms

A. Scope of Contract

The operator is responsible for rehabilitating the distribution assets and improving operational performance within a six-year period. The scope of rehabilitation is defined in the contract but turned out to be inadequate, and the operator proposed a doubling of rehabilitation investments. The KUWSDB did not have a source of financing for the

increased costs and in any case was reluctant to admit that its initial estimates were wrong. This resulted in a stalemate in rehabilitation and also impacted the performance targets for the operator. KUWSDB's performance obligations are limited to the supply of treated water.

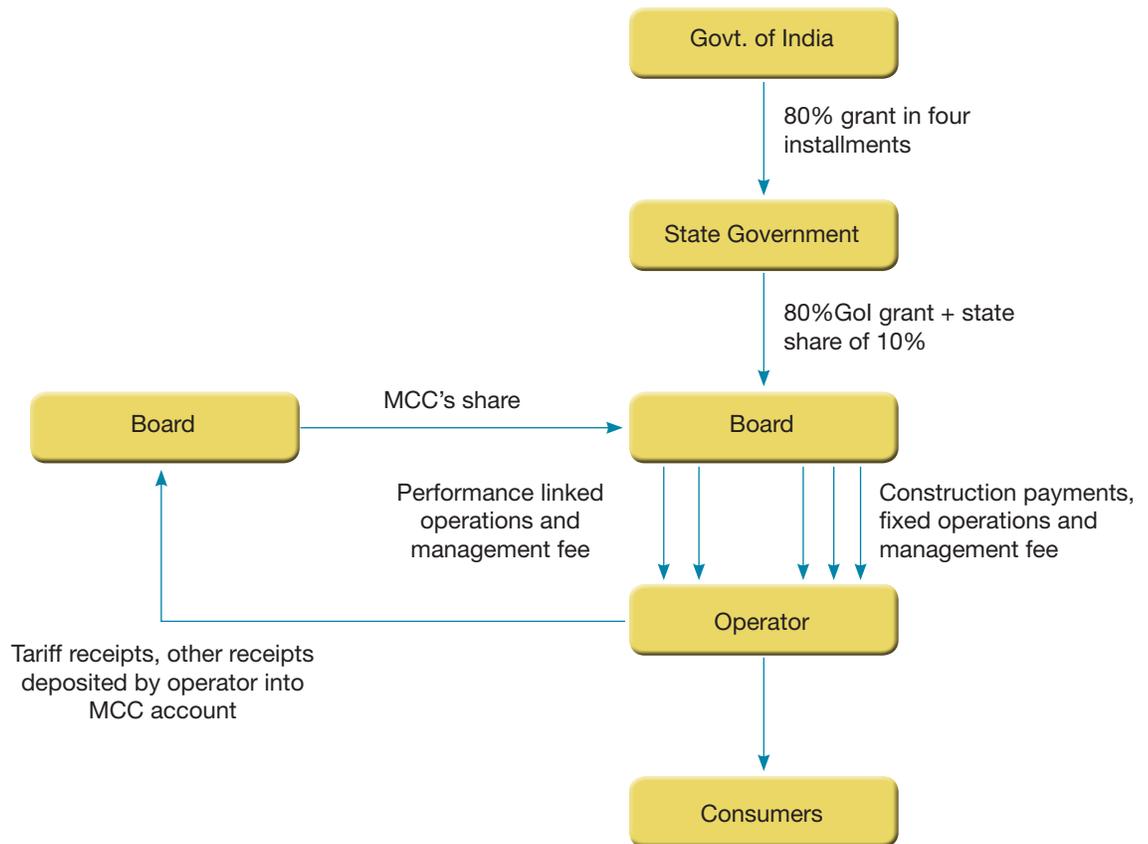
Flow of Funds: The construction costs are paid to the operator on a milestone basis (figure 3.10). Unlike other cities where JNNURM grants are transferred to the city, in this case the grants are transferred directly by KUIDFC to the KUWSDB. Payments are made after a verification of the quantities on a periodic basis. Fixed fees for O&M are paid at the end of every quarter. The performance linked fee for O&M is to be released every six months based on performance targets met.

Financing: The JNNURM provides 80 percent of the approved project cost as a grant. The State Government provides an additional 10% and MCC is responsible for financing the residual costs through its own sources.

B. Regulation and Contract Management

The contract management is carried out by the KUWSDB on behalf of MCC. The contract is a rehabilitation cum operating performance improvement contract and is divided into three phases: a preparatory phase to prepare an

FIGURE 3.10 MYSORE PPP PROJECT FLOW OF FUNDS



investment plan (twelve months), implementation phase (thirty-six months), and a last phase focusing on operations and maintenance.

Eight service standards are set in the contract with phased performance targets. Some of the “phasing” is seen as aggressive and difficult to meet, such as the 24/7 and NRW targets. There is no mechanism to control or adjust the targets during the execution of the contract, irrespective of the findings of the preparatory phase surveys.

The operator is responsible for all repairs and maintenance of the entire distribution network. The contract differentiates between rehabilitation works in the nature of asset replacement (which are funded through an item rate contract) and routine repair activities. For other O&M activities, the operator is paid a fee based on the bid price.

Dispute resolution is limited to amicable settlement and adjudication. The sole adjudicator is a retired engineer from the KUWSDB or an engineer to be appointed by the Karnataka chapter of the Institution of Engineers. The contract does not provide for arbitration.

The project was not able to resolve a serious expansion in scope. The Board as a contract monitoring agency did not have stakes in resolving this issue and the city may not have been prepared to finance the expansion. Lack of independent arbitration could also be a factor in this.

Revenue Model and Incentives: The operator is paid a fixed construction fee for rehabilitation. The rehabilitation costs are adjusted for price escalation as per inflation indices. Up to 85 percent of the inflation in indices is passed on to the operator through a predetermined formula. For operations, the operator is paid a fee (consisting of a management fee and operating costs).

A large part of the recurring fee for the operator is performance linked, thereby requiring the operator to focus on performance targets. However, the contract has an implicit price cap and stiff targets and there is no material upside to the operator. Moreover, mechanisms for handling unforeseen events and dispute resolution are not forward looking. As a result, if the contract encounters difficulties, the incentives to continue performance are low.

Staffing: The public sector employees are delegated to the operator for the duration of the contract, but their salaries will continue to be paid by MCC and KUWSDB. This creates a disconnect between payment and performance, and as a result the operator has had difficulty in securing cooperation of all the employees. The operator is also responsible for training all public sector employees.

Performance Standards and Linkages to Revenue: The operator is remunerated in four ways: (i) rehabilitation costs; (ii) management fee, which includes all management costs including staff costs; (iii) operating cost, which covers the cost of consumables, equipment, and material; and (iv) provisional items.

The operator is expected to meet eight performance standards, among which are the following:

- 100 percent of households to be provided with 24/7 water supply (up from 79 percent coverage with intermittent supply).
- A nearly 20 percent improvement in percentage of samples meeting water quality targets.
- A revenue improvement marker of 40 percent and NRW decreased to 15 percent.
- Ninety-eight percent efficiency in complaints redressed.

Performance parameters are weighted. Fifty percent of management fees and 70 percent of operating costs are performance linked. Six monthly performance targets are specified, and the performance component is subdivided against these targets (for each performance element and each six month period of contract). In all, there are 82 performance installments for the management fee and another 82 installments for the operating fee. If the operator is unable to achieve a performance target specified for a

six-month period, the installment lapses and cannot be paid proportionately for partial performance or when the target is achieved at a later date. This style of the performance-linked fee is inconsistent with the operating cost pattern and the poor quality of initial estimates of rehabilitation in the DPR.

The management of the contract has further aggravated the inconsistent and irrational targets. JUSCO has reportedly not received any performance payment and even the fixed payment for costs and management fee were not fully paid as of mid-2012.

Tariff Mechanisms and Revenue Collection: Tariffs will remain unchanged during the PPP arrangement. The operator is responsible for billing and collection. One of the performance parameters for the operator is a gradual increase in revenue collection, starting with an increase of 5 percent.

Universal Coverage and Tariff Considerations: The PPP project does not have special provisions for services to the poor but targets universal coverage and common service standards. Group connections are permitted for the urban poor. Since the operator fee is distinct from user charges, no specific pro-poor tariff mechanism is proposed in the PPP contract.

Revenue Risk: Revenue risk is significant for the operator: 50 percent of the management fee and 70 percent of the operating fee are performance linked. While the service improvement targets are very stringent and are difficult to achieve, the revenue collection and customer service targets are manageable considering the service levels already being maintained by the city. Ten percent of each payment is retained by the Board as retention money (up to 7.5 percent of contract value) to be returned on completion of defect liability period (approximately fifteen months after expiration of the contract).

The operator is liable to pay liquidated damages of 0.005 percent per day of default, which will be capped at 7.5 percent of the contract value. The KUWSDB and MCC are entitled to terminate the contract once the cap is reached. In addition, the operator is exposed to the performance

security (6 percent of the contract price) being invoked. Thus, in addition to the performance-linked fee for operations, 21 percent of the contract price is linked to performance.

Contingency Management: The contract has poor mechanisms for addressing changes in scope. The rehabilitation costs proposed in the investment plan cannot exceed 110 percent of the price quoted by the bidder's original estimates, irrespective of the increase in quantities that may be warranted due to poor initial estimates. Other variations during the contract cannot exceed 5 percent. However, variations are permitted in the event of more than 10 percent variation in data provided by the client in the tender documents.

If the KUWSDB terminates the contract unilaterally or due to force majeure, it must pay the operator for all works completed and services satisfactorily rendered (although this is not clearly defined). The operator is not entitled to recover reasonable costs as compensation in all other events of default. This also includes default in payment by the KUWSDB/MCC. The only recourse available to the operator is legal recourse through a court process.

C. Financial Sustainability

By design, City of Mysore does not aim to achieve financial sustainability through the project. The investments, as well as the management fee, are funded by the city. Current

cost recovery is low (51.7 percent) and no tariff revision was planned. The project design does not address both current and future cost needs of the city and is purely a grant funded service improvement project.

D. Project Status

The objective of the PPP was to achieve city-wide rehabilitation and performance improvement. The contract has only one year to completion. However, both objectives remain seriously challenged, largely due to poor technical preparations leading to expansion in scope; poor PPP design, especially performance standards, revenue risk and contingency management; a hybrid contract that requires both construction and operation responsibilities; conflicting stakeholder interests; and aggressive bidding by the operator. Among these, the inability to resolve the increase in rehabilitation scope and costs appears to have cascaded issues. MCC and the operator expected the state government to resolve this issue. However, the latter is not envisaging any further capital investment in the project under the current contract. Likewise, the operator is not proposing to seek an extension of the contract period, as is permissible under the contract. The project has shown results / benefits in terms of achieving a significant increase in the city's water supply revenues; as well as in the number of customer connections, a large number of which consisted of conversion of illegal connections.

IV. Observations and Lessons Learned

KEY POINTS

- The direction that the PPP projects are taking is appropriate for the Indian water sector: projects are leveraging private sector efficiency with public funding, and are targeting distribution improvements, universal coverage and continuous supply
 - PPP Projects are ignoring vital ingredients that will ensure success and sustainability: project preparation, PPP design and monitoring are weak; projects costs are not optimised, financial and institutional sustainability are not being addressed; employee and citizen communication is weak
-

The projects reviewed in the previous sections represent all the PPP initiatives in urban water supply undertaken in the country between early 2005 and late 2012 with a focus on citywide distribution. Three of these are, as yet, in early stages of implementation, and operational experience is limited. However, across projects, the underlying rationale for PPP; aspects of the preparatory and bid process; and key contract provisions will have a bearing on the operational trajectory and impact achievement of objectives. An analysis of these, across all five initiatives, is captured in this section. Relevant observations culled from international experiences of water PPPs in developing countries are also presented to allow a comparative perspective (Box 4.1).

Observation 1: Distribution Projects Have Been Taken up Where Bulk Water Availability Has Been Assured

A decade ago, cities were largely concerned with bulk supply augmentation. The focus has shifted from bulk water to service delivery or end-user experience. In all cases, bulk water availability has been assured at the start of the projects. Khandwa is an integrated project with a large proportion of investments in transmission and off-take. In Mysore, the city is also investing in bulk water treatment and transmission. In Nagpur, the parallel investments in transmission and treatment far exceed the proposed investment under the PPP project. In Latur, the PPP followed a bulk water augmentation project that improved the availability of water but pushed up operating costs—and as a result, the public sector agencies decided to pursue PPP to implement metering and volumetric tariff to improve cost recovery. Aurangabad is also building a bulk water supply line as part of its concession contract.

Observation 2: Data and Information on the Existing Infrastructure Was Poor

Initiatives to address distribution aspects in existing cities are inherently brownfield projects—and thus closely tied to the nature of existing assets. However, all the contract studies have been executed with poor data. As a result, initial assessments for rehabilitation were underestimated and committed public funds proved inadequate. Two cities, Khandwa and Mysore, are now unprepared to mobilize additional financing, putting the projects at risk. In Latur, the operator discovered that daily water supply was not possible using the existing infrastructure.

It is reasonable to expect that most brown-field water PPP contracts may require adjustment or even renegotiation, given that they are awarded in the context of poor data relating to the existing system and inadequate preparation. A credible and transparent mechanism would help address this issue during implementation; in the absence of this currently, public sector officials are reluctant to exercise judgment to resolve issues objectively and stakeholders look upon any adjustment negatively. Therefore, decision making is escalated to the state government level, as in Khandwa and Mysore, leading to delays. In Latur, this also exposed the project to significant political risks.

Lessons Learned

Lack of accurate data is a real risk for water PPPs. Public agencies should explore contractual approaches that incentivize the operator to cope with this risk. This could include more detailed project preparation, in which operators assume a role of providing incentives to the operator to maximize achievement of service standards within the

BOX 4.1 FINDINGS FROM INTERNATIONAL EXPERIENCE OF URBAN WATER PPPS

Meaningful analysis of the impact of PPPs in improving service delivery and sector outcomes in developing countries has been handicapped by the difficulty in obtaining good performance data in the sector, including baselines from public entities. Analysis from recent reviews of cases that were successful indicate that the biggest and most consistent contribution that private operators have made is in improving operational efficiency (water losses, cost recovery, and collection efficiency) and service quality (coverage, quantum and continuity of supply).

NRW reduction: In Colombia, three of ten water PPPs showed strong gains in absolute reduction in NRW percentage. In Brazil, seven of eight large PPPs significantly reduced water loss levels; Limeira achieved NRW levels of 13 percent. PPP projects in Gabon, Niger, and Senegal achieved NRW levels below 20 percent.

Collection efficiency and global efficiency: In Brazil, several PPP projects (Campo Grande, Campos, Limeira, Niteroi, Manaus, and Tocantins) achieved significant collection increases within a few years. Most management contracts have performed well in improving bill collection. In Yerevan, the collection rate went up from less than 20 percent to 80 percent within five years. In ten out of twelve management contracts, significant gains were achieved in the global efficiency ratio (the ratio of water billed and collected to water input to the system), while the remaining two also showed improvements.

Continuity of supply: In Colombia, all ten PPPs awarded demonstrated significant progress in improving number of hours of supply and six projects awarded in 1997-98 achieved continuity within five to six years of private operations. Ten of twelve management contracts studied showed water rationing was significantly reduced by the end of the contract. Progress was particularly significant in Mozambique, Monagas, La Rioja, and Yerevan. Only in a few cases was no significant improvement achieved.

Coverage: The evidence for increased coverage is mixed. In Argentina, Brazil, Colombia, and Morocco,

private concessionaires on average did not perform demonstrably better than public utilities. In Guayaquil (Ecuador), Jakarta, and Manila concessionaires performed better, but the performance may be attributable to the size and financing advantages available to these cities. In Sub-Saharan Africa, private operators have clearly performed better than public utilities accounting for a 20 percent increase in the household connections although PPPs have only a 9 percent market share. However, this difference also gets diluted when considering more detailed measures of performance.

While projects have not necessarily included targets for financial sustainability in the short term, improved services are expected to result in lower costs and increased revenues from customers. This is further expected to help generate adequate cash flow from operations to invest in expansion, increase the customer base and revenues, and create a virtuous cycle of sustainable operations in the long term. Other findings include the following:

- Improving water supply services and operations in the context of developing countries takes time. For example, as compared to concessions and other long-term arrangements, management contracts have shown a mixed result in reducing water losses. Out of twelve management contracts studied, fewer than half achieved a sizeable reduction, and no significant change occurred in five other cases. This is possibly due to the short-term duration and inherent limitations of the management contract. In Senegal results took ten years to achieve, and in Niger positive results are emerging only after five years of implementation.
- Water PPPs have been successful mainly when implemented within a wider framework of sector reforms. For example, in Chile, Colombia, Côte d'Ivoire, Morocco, and Senegal, the introduction of PPP was a part of a wider reform by the central government to establish a sector framework that supported financial viability and accountability for performance. All these countries had clear policy

to move to cost recovery tariffs in a sustainable and socially acceptable manner. In countries where public sector and private sector co-exist, such as in Morocco and Colombia, benchmarking was promoted at the national level to foster a sense of competition among providers.

- The extent of improvement that can be achieved through a PPP project depends on the allocation of responsibilities and risks. This includes the incentive structure and the nature of the arrangement between the private partner and the government for implementing civil works when the government remains responsible for funding investment.
- Contractual targets must reflect realistic goals in order for PPP projects to be viable. Given the difficulty of setting baselines, a few PPP projects have adopted a flexible approach, which gives the private operator the opportunity to establish the baseline in the first year of operation, under the supervision of an independent technical auditor. For example, in Johannesburg and in Niger, the private operator was tasked with putting in place the necessary framework, and the baseline performance was agreed to in the first year of operations under the control of an independent technical auditor.
- Given the prevailing context of water supply, PPP contracts have been prone to adjustment over time; for the period 1985 to 2000, renegotiation in

the water sector occurred in 74 percent of cases and, on average, just 1.6 years after award. Where undertaken, contract renegotiation has been controversial, fuelling criticism that operators may have taken advantage of adjustments to make financial gains. Transparency in contract regulation has helped to mitigate distrust among stakeholders.

- Poor households have benefitted significantly from increased access (universal coverage) and continuity of supply that was achieved by a significant number of PPP projects. Instances in which public funding has complemented tariff revenues have been most successful in ensuring benefits for the poor. For example, Senegal demonstrated much better results in achieving increased coverage as compared to Côte d'Ivoire. The difference is attributable to the fact that Senegal saw an injection of donor funding while Côte d'Ivoire relied on financing expansion through customer revenues.
- Many of the PPPs classified as broadly successful were implemented by local private operators or investors that had little or no previous experience in operating water utilities. Local private operators serve more than 40 percent of the market as of 2007 and several have performed well. In Brazil, Colombia, and Malaysia, investors with previous experience in construction, engineering, or consulting proved able to operate water utilities satisfactorily.

Sources: Marin 2009; Gassner and others 2008.

initial budget. Contracts could also include clauses that permit changes in scope or service standards to cope with increased costs or have a contingency fund.

Observation 3: None of the Projects Have Targeted Any Capital Investment Optimization

All the projects reviewed have been executed after the inception of JNNURM and rely substantially on public funds made available under the program: from 50 percent in Aurangabad to 90 percent in Khandwa and Mysore. Khandwa, Nagpur, Aurangabad, and Mysore include 100 percent replacement of customer connections and

substantial replacement of distribution networks. In Khandwa, the private investment is 10 percent and in Mysore, under a management contract, the private operator is not putting up any financing. In Nagpur, the operator is required to invest 30 percent of the initial improvement plan, but the city has committed substantial cash flows to the operator against this. Only in Aurangabad is the operator required to invest substantially.

However, the availability of public funds has had an unintended consequence on project development and implementation, in that the imperative for efficiency of capital

deployment has been diluted or compromised. The focus has shifted from rehabilitation to replacement, and the scope of replacement works has further expanded in Khandwa, Mysore, and Aurangabad after the initial design.

As a result, cities are bearing additional costs and the objective of public funding, which was to keep the impact on citizens and cities low, has been negated. In all cases, the PPP design did not build in any incentives for the operator to optimize capital expenditure or succeed in drawing out the more rigorous technical expertise, creativity, and innovation implied in addressing service delivery in the challenging context of existing Indian cities. The approach has been on construction of new assets rather than the selective rehabilitation of existing assets. This recalls the earlier pattern of significant, construction-focused investments in bulk water assets, whereas addressing distribution aspects may benefit, rather, from a focus on operational and technical experience / knowledge.

Thus, not only has financial leverage from the private sector been limited, technical expertise has also not been optimized.

Lessons Learned

In the current funding context, PPP structures must be consistent with the depth of public financing. PPP design should seek to incentivize optimization of capital investments, through a focus on application of technical skills, expertise, and innovation—rather than underwriting risk for the private operator—to maximize the impact of available funds.

Observation 4: PPP Design and Monitoring Are Not Always Consistent with the Rationale for Choosing PPPs

A. It is important to enforce service delivery contractually. In all the contracts (except Latur), the city officials clearly articulate the need to focus on customer service and therefore on distribution improvements. This formed the basis of the rationale for PPP in the cities: in Khandwa and Aurangabad, the promise of daily water supply and 100 percent coverage; in Nagpur, the scaling up of the pilot project and equitable supply; and in Mysore, continuous water supply.

All four contracts thus had a goal for service delivery improvements and included targets for service delivery parameters. However, the targets are not linked to operator revenue in a realistic manner. In Nagpur, only 5 percent of the annual operator revenue is linked to service delivery standards. In Khandwa, the revenue is protected but the concession period is shortened, which is a back-ended impact. In Aurangabad, 25 percent of the operating subsidy provided by the city is linked to performance. In Latur, service delivery targets are not the primary objective of the contract. On the other hand, an aggressive contract in Mysore links approximately 60 percent of the operator's revenue to performance and subjects 21 percent of the contract price to performance guarantees.

While it may be argued that credible targets are difficult to establish, given the initial conditions, once operators have signed up to the targets, clear incentives for meeting them are necessary and meaningful. Moreover, all projects are building fresh assets, and for such areas or components, realistic targets can be set. The linkage between service delivery targets and operator revenue, in the contracts reviewed, is either too liberal or too unrealistic.

Lessons Learned

In the contracts reviewed, the consequences of not meeting the targets or standards are too weak or too unrealistic. The service level objectives should not only influence the PPP choice and contract design but should be further embedded in specific and meaningful contractual commitments. This weakness is especially significant since the private sector is not risking its capital in these projects. Therefore, the incentive for achieving service levels relies significantly on enforceable commitments in the contract. In the absence of such enforcement, the primary objective of PPPs, which is to leverage private sector efficiency, stands compromised. This is further compounded by lack of strong institutional mechanisms to monitor performance.

B. There is an inconsistency in the treatment of standard issues (such as key escalation clauses or changes in law) between contracts, which may have resulted in limited competition. There is no balanced assessment and treatment of risk sharing in any of the projects. Standard clauses such as treatment of escalation in power tariff, change in

law, and compensation in the event of termination, arbitration, and so forth vary significantly among contracts. There is no common approach to prequalification of bidders, which affects bidder interest and competition.

In Aurangabad, the contract transfers all performance and financial risk to the operator. In Nagpur, although the PPP contract is designed to improve operating performance, the city has retained significant risks, and the consequence to the operator for any shortfall in performance is minimal. The city prequalified only three bidders and received only two financial bids. Mysore had a risky contract, but open competition, and received only three financial bids. However, the open competition may have resulted in an aggressive (possibly speculative) bid by one of the companies.

This situation is not necessarily due to lack of awareness; there is adequate experience of PPPs in India to inform the water sector. Aggressive risk-sharing clauses benefit conservative public sector officials who are hesitant to take potentially controversial decisions on risk sharing; and these clauses may also benefit interests that may not be unhappy to see a project fail. This position also benefits some aggressive private sector bidders, as cautious competitors opt out of the process.

Lessons Learned

One of the key indicators for the success of a PPP process is attracting sufficient participation followed by using well established principles for prequalification (aligned with the responsibilities of the operator). Standard commercial risks such as power tariffs or change in law enhance this possibility.

Observation 5: The PPP Contracts Focused on Delivering Technical Improvements While the Financial Sustainability of Operations Has Not Been Addressed in the PPP Design

This has been the case in all the projects except in Khandwa. Other cities will continue to be responsible for providing subsidies from the general budget.

Khandwa is the most financially sustainable project because the operator's revenue is tied directly to the collection of

revenue from users and there is no support from the city. A new tariff was agreed upon to cover operating expenses and recovery of capital. While this is four times the flat tariff currently in place, it has been agreed to by the residents and is to be implemented on completion of the project. In Nagpur and Mysore, the operator's revenue is not linked to water supply revenues, and the gap between the water supply revenue and the operator payments is met from the general budget of the city. Mysore has a short-term performance improvement contract with a fixed price and the financing has been provided by through a state grant and the city budget. Due to the short-term nature of the contact there are no significant vulnerabilities for the budgeted expenditures. But there is no clear framework for financial sustainability for the future. The PPP arrangement expects to improve commercial practices, but after the PPP project, the water supply function will continue to rely on city finances for meeting deficits in recurring costs as well as to finance future expansions.

In Nagpur, the operator receives a fixed rate per unit of water billed and collected. This rate is delinked from the water tariff and does not allow for full cost recovery, and therefore the water supply function will continue to be dependent on city finances for sustainability. In Aurangabad, the city has agreed to provide an annual operating subsidy through the life of the contract, drawn from the general budget of the city.

Thus, cities have (justifiably) insulated the operator from cost recovery risks; however, they do not seem to have put in place any parallel mechanisms to ensure financial sustainability of the water supply function at the city level in the medium to long term. (See Table 4.1 for financial and operational details.)

Lessons Learned

Public funding aims to reduce the cost of initial service delivery improvements in order that cities may dilute the impact of capital expenditure on corresponding tariff. However, it is important to ensure that the PPP design is within an overall framework for long-term financial sustainability and viability of water supply functions for the city, in addition to ensuring viability of the PPP project.

TABLE 4.1 FINANCIAL SUMMARY OF THE FIVE CASE STUDIES

	Khandwa	Aurangabad	Nagpur	Latur	Mysore
Project is concurrent with tariff revision to improve cost recovery	Yes	Yes	Yes	Yes	No
User charges are an integral part of the revenue model of the operator	Yes	Part user charges, part subsidy	Distinct from user charges	Yes	Distinct from user charges
Project eliminates need for operating cost subsidy from the city	Yes	No, but subsidy is capped	No; will require operating subsidy	Yes	No
Project finances part of initial capital costs	10%	50%	30% of distribution network	No	No
Project design includes a solution for financing of change in scope in initial capex	No	No	No	NA	No
Project design includes a solution for financing of future expansions	No	No	No	No	No

Observation 6: Institutional Arrangements Have an Impact on Project Design and Contract Management

In Nagpur, the institutional commitment to PPP did not translate into effective contractual terms that secure service delivery. However, the city has the strongest institutional mechanism for contract management, because the PPP contract is housed within a city-owned utility and is supervised by the utility.

As part of the reform program in Khandwa, the state government transferred the entire water supply function to the Urban Local Body, including tariff setting. The contract reduces dependence on the city because of the city's limited capacity to manage the project. Arrangements to address contract-related issues have been proposed, such as a committee to revise tariffs based on the formula specified in the contract. A contract monitoring committee, consisting of municipal officials and a design consultant, has also been set up at city level, and the state government will continue to provide technical assistance to the city.

In Mysore, the Water Board, a parastatal entity, has limited experience executing or monitoring a performance contract. The contract arrangement is unique: although the formal counterpart for the contract is the city, all operational

interfaces are with the Water Board, which is not directly answerable for service delivery. On the contrary, the Board may benefit from negative perceptions regarding PPPs since this would strengthen its position as an executing agency and operator. This has resulted in a contract that is unrealistic on performance expectations and has poor risk sharing and substantial penalties for the operator.

In Latur, the parastatal entity, MJP, is the primary counterpart in the tri-partite arrangement. MJP prioritized commercial improvements in the PPP design—which are of primary interest to itself—rather than service delivery improvements. Not having taken their views adequately on board, MJP was also unable to secure city and citizen cooperation during implementation.

In three out of the five cases, serious scope expansion (Khandwa, Mysore) and/or disputes (Latur) have arisen during the implementation stage and led to a stalemate. In all three cases, though the city is responsible for resolution of these issues, the institutional mechanisms put in place were not able to do so. All three projects lack independent arbitration, and possibly this may have also limited the options available to the operator to resolve the issue. All five contracts require active participation of the city to audit service standards, verify capital expenditure plans,

and adjust operator fees and/or tariffs. The experience so far indicates that it will be a serious challenge to all five cities.

Lessons Learned

A meaningful focus on service delivery improvements and realistic contract management is possible only when the entity accountable for service delivery is the key counterpart to the contract and clear institutional mechanisms are provided to buffer the contract against external and extraneous interests. Institutional fragmentation weakens PPP design and implementation. The PPP designs require the city to develop sophisticated contract management skills and decision-making capability, which they appear to lack.

Observation 7: Communication and Stakeholder Engagement Was Weak in All Projects

None of the projects included any type of opinion research or communications assessment to help understand the key opinions and attitudes around reform, which could have fed into a broader, more responsive communication strategy.

In Khandwa, the climate-for-reform rationale for PPP was well explained and accepted by the public, against the backdrop of almost nonexistent supply. This is reflected in the willingness to pay for improved supply. Also, at the time, the city had strong political leadership at the city level and administrative leadership at the state government level. The Nagpur project is strongly supported by local political leadership across party lines, but public sentiment and support varies. There is persistent public skepticism of the rationale, expressed in ongoing opposition to the project, in spite of a number of stakeholder meetings held by the corporation.

Mysore did not have either political or administrative leadership in support of the PPP initiative. On the other hand, the city had the PPP decision thrust upon it, and consequently, communication of the rationale was weak early on. As a result, the initial opposition in Mysore was the strongest. However, this has subsequently abated, as a result of JUSCO's concerted information and public outreach program, and the quick gains demonstrated by the PPP. Latur had negligible communication with citizens during project design and limited political consensus. As a result,

political opposition was able to use citizen apprehensions regarding metering to criticize the project and slow down implementation. This was compounded by the operator's inability to rectify technical deficiencies in the system rapidly enough to quell initial opposition.

Stakeholders also lack a credible platform to express their views and grievances; the city government is seen as implicitly favoring the private sector. Political representatives present the only accessible platform. However, once stakeholder opposition is politicized, meaningful resolution of issues become difficult. In such a situation, an independent regulator or an ombudsman can provide an alternative institutional space to stakeholders where their grievances can be addressed.

The Government of India, in a recent decision, now requires PPP projects to disclose information voluntarily. Communication programs should be designed to reflect this principle, and platforms for interaction should implement it proactively. Together, these approaches can help the city generate an informed political and citizen opinion around the project.

Lessons Learned

If upfront communication about the rationale for a PPP is weak it puts the project at risk. This will have a cascading effect when citizen support is poor and political consensus across party lines is lacking. Projects are also vulnerable to vested interests and political opposition. Communication programs should be implemented widely and well before the bidding of the project. An effective communication strategy helps mitigate political, social, economic, technical, and even commercial risk. Where there is limited buy in, an initial focus on gaining and communicating quick results helps to mitigate the damage that can be done by lack of stakeholder buy in.

Observation 8: Staffing and Transitioning of Staff Can Create Opposition from Within

Transitioning of city employees to the private operators is challenging, as loyalties and incentives are not always aligned. When public sector employees are delegated to the operator but continue to be paid by the government, it can create significant employee resistance. This is particularly

true when contracts are short term, such as in Mysore, where the public sector employees work for the private operator but their salaries are paid by MCC and KUWSDB. This creates a disconnect between payment and performance and, as a result, the operator has had difficulty in securing support from the employees.

In Aurangabad, the operator bears (in addition to salaries) the revision in salaries of the employees deputed to the operator by the city but has no control on the extent of revision. On the other hand, Nagpur has a strong arrangement, where both the operator and the staff have the freedom to choose who will work in the private organization. Both sides are also provided sufficient time to familiarize themselves with each other before they make a final choice.

Lessons Learned

Conflicts occur when staff are transferred physically to a private operator but remain tied administratively to the city. Staff may transition better if they are able to see a clear gain for both themselves and the project if it succeeds. Contracts that provide clear incentives to employees help build staff ownership to work toward a successful project.

Observation 9: Projects Relied on External Grants or Public Agencies for Investments

All projects relied either on external grants or, in the case of Latur, on a public agency to implement linked investments (Table 4.2). In the three cases where implementation

has progressed (Khandwa, Latur, and Mysore), this reliance has led to problems in implementation. Khandwa and Mysore faced expansion in scope and the public agency was unable to resolve this. Khandwa also faced delays in receipt of public grants. In Latur, the public agency was unable to implement committed capital expenditure due to unavailability of funds.

None of the contracts have a practical or bankable mechanism for resolving either delays in receipt of grants or the need for additional grants due to scope expansion.

Lessons Learned

Appraisal of PPP projects also has to take into account the capacity of the city to manage changes in scope and delays in funding. External grants are helping cities take up projects far beyond their financial capacity, but they also make them vulnerable to unforeseen events. Project preparation, financing plan, and tariff/fee design should build in a contingency to handle these issues.

Observation 10: Market Interest Is Fairly Strong but Dampened by the Poor Treatment of Risks

The market appetite for PPPs appears to be strong. The earliest PPP attempt in Latur witnessed six prequalified bidders, all but two being domestic bidders. Aurangabad received eleven applications for prequalification, representing consortia with domestic as well as international firms.

TABLE 4.2 FUNDING MECHANISMS FOR THE FIVE WATER PPPs

	Khandwa	Aurangabad	Nagpur	Latur	Mysore
Is the city responsible for providing grants for initial capital investment or for linked investments?	Yes	Yes	Yes	Yes	Yes
Are public funds available unconditionally and are they secured?	No	No	No	No	No
Did the projects face delays in availability of committed funds?	Yes	Not tested yet	Not tested yet	Yes	No
Was the city able to resolve expansion in scope quickly?	No	Not tested yet	Not tested yet	No	No
Did the projects suffer due to reliance on public funds/public execution?	Yes	Not tested yet	Not tested yet	Yes	Yes

In Nagpur, three consortia were prequalified. While this indicates the receptivity to PPP project opportunities, the number of financial bids received has been low in all projects: four in Khandwa, three in Mysore and Latur, and two in Nagpur and Aurangabad. Though interest appears high, participation appears limited either because of prequalification criteria or because of poor project preparation/PPP structuring.

The prequalification criteria used vary significantly from project to project. In this regard, international operators have tended to seek balanced risk sharing, while domestic operators have inherently shown a willingness to take higher risks, possibly to establish their credentials in water PPPs or due to greater comfort with the operating environment. Poorly designed prequalification criteria can result in a group of bidders that is either too risk averse or excessively risk taking. Bidder response is also a function of project design, which must seek to ensure that both local knowledge and international expertise, as relevant, are available to cities.

A related issue is that of eliciting operator behavior that is in alignment with sector objectives, that is, focused on a long-term service delivery perspective rather than on quick profits from construction activities. Most water operators are integrated players with interests in construction and equipment supply. Poorly designed PPP structures may encourage operators to focus on short-term gains through related party contracts for construction and equipment supply rather than on hard-earned gains through improving system efficiencies in the long term.

Lessons Learned

A standard approach to prequalification has increased competition in other infrastructure sectors in India, such as highways and ports. A similar approach may be needed to provide predictability to potential domestic and international bidders. Improving project preparation and PPP structuring is also important to convert the bidder interest in the sector to bidding for specific projects.

Observation 11: All Projects Have a Goal of Universal Coverage and Common Service Standards for All Consumers

All five projects include a target of universal coverage and common service standards, including continuity of supply, for all consumers. Standposts are being replaced with house service connections. Operators are encouraged to provide group connections to poor customers. Tariff concessions are also common.

Lessons Learned

In response to social issues, all contracts have proactively provided for service delivery options to consumers as well as tariff concessions: bulk supply to poor neighborhoods, fortnightly payment options, special tariff for group connections, and so forth. It would also have been useful to explicitly state the subsidy that the city would provide for connecting poor consumers to the network. Explicit arrangements in the contract would allay the apprehensions of the urban poor as well as encourage the operator to connect the poor.

V. Conclusion

Indian cities are the engine for the country's economy, accounting for over 60 percent of GDP and over 50 percent of new jobs created (2001–11). Infrastructure, especially water and sanitation, is central to support the growth momentum through urbanization. Partnerships are important to this agenda, including the aspect of meeting investment targets, and several of GoI's programs seek to coordinate public and private financing toward this. Although there has been limited financial leverage from private sector for urban water supply projects so far, the experience of PPPs in the sector has recorded significant achievements over the past two decades. The most important of these has been the shift in focus to service delivery and the increased ownership demonstrated by cities toward PPPs, leading to increased willingness to explore and design solutions that suit their specific context and needs. In addition, projects have succeeded in eliciting interest from both domestic and international operators, through well-established competitive selection processes. There is good ground for forthcoming initiatives to build upon.

The projects reviewed in this paper are making headway in the right direction: all projects focus on distribution and service delivery, on the basis of competitive procurement, and have drawn upon public funds and subsidies to minimize tariff impacts on consumers. They show that PPPs backed by public funding are offering a viable option to local governments that do not have the technical and managerial capacity to improve service delivery. This direction is likely to persist in the short to medium term: private sector efficiency, rather than privately mobilized capital, will be the predominant focus of forthcoming PPPs until such time as the water sector enables commercially viable projects. While this overall direction is relevant and promising, the context within which operators are required to

KEY POINTS

- Cities need to substantiate their willingness to engage with private sector with better project preparation and meaningful contracts
- Cities need to focus on strengthening public sector institutions to build on the private sector's contribution
- Building public sector capacity to manage PPPs and sustain the project gains is an important task
- The federal Government has high stakes as well as leverage to ensure that cities and states adopt the desired principles

deliver in an urban water supply distribution mandate in India is complex. Meeting the objectives of improved service delivery rests on the details of project design and in embedding objectives meaningfully in contract documents through realistic targets and effective incentives. This calls for adequate information to support the contract mandate and also for a readiness to accommodate information volatility, and hence cost uncertainties. Future initiatives will have to demonstrate more robust diagnostics underpinning project preparation alongside mechanisms that allow for flexibility and transparency in resetting targets or renegotiating funding allocations, as and if necessary. This may be facilitated by strong monitoring and oversight—backed by a comprehensive information-sharing and reporting regime—as may be exercised by a third party, independent technical supervisor.

The Institutional Aspect

That public funding is making PPP projects possible, and increasing their acceptability, owes much to the growing perception of PPPs as arrangements that may facilitate a transition to a more sustainable institutional and governance context in the sector. It is recognized that reform of these aspects may otherwise prove difficult or lengthy. Thus, while “cities could, in principle, improve their management skills and deliver better quality of services, given the complex web of relationships, often infusion of a new organization or private participation tends to catalyze success.”³³ Improvements in sector governance are recognized as valid justification for undertaking PPPs.

In order to be credible, such improvements must involve and be embedded in an institutional counterpart that is able to continue and build upon them beyond the term of the PPP project. Capacity building of the local service

provider—extending, if necessary, to establishing an entity responsible for city water supply—to sustain the changes introduced would be an important factor in this. Forthcoming projects will benefit in according greater attention to this aspect through the contract arrangement. This would necessarily include considerations of financial sustainability of water supply operations, through a city utility, in the long term.

The Issue of Public Sector Capacity

Designing PPP projects that rest upon an informed understanding of technical aspects and a balanced perspective of objectives, responsibilities, risks, and rewards is a complex undertaking. A key challenge in this has been weak competencies in the public sector, both in state government and in the implementing entities at local level,³⁴ as, over the years, local bodies have nurtured competencies in tune with traditional models of delivery of services. Projects at the formulation stage will benefit from initiatives to build public sector institutional capacity, in order that asymmetries in information and understanding between public and private sector

partners may be bridged. While this may best be addressed at the level of the states and local bodies, the federal government is perceived to have a proactive role in incentivizing and facilitating the process through central level support systems and tools to streamline contract design and documentation. The leverage the federal government has while appraising projects and disbursing grants is relevant in this respect: an appraisal process and disbursal mechanism that encourage sound project preparation and associated reforms can significantly incentivize the adoption of desirable principles into a project.

No project in India yet has adequate operational experience to allow a fair evaluation of the impact of private sector involvement on cost-effective improvements in service delivery at a city wide scale. Yet decades of negligence under public sector management have created a fertile ground for alternate options to be explored. The opportunity for the private sector is enormous, but it must deliver, and convincingly. This rests upon both partners and the partnership.

Appendix: City Project Sheets

Project Sheet: Khandwa

KEY PROJECT DATA				
Name of the City	Khandwa	Service Coverage	51%	
Size	0.2 Million	Continuity of Supply	Two to three times a week for 30 minutes at a time	
Location	Madhya Pradesh, Central Western India	Water availability	60-70 litres per capita per day	
Institutional Structure - O & M	Water department of Municipal Corporation	NRW	Unreliable estimates of 41.9% (no metering)	
Institutional Structure -Planning and investments	Water department of Municipal Corporation	Operating Cost Recovery	13.30%	
Scope of PPP	Construction of new bulk water off take, treatment and transmission facilities Rehabilitation of distribution network, metering of all consumers Operation of distribution network and supply to customers on 24 x 7 basis Billing and collection Responsibility for financing approximately 10% of capital costs and all cost escalations			
Term of Contract	25 Years			
Status of Project	Awarded in 2009, the project is in the construction phase and is expected to commence operations in early 2013			
Investments in Phase 1	USD 18.8 Mn	Public funds provided as grants	90%	Private finance 10%
Project Preparation	The city received assistance from the State Government during project preparation and procurement. Political consensus for the PPP option was secured. Technical estimates of rehabilitation were poor.			
Bid Process	Single stage, three step international bidding; qualification assessment, followed by technical evaluation and financial evaluation			
Number of prequalified bidders	Not applicable	Number of financial bids received	4	
Selection Criteria	Least end user tariff			
CONTRACT STRUCTURE AND RISK SHARING				
Revenue model for the operator	User charges from consumers			
Consumer tariff	Determined through bidding process and escalated based on pre agreed formulae.			
Source of operating subsidy if any	None anticipated as per contract.			
Key performance requirement	Implementation of new bulk water supply project, achievement of continuous water supply	Linkage of key performance requirement to operator revenue	Operator revenue depends on the quantum of water made available for consumption to consumers. Linkage to other performance standards such as continuity, quality and customer service are weak.	
Key investment phase responsibilities of the city	Providing financing for 90% of the investments budgeted (as per bid)	Key operating phase responsibilities of the city	Tariff revisions as per agreed formulae	
Risk	Allocation	Remarks		
Change in project scope	City	Financial capacity of the city to bear consequences is poor.		
Capital Cost over run	Operator			
Delays in receipt of grants	Operator to manage delays, impact to be borne by city	Financial capacity of the city to bear consequences is poor.		
Operating cost escalations	Substantially by Operator		Tariff is adjusted based on price indices.	
Investment risk	Operator			
Time over runs in rehabilitation/ investment	Operator		Delays affect Operator's ability to collect user charges	
Demand Risk	Operator			
Revenue Collection risk	Operator			
Condition of pre-existing assets	Operator		Bulk water assets were to be newly built. Only a part of the distribution network was to be new and the condition of the network that was to be retained was not known well.	
Baseline information risk	Operator		Information to forecast consumption and revenues is inadequate.	
Expansion	City		Ability of the city to bear this responsibility is weak	

Project Sheet: Nagpur

KEY PROJECT DATA					
Name of the City	Nagpur	Service Coverage	80%		
Size	2.5 Million	Continuity of Supply	12 Hours per day		
Location	Maharashtra, Central India	Water availability	135 litres per capita per day		
Institutional Structure - O & M	Water department of Municipal Corporation	NRW	Estimated at 54%		
Institutional Structure - Planning and investments	Water department of Municipal Corporation	Operating Cost Recovery	59.70%		
Scope of PPP	Conversion of intermittent supply to continuous supply				
	Rehabilitation of distribution network, replacement of house service connections and metering, rehabilitation of select treatment plants				
	Operation of treatment plants and distribution network, supply to consumers				
	Billing and collection				
	Financing of 30% of initial capital expenditure				
Term of Contract	25 Years				
Status of Project	Awarded in 2011, Operator has taken over assets and has commenced rehabilitation				
Investments in Phase I	70.52 USD Mn	Public funds provided as grants	70%	Private Finance	30%
Project Preparation	The project was based on an overall water sector roadmap. A pilot project preceded the decision to implement continuous water supply for the entire city. Political consensus was secured.				
Bid Process	International two stage competitive bidding				
Number of prequalified bidders	3	Number of financial bids received	2		
Selection Criteria	Least operator fee per unit of water billed and collected from consumers				
CONTRACT STRUCTURE AND KEY RISKS					
Revenue model for the operator	Fee per unit of water billed and collected from consumers.				
Consumer tariff	Delinked from PPP. The city will fix tariff independently				
Source of operating subsidy if any	Required since tariff realisation will not cover city's cost and operator fee. Subsidy from the general budget of the city.				
Key performance requirement	Achievement of continuous water supply	Linkage of key performance requirement to operator revenue	No direct linkage. A maximum of 5% of operator fees deductible as liquidated damages for all performance shortfalls in aggregate. Repayment of investments financed by Operator is through an annuity like structure.		
Key investment phase responsibilities of the city	Providing 70% of investment requirement	Key operating phase responsibilities of the city	Supply of raw water, electricity		
Risk	Allocation	Remarks			
Change in project scope	City	City is responsible for financing any change in scope.			
Capital Cost over run	City	Escalation risks are addressed through adjustment. The city bears the risk of any increase in the initial capital investments required to meet performance standards			
Delays in receipt of grants	City				
Operating cost escalations	City	Operator fee is reset to adjust for actual expenditure			
Investment risk	City	There is no material impact on operator compensation.			
Time overruns in rehabilitation/ investment phase	Substantially by the city	There is no material impact on operator compensation due to delays.			
Demand Risk	City	Operator is compensated based on a normative billing in the first five years. The fee is reset after five years if the business planning assumptions change			
Revenue Collection risk	Operator	The operator bears the risk after the first five years.			
Condition of pre-existing assets	City	Any change in investments is borne by the city			
Baseline information risk	City	Increase in investments is borne by the city. Any change in business planning assumptions leads to fee reset.			
Expansion	City				

Project Sheet: Latur

KEY PROJECT DATA					
Name of the City	Latur	Service Coverage	47%		
Size	0.38 Million	Continuity of Supply	Twice a week, 3 to 4 hours each time		
Location	Maharashtra, Western India	Water availability	100 litres per capita perday		
Institutional Structure - O & M	Water department of municipal corporation which delegated the function to the Water Board	NRW	No reliable estimates		
Institutional Structure - Planning and investments	State level water supply board (Water Board, MJP)	Operating Cost Recovery	34.00%		
Scope of PPP	Operation of the water supply system Technical inputs for system improvement/ up gradation Metering of all consumers Billing and collection Operational efficiency improvements				
Term of Contract	10 years				
Status of Project	Awarded in June 2008, the contract is currently under suspension				
Investments in Phase 1	Not applicable	Public funds provided as grants	NA	Private Finance	NA
Project Preparation	Quality of existing assets not documented adequately. The asset condition did not permit achieving performance parameters expected from the Operator. Stakeholder engagement proved to be inadequate.				
Bid Process	Two stage international bidding				
Number of prequalified bidders	6	Number of financial bids received	3		
Selection Criteria	Highest net present value of payments to Water Board.				
CONTRACT STRUCTURE AND RISK SHARING					
Revenue model for the operator	User charges from consumers less fixed payments to Water Board				
Consumer tariff	Consumer tariff pre-determined for the life of the contract (including periodic escalations)				
Source of operating subsidy if any	Not applicable. The Operator was required to share the operating surplus with the Water Board.				
Key performance requirement	Daily water supply. Commercial improvements (legalising illegal connections, metering and volumetric billing)	Linkage of key performance requirement to operator revenue (Performance risk)	Operator revenue was entirely from user charges which is directly linked to performance.		
Key investment phase responsibilities of the city	Implementing the pre agreed investment plan. Supporting the Operator in achieving regularisation of illegal connections and metering of at least 10000 connections	Key operating phase responsibilities of the city	Supporting the Operator in all commercial functions. Any major capital expenditure.		
Key Risk	Allocation	Remarks			
Change in project scope	Water Board	Water Board is responsible for meeting all major capital expenditure			
Capital Cost over run	Water Board				
Operating cost escalations	Substantially by Operator	Electricity tariff revision beyond a threshold is borne by Water Board			
Investment risk	Water Board	in achieving regularisation of illegal connections and metering of at least 10000 connections			
Time overruns in rehabilitation/ investment	Operator	Delays affect Operator's ability to collect user charges based on volumetric tariff			
Demand Risk	Operator	Significant since current consumption is not known			
Revenue Collection risk	Operator	Mitigated by disconnection policy			
Condition of pre-existing assets	Operator	Service standards have to be met without any significant fresh investments			
Baseline information risk	Operator				
Expansion	Water Board				

Project Sheet: Aurangabad

KEY PROJECT DATA					
Name of the City	Aurangabad		Service Coverage	NA	
Size	1.2 Million		Continuity of Supply	Alternate day supply	
Location	Maharashtra, Western India		Water availability	110 liters per capita per day	
Institutional Structure - O & M	Water department of Municipal Corporation		NRW	Estimated as at least 33%	
Institutional Structure -Planning and investments	Water department of Municipal Corporation		Operating Cost Recovery	48.50%	
Scope of PPP	<p>Construction of new off take, transmission and treatment facilities</p> <p>Reconstruction of the entire distribution network to achieve metered continuous water supply</p> <p>Operation of the entire water supply system and supply to consumers</p> <p>Billing and collection</p> <p>Financing of 50% of initial capital expenditure</p>				
Term of Contract	20 Years				
Status of Project	Awarded in 2011, Operator is in the preparatory stage				
Investments in Phase 1	USD 144 Mn	Public funds provided as grants	50%	Private Finance	50%
Project Preparation	Detailed project report prepared with a focus on bulk investments. A water audit report with sample assessments of distribution network and NRW estimates was available. Concerns of pre-qualified bidders about the reasonableness of risk sharing was not fully addressed in the bidding stage.				
Bid Process	International two stage competitive bidding				
Number of prequalified bidders	9	Number of financial bids received	2		
Selection Criteria	Least operating subsidy to be provided by the city. The starting subsidy is escalated at 6% per annum.				
CONTRACT STRUCTURE AND RISK SHARING					
Revenue model for the operator	User charges collection from consumers, Operating subsidy provided by the city from the general budget during the entire term of the contract.				
Consumer tariff	An escalating tariff curve has been pre-fixed for the contract duration by the city.				
Source of operating subsidy if any	The gap between cost recovery tariff and the pre-fixed tariff is met by the city through an annual operating subsidy.				
Key performance requirement	Construction of bulk water assets. Rehabilitation of distribution network. Achievement of continuous water	Linkage of key performance requirement to operator revenue	25% of operating grants are linked to performance parameters.		
Key investment phase responsibilities of the city	Providing 50% of investment requirement as grant. Any shortfall or delay has to be met by Operator. Shortfall in public funding will be compensated by extending concession period, which is not a fully bankable solution.	Key operating phase responsibilities of the city	Securing raw water allocations; providing annual operating grant; implementing the pre-determined tariff structure; maintaining payment security accounts		
Risk	Allocation	Remarks			
Change in project scope	City	Mode of compensation to the Operator is not clear and may not be bankable			
Capital Cost over run	Operator				
Delays in receipt of grants	Operator to manage delays, impact to be borne by city	Operator to arrange alternative financing. The adjustment mechanisms provided are not bankable.			
Operating cost escalations	Substantially by Operator		Electricity tariff revision and raw water tariff revision beyond a threshold are borne by the city.		
Investment risk	Operator				
Time over runs in rehabilitation/ investment	Operator				
Demand Risk	Operator				
Revenue Collection risk	Operator				
Condition of pre-existing assets	Operator				
Baseline information risk	Operator				
Expansion	Operator at the cost of city				

Project Sheet: Mysore

KEY PROJECT DATA				
Name of the City	Mysore	Service Coverage	79%	
Size	0.98 Million	Continuity of Supply	4.5 Hours per day	
Location	Karnataka, Southern India	Water availability	248 litres per capita per day	
Institutional Structure - O & M	Water department of Municipal Corporation	NRW	Estimated 52.36%	
Institutional Structure -Planning and investments	State level water supply and sewage board (Water Board)	Operating Cost Recovery	51.70%	
Scope of PPP	Conversion of intermittent supply to continuous supply			
	Rehabilitation of distribution network and metering of all consumers			
	Operation of distribution network and supply to customers for a period of two years			
	Billing and collection			
	No financing responsibility			
Term of Contract	6 Years			
Status of Project	Awarded in 2009, the project is in the rehabilitation phase.			
Investments in Phase I	USD 21.77 Mn	Public funds provided as grants	100%	Private Finance
				0%
Project Preparation	Quality of the technical report which formed the basis for the project was poor. Stakeholder communications and acceptance was inadequate.			
Bid Process	Single stage, three step international bidding; qualification assessment, followed by technical evaluation and financial evaluation			
Number of prequalified bidders	Not applicable	Number of financial bids received	3	
Selection Criteria	Least bid for rehabilitation cost and O & M fee			
Revenue model for the operator	Rehabilitation fee based on quantities used and unit rates (as per Operator bid) and O & M fee (as per Operator bid)			
Consumer tariff	Delinked from PPP. The city will fix tariff independently			
Source of operating subsidy if any	Operator fee for O & M borne by the city out of the general budget.			
CONTRACT STRUCTURE AND KEY RISKS				
Key performance requirement	Achievement of continuous water supply	Linkage of key performance requirement to operator revenue	Approximately 60% of the Operator fee for O & M is linked to 8 performance parameters. 10% of the savings from initially budgeted capital costs is provided as an incentive.	
Key investment phase responsibilities of the city	Providing financing for 100% of the investments budgeted (as per bid)	Key operating phase responsibilities of the city	Supply of treated water	
Risk	Allocation	Remarks		
Change in project scope	City	Not clear. The city bears the risk but the Operator is not allowed to propose deviations beyond a narrow band.		
Capital Cost over run	Operator			
Delays in receipt of grants	City			
Operating cost escalations	Operator			
Investment risk	City	Operator bears the risk to the extent of performance component of the O & M fee.		
Time overruns in rehabilitation/ investment phase	Operator	Delays affect Operator's remuneration (performance component)		
Demand Risk	City	Significant since current consumption is not known		
Revenue Collection risk	City	One of the performance parameters of the Operator is overall increase in revenue collection, though the revenue risk is borne by the city.		
Condition of pre-existing assets	Operator	The project was designed based on partial rehabilitation of distribution network. Quality of assets to be retained was not known.		
Baseline information risk	Operator	Information on quality of assets was inadequate.		
Expansion	City			

Endnotes

1. For more information on the achievement of Indian water PPPs, see *Trends in Private Sector Participation in the Indian Water Sector: A Critical Review* (WSP 2011).
2. This excludes pilot initiatives (KUWASIP, Nagpur) and bulk and industrial/commercial water supply projects (Dewas, Chennai, Kolkata, Haldia, and Naya Raipur). Initiatives in Madurai and Bhiwandi were nonstarters, and the initiative in Shivpuri, identical to the Khandwa project, was not undertaken.
3. GoI 2011a; ADB 2007; WSP-SA 2007.
4. This sections draws upon the WSP study, *Trends in Private Sector Participation in the Indian Water Sector: A Critical Review* (WSP 2011).
5. By comparison, projects whose performance was reviewed in *Public-Private Partnerships for Urban Water Utilities* (Marin 2009), include 15 projects serving 22.15 million in Africa; 7 projects, serving 22.3 million in East Asia and the Pacific; 4 projects covering 2.9 million in Europe and Central Asia; and 41 projects serving 49.7 million in Latin America. All projects were undertaken after 1993, with the exception of the lease affermage in Côte-d'Ivoire, initiated in 1961 and serving 8.7 million.
6. Distribution focus is considered important, since traditionally the focus was only on enhancing bulk water supply capacity, with little consideration of improvement in service to the end-user: without improvements in distribution, service delivery to the customer will not improve.
7. This excludes pilot initiatives (KUWASIP, Nagpur) and bulk and industrial/commercial water supply projects (Dewas, Chennai, Kolkata, Haldia and Naya Raipur).
8. Certain facilities of the Indian Railways, which service Khandwa, were also relocated as a result of water shortage.
9. The federal share is through the JNNURM Program.
10. See Khandwa PPP water supply project information in the IFC Project Database, online: <http://ifcext.ifc.org/ifcext/spiwebsite1.nsf/ProjectDisplay/ESRS30859>.
11. As against this, the KMC levies a flat monthly tariff of Rs 50 per household.
12. October 2013.
13. Figure taken from the 2011 Census of India (GoI 2011b); censusindia.gov.in.
14. As against Rs 10,500 per connection (at 2008 prices) for total infrastructure replacement in KUWASIP.
15. It was not clearly stated that the lowest financial bid would win. Instead, the term “evaluated” was introduced. *Post facto*, it can be said that this was misused.
16. Chary, Srinivas. “24x7 Water Supply Project for Nagpur City.” Presentation by ASCI (Administrative Staff College of India). PDF accessed at Ministry of Urban Development, Government of India website: http://urbanindia.nic.in/programme/lsg/lsg_presentation/ASCI/Nagpur%20PPP-dist%20copy.pdf.
17. The study was not very quantitative.
18. October 2013.
19. The MJP is the state level entity mandated with engineering and construction of water supply infrastructure in the state of Maharashtra. It had a monopoly on capital investments until the year 2001.
20. 2011 Census of India (GoI 2011b); censusindia.gov.in.
21. On cash basis, without considering unpaid liabilities.

22. The MJP admits to its inability to rectify these without external technical inputs.
23. Originally an employee of Hydrocomp.
24. It is not clear whether it was continued interest to pursue the arrangement or the political overlay that kept the contract alive.
25. Current service levels, however, are not well documented.
26. Comprising SPML Ltd., National Water and Sewerage Corporation, and VA Tech Wabag Ltd.
27. A joint initiative of the Department of Economic Affairs and the Asian Development Bank.
28. The financial bid was 79 percent higher in any case.
29. Residual amounts are estimated to be approximately 60 percent (or Rs 374.7 million) of the annual grant (Rs 630 million) in the year 2012–13. The grant is escalated at 6 percent per annum. AMC carried out an internal assessment of its ability to pay the annual grant quoted by the bidder prior to accepting the bid. AMC concluded that strict financial discipline, better tax collection efforts and new sources of revenue will be needed, among other measures to meet its financial commitments.
30. It is unclear if minimum requirement is calculated as a yearly average. If the requirement is not measured as a yearly average, and if even a one-time failure attracts deduction, the revenue risk to the operator increases.
31. 2011 Census of India (GoI 2011b); *censusindia.gov.in*.
32. A state level entity mandated with water supply.
33. HPEC 2011.
34. Devkar 2012.

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