



Ministry of Urban Development
Government of India



Confederation of Indian Industry

Compendium on Public Private Partnership in Urban Infrastructure

Case Studies

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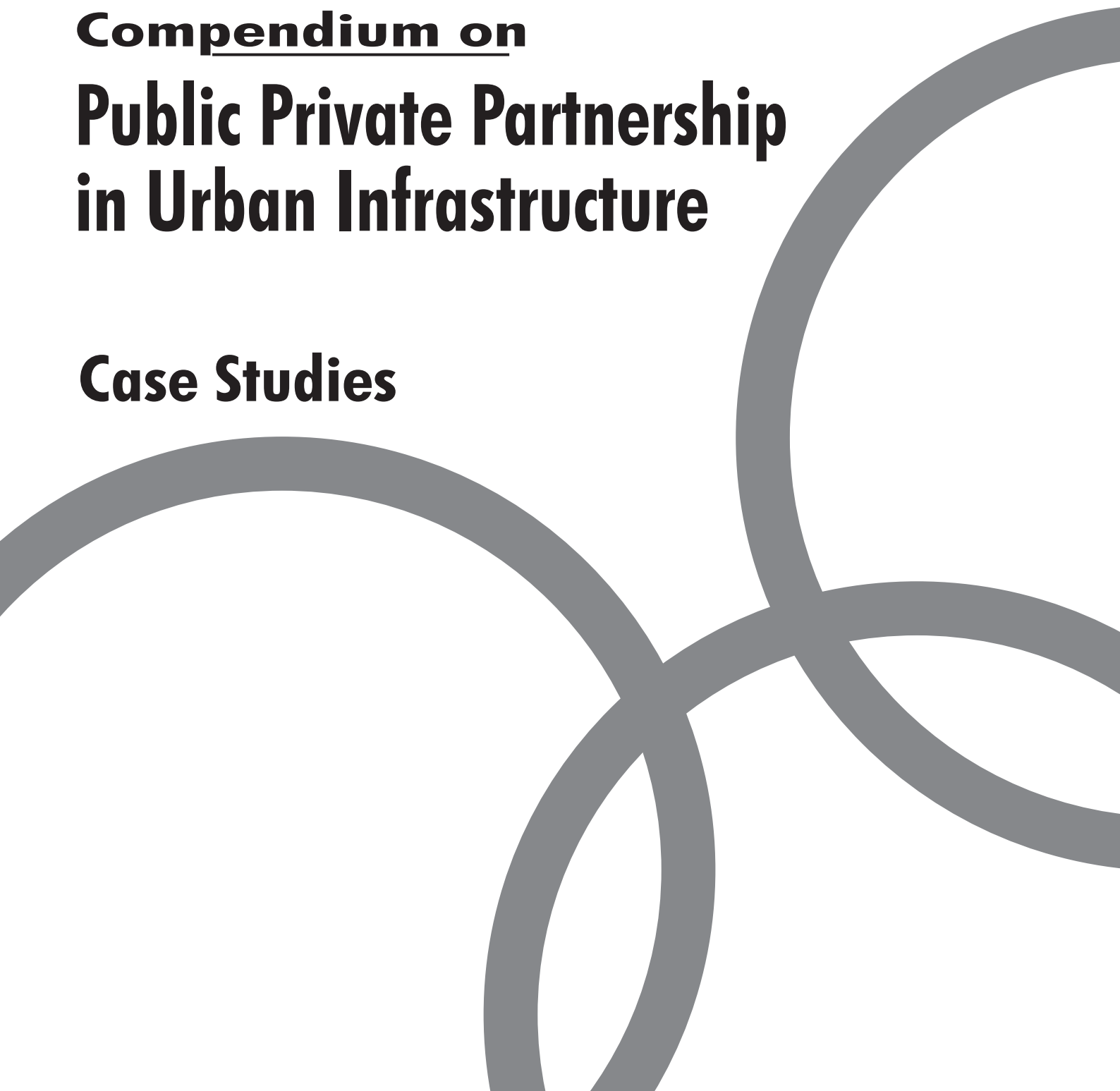
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Foreword

India has the second largest urban population in the world with more than 300 million people living in towns and cities. By 2021, the figure is expected to cross 40% with 74 million-plus urban agglomerations.

To meet the challenges of rapid urbanization, the Government of India has launched the Jawaharlal Nehru Urban Renewal Mission (JNNURM) in 2005 with an overarching objective to strengthen and empower urban local bodies / municipalities and to catalyze investment, both public and private, for urban infrastructure and amenities.

Over a short span of 3 years, several urban local bodies and municipalities have come up with innovative ideas to attract private sector as a partner to build, operate and manage urban infrastructure and amenities.

The compendium on Public Private Partnership in Urban Infrastructure – Case Studies, is an initiative to highlight some of the commendable work being done by municipalities / urban local bodies. The compendium is expected to serve as a source of learning and sharing of experiences on PPP in urban infrastructure.

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Water Supply & Sewerage

Water Supply & Sewerage Project (Salt Lake, Kolkata)

1. Project Description :

Sector-V of Salt Lake is considered to be the IT & ITeS hub of West Bengal. The Government of West Bengal has identified Sector V, Salt Lake, Kolkata as a growth centre for information technology industries. The Government has established a separate industrial township authority called Nabadiganta Industrial Township Authority (NITA) for Sector-V. At present there is no organized water supply and sewerage systems in the Township. Thus, the industrial units in Sector-V have to depend on ground water based water supply and on-site sanitation at their own costs. The Government of West Bengal proposes to dispense with indiscriminate extraction of underground water to prevent environmental hazards.

With a view to providing a **healthy environment, KMDA had planned a combined Water Supply-cum-Sewerage Project for the entire township through PPP by invoking the PPP format of Build, Operate and Transfer (BOT)**. The implementation and management of the project was to be given over to a competitively selected private sector entity for a period of 30 years initially and renewable for another 30 years. Accordingly, KMDA devised the terms and conditions of bidding prior to inviting competitive bids.

2. Bidding Process :

- Fixation of eligibility criteria for the applicant bidders in terms of past experience in the related field, net worth, annual turnover etc.
- Making available to the applicant bidders the broad technical parameters for the Project as follows:

Water Supply:

- 1-mg. capacity elevated reservoir at an identified location within Sector-V for which about a half-acre plot will be made available;
- A dedicated main of 750 mm dia. from the source near Central Park to the elevated reservoir in Sector-V over a length of about 3 km.;
- UGR near Indira Bhavan for storage and stable supply through pumping

- Branch lines along individual roads within Sector-V and such lines connected to the dedicated main;
- Industrial premises to get connection from the piped network (to be created) to draw treated surface water.

Sewerage:

- About 10000 metre length of sanitary sewer line network to be laid within Sector-V
 - The trunk sewer will be terminated through lifting/pumping station (of 4 mld) to the sewage treatment plant (STP) that may be located near Munshir Bhery or any other suitable place
 - Connecting all premises to sewer network
 - The suggested sewage treatment methodology should be based on minimum requirement of land. So extended aeration system, entirely aerobic, omitting primary settling and anaerobic digestion has been recommended.
 - The effluent BOD5 may be maximum 50mg/l.
 - The land requirement for 7 MLD capacity STP, including electric substation, laboratory, quarter etc. will be around 100 metre X 60 metre i.e. 1.5 acres.
 - 20% of treated sewage to be recycled for reuse.
- Setting the cut-off mark (60 on a scale of 1 – 100) that a bidder has to obtain on technical bid evaluation to be considered as qualified technically
- Deciding on the financial parameter (**lowest water-cum-sewerage charges per KL**) for selection of one from amongst the technically qualified bidder.
- Determining the process of evaluation – technical evaluation and marking of bids by a team of independent experts including experts from outside KMDA
- Invitation of bids from prospective private sector entities (developers/BOT operators) through insertion in leading national dailies and KMDA website
- Empowered Committee opened the sealed bids in presence of bidders' representatives and received a PowerPoint presentation on the technical proposal from each bidder on one-to-one basis.

- Technical evaluation sub committee carried out detailed evaluation of technical proposals of the bidders and marked each bid on a scale of 1 – 100
- Empowered Committee reviewed the marking done by technical experts and adopted the same, as the same was found to be in order and shortlisted the bidders who secured at least the cut-off mark
- Empowered Committee opened the sealed financial bids of the technically qualified bidders only and recommended JUSCO (Jamshedpur Utilities and Services Company Ltd. – a wholly owned subsidiary of Tata Steel Ltd.) -VOLTAS (also a Tata enterprise) Consortium [henceforth called JUSCO] as the private partner for implementation of the Project on BOT basis for a period of 30 years, renewable for another period of 30 years.

3. Salient Features of the Project :

- NITA shall make treated water available from the Kolkata Municipal Corporation (KMC) network to JUSCO @ Rs.5.00 per KL, whereas KMC normally charges Rs.15.00 per KL for bulk non-domestic supply
- Making land available for construction of pumping station, elevated reservoir and STP free of cost
- NITA to prohibit extraction of ground water at any premises at Sector-V after satisfactory water supply delivery mechanism is in place
- Allowing JUSCO to levy ‘water-cum-sewerage charges’ @ Rs.25.00 per KL of water supplied (Rs.15 for water supply and Rs.10 for sewerage) to the premises connected to water supply network
- Allowing JUSCO to take one-time connection charges @ Rs.10.00 per sft. of built up area of the premises for connection of the premises to water and sewerage network by JUSCO
- Capital subsidy to JUSCO to the extent of 35% of the capital cost (estimated at Rs.63 crore) of the Project through JN-NURM.
- NITA further grants to JUSCO-VOLTAS Consortium the right to collect User Charges equivalent to 50% of the Demand Charges as Sewerage Charges in the event of default of the particular Consumer to pay the combined service charges for a period prescribed by Applicable Law

- In case of default by any consumer to pay the charges within the prescribed period, the water supply may be disconnected.
- NITA further authorizes JUSCO-VOLTAS Consortium to collect 6 (six) months of Demand Charges in advance by way of revolving Bank Guarantee.
- NITA will provide uninterrupted supply of water of Adequate Quantity conforming to the Quality Standards to JUSCO from KMC source.
- NITA shall facilitate obtaining all applicable permits, including all environmental clearances, for the purposes of the Project
- NITA hereby undertakes to hand over to JUSCO physical possession of the concerned parcels of Lease Land free of cost and also free from any encumbrances together with the necessary rights of way and use of public thoroughfares for the purpose of laying pipelines as part of implementing the Project
- NITA shall provide written notice or intimation to the Consumers that all payments in respect of water supply and sewerage services shall have to be made by the Consumers to JUSCO directly.
- NITA will issue notification, banning use of ground water after JUSCO is in a position to offer water connection to the Consumers.
- NITA shall monitor the Project at the Construction Phase as well as during the operation and maintenance of the Project by JUSCO to determine whether the Project is being implemented and operated and maintained in accordance with the provisions of the Development Agreement and Good Industry Practice.
- JUSCO-VOLTAS Consortium shall incorporate the SPV in accordance with the provisions of the Development Agreement
- JUSCO-VOLTAS Consortium shall design, plan, develop, finance, construct, administer, manage, operate and maintain the Project, during the Authorisation Period in accordance with the provisions hereof, including the Technical Standards, Specifications and Standards, the Applicable Laws, the terms of Applicable Permits and Good Industry Practice.

- JUSCO shall provide periodic reports on a regular basis during the Authorisation Period to NITA, except confidential documents.
- The water to be supplied by JUSCO to the Consumers shall be in accordance with the Quality Standards.
- The discharge of treated sewerage in identified areas shall conform to technical parameters specified in this Agreement.
- The SPV shall furnish a Bank Guarantee to NITA for an amount of Rs.15 lac as Performance Security, which shall be valid for a period of 30 years from the Commencement Date.
- Urban Development Department of the State Government to make land available free of cost and also free from any encumbrances for permissive use on leasehold basis to JUSCO for UGR, ESRs and STP during the concession period.
- Recommend and forward the Project to Ministry of Urban Development in the Govt. of India for 35% grant under JN-NURM.
- Any of the Parties (JUSCO or NITA) committing material breach of the Development Agreement, not caused by events of Force Majeure, shall be treated as default.
- If the Government fails to make available the Grant, passed on to it by JN-NURM, to JUSCO in accordance with the agreed Schedule, in spite of JUSCO's meeting all conditionalities, the same shall be treated as the Govt.'s Event of Default.
- If Termination is due to JUSCO Event of Default, JUSCO shall, subject to payment by NITA to JUSCO of the written down value of the Project Assets determined by an independent expert valuer/accountant appointed jointly by NITA and JUSCO, transfer, assign and deliver to NITA or its nominated agency, free and clear of any Encumbrances, the vacant and peaceful possession of the Project Assets, the Lease Land along with the buildings, facilities and structures constructed on, over, at or under it and its right, title and interest in and to the Project and the Project Assets.
- If Termination is due to NITA Event of Default/Govt. Event of Default or due to a Prolonged Event of Force Majeure, NITA shall, upon transfer of the Project Assets to NITA or its nominated agency, pay to JUSCO an

amount equal to the then 'fair market value' of the Project Assets transferred to NITA.

- NITA shall monitor the Project at the construction phase as well as during the operation and maintenance of the Project by JUSCO to determine whether the Project is being implemented and operated and maintained in accordance with the provisions of the Development Agreement and Good Industry Practice. JUSCO shall provide all data and information in reporting formats with notes on progress of work. NITA may cause the Performance Security to be invoked for the purpose.

4. Project Status :

- On the terms of the Development Agreement executed between NITA and KMDA on behalf of the Government, on the one hand, and JUSCO and VOLTAS, on the other, KMDA moved Govt. of India for sanction of the Project under JN-NURM, estimated to cost Rs.62.76 crore as per the DPR prepared.
- The water supply component of the Project has already been approved by Govt. of India under JN-NURM for an amount of Rs.26.06 crore.
- The sewerage component of the Project, estimated at Rs.36.7 crore is under consideration of Govt. of India towards approval under JN-NURM. Replies to some project appraisal related queries have been sent to Govt. of India.
- The SPV formed by the JUSCO-VOLTAS Consortium has already started water supply related work on ground, after the working schemes have been approved by KMDA/NITA.
- About 25% progress in the work on ground has been achieved against the sanctioned water supply component of the Project.
- KMDA is extending all kinds of technical and other support to NITA in the matter of speedier implementation of the Project.

Water Supply Project (Chandrapur, Maharashtra)

1. Project Description:

The Maharashtra Jeevan Pradhikaran had constructed water supply scheme for the Chandrapur City from Irai River (Datala) in 1962 and augmentation water supply scheme from Irai Dam in 1995.

Through original water supply scheme, raw water is taken from Irai River (Datala) and through augmentation scheme it is taken from Irai Dam and processed in water purification center then stored and supplied to the whole city.

The water supply scheme which was being managed by Maharashtra Jeevan Pradhikarn Authority was handed over to Municipal Council by the Collector, Chandrapur Dist. on 4th August 1998. The Council neither had any technical staff nor sanctioned posts to run this scheme. Earlier the scheme under Maharashtra Jeevan Pradhikaran was being managed by contractors who were responsible for works like water pumping from the river, pumping at Irai Dam purification center. Since the schme was handed over to the Council, now the Municipal Council had to spend on various accounts such as office, mentainance and repairing, purchasing instruments, electric bills etc.

Demand & Collection and Expenditure on the Scheme before Privatisation

Sr. No.	Year	Water Tax Collected		Expenditure on W.S.S.	Loss against Water Tax Recovery
		Demand	Recovery		
01	2001-02	154.55Lakh	96.89 Lakh	393.00 Lakh	238.45 Lakh
02	2002-03	159.97Lakh	89.79 Lakh	314.74 Lakh	154.11 Lakh
03	2003-04	218.36Lakh	146.49Lakh	363.69 Lakh	155.43 Lakh

As the scheme was in loss, the other developing programmes by the council got neglected.

The Government of Maharashtra had issued guidelines to the Municipal Corporations and Municipal Councils Class 'A' for encouraging PPP to increase efficiency and investments in water supply and sewerage projects vide Govt Circular dated 12th June 2001. According to the Govt. Circular, the following options for PPP were suggested:

- i) Management agreement/contract
- ii) Tax agreement
- iii) Concession agreement

As the water supply scheme was in loss, this case was put in the General Meeting of the Council held on 26/02/2002 to explore PPP.

In the General Body meeting resolution was passed and decided to collect the required information regarding privatization of the scheme. So rules and conditions were prepared / framed to privatize the scheme as per the guidelines of Government .

Through tendering route, the **water supply scheme of Chandrapur was privatized on 23/04/2004. The scheme was handed over to M/s Gurukrupa Association & Pvt. Ltd. for 10 years.**

As the scheme has been privatized, the Council is not required to spend any amount on the scheme. On the contrary, in 10 year's duration/period the Council will get income of Rs. 1.59 crore from the private agency.

2. Salient Features of the Project :

- There will be no financial burden on the Council.
- In the next 10 years, the council will get an income of Rs. 1.59 Crore from the contractors.
- From the date of privatization in the last 4 years there is no serious complaint received regarding to the water supply except some casual ones.
- During scarcity, the contractor supplies water through tankers without taking any extra charges from the Council.
- It is in the agreement that the contractors should lay at least 1 Km. pipe line every year.

- It is also mentioned in the agreement/contract that the number of the public stand posts shall be kept intact.
- The minimum water rate notified by the State Government (Rs. 806/- per year from ½ inch connections) will be continued for 3 years & afterwards 10% additional charges will be levied for 3 years. Finally after 10 years the rate will grow from Rs. 806/- to Rs. 1072/-
- Municipal workers collect the water samples & send it for checking to the District Health Center.
- Rs. 75/- Lakhs bank guarantee is collected from private contractor as security.
- The contractor will be responsible to maintain machineries, pipelines etc with any additional cost.
- In case of default by contractor, there is a proper penal action prescribed by Municipal Council as per the agreement.
- The contractor is also responsible for repairing all borewells & handpumps in the City
- Regarding to the regular water supply by the contractors, there are some special clauses in agreement.

Seawater Desalination Project (Chennai, Tamil Nadu)

1. Project Description :

Chennai Metropolitan Water Supply & Sewerage Board entered into a Bulk Water Purchase Agreement (BWPA) with the Special Purpose Vehicle Ms. Chennai Water Desalination Limited (CWDL) on 13.9.2005 for setting up of a 100 MLD Sea Water Desalination Plant at Kattupalli Village, Minjur on Design, Build, Own, Operate and Transfer basis.

2. Salient Features of the Project :

The salient features of the Bulk Water Purchase Agreement are:-

- (i) The agreement is in force for 25 years of operation period.
- (ii) 60 acres of land has been provided to the Company on lease basis for the agreement period.
- (iii) 95% of the contracted capacity will be the minimum quantity to be off taken every month by the CMWSS Board.
- (iv) CMWSS Board guaranteed a take-or-pay at water minimum off-take for each operating year at the water dispatch point throughout the operating period.
- (v) The Company shall not grant to any third party to obtain any entitlement to the Product water supplied by the facility during the term of the agreement.
- (vi) The charges payable by CMWSS Board to the Company for supply of Product water will be – the Water Capacity Charges and the Water Variable Charges. The Water Capacity Charges will be the amount of money determined, levied, demanded, charged, collected, retained and appropriated by the Company from CMWSSB. The Water Variable Charges include all variable cost including but not limited to consumables, chemicals, power cost and variable operation & maintenance cost. The schedule for water capacity charges and water variable charges are closed. The levelized tariff for the rate quoted by the company works out to Rs.48.66 / KL.

- (vii) Failure of the Company to meet any requirement of CMWSS Board in providing product water upto the water minimum off-take would lead to payment of penalty by the Company to CMWSS Board. In the event that the quality of product water is not in conformity with the standard specified, the Company shall be liable to pay penalty to CMWSS Board.
- (viii) CMWSSB will ensure the Company to have access to uninterrupted supply of electricity of the required specifications at the site. It is the responsibility of the Company to pay the energy charges to the Tamil Nadu Electricity Board.
- (ix) The Company will deliver the Product Water into a 20 ML capacity underground tank at the plant site. It is the responsibility of the CMWSS Board to convey the Product Water to the required location for distribution to the city network.

Water Management Contract (Source to Tap) (Latur, Maharashtra)

1. Background :

Latur city is located in the Maratwada region of Maharashtra and is the district headquarters. The city has an area of 32.56 sq kms and a population of approximately 3.5 Lakhs, as per the 2001 census and is expected to have a growth of 52% every 10 years due to increase in trade and commerce activities.

In comparison with other cities in Maharashtra, Latur appears to be on a high growth trajectory as it has been consistently attracting investments as well as immigration of people. In the last decade, Latur's economy was primarily driven by investments in infrastructure; employment in government sector; trade, commerce; and construction activities. The presence of educational institutes of repute, coupled with quality health care facilities and infrastructure services makes the city an attractive destination. The existing water supply to the Latur city being managed by Latur Municipal Corporation(LMC) and has now been transferred to Maharastra Jeevan Pradikaran (MJP) as LMC is not in a position to absorb its operations and maintenance expenditures and the concerns about the management of water supply account. MJP would raise finance and complete the balance water scheme (Stage V) and operate the O&M of the scheme through private operator. MJP has also been provided the right to charge water tariffs as necessary for operating the system in an optimum manner and collect the said revenues from the users by a legislation. Under the Management Contract, the Operator shall pay to MJP a fixed monthly sum in lieu of the right granted to it during the term of agreement. Towards this end MJP invited Bids from pre qualified parties in the Project in April 2007 and awarded the tender to the SPV "LATUR WATER MANAGEMENT COMPANY LIMITED" based on experience, financing & technical ability, business model presentation and the highest evaluated payment quoted by the SPV.

The water supply system of the city consists of intake works from 3 locations namely; Sai Head works, Nagzari Head works and Dhanegaon Head works.

The water is processed by three water treatment plants with an aggregate designed capacity of 109 MLD and utilized capacity of 35 MLD at present. The treated water is transmitted to eleven Elevated service reservoirs (ESR's) located at different parts of the city. The total storage capacity of these ESR's

is 25.50 ML with 12 hours storage capacity. The total length of the water distribution system is 600 km.

Key Statistics of Latur Water Supply Operations

(Source: Water Supply Department, LMC)

Description	Units	Values
Gross water supply – Sai & Nagzari KT Weirs& Manjara Dam	MLD	35
Overhead Tanks / GLSR	Nos	11
Total Storage Capacity	MLD	25.50
Daily water Supply	MLD	30 to 35
Length of Distribution Network	Km	600
Daily Water Supply Level (Normal Season)	Lpcd	100
Daily Water Supply Level (Summer Season)	Lpcd	100
Duration of Water Supply (Normal Season)	-	2 to 3 hours twice a week
(Domestic) House Connections	No	40,000
(Non-Domestic) Institutional – approx.	No	274
Industrial & Commercial – approx.	No	723
Total area of Latur	Sq. km	32.55
Total no. of households – 2005 approx.	Nos.	65,000
Households covered by house service connections	No	26000

Problems of Latur Water Supply scheme

- Inequitable supply of water and poor demand coverage (twice every week covering just 80% of population).
- Poor asset maintenance and management of water supply account (water charges collected as Cess once a year, no records and very poor collection efficiency).
- Lack of meters and illegal connections
- LMC is not in a position to absorb its operation and maintenance expenditure on account of present poor practices
- High non revenue water

2. Project Description :

Maharashtra Jeevan Pradhikaran floated a Management Contract in June 2006 for operation, maintenance and repairs of Latur Water Supply Scheme which includes billing and collection of water charges from the consumers, with water supply scheme from Dhanegaon dam, Nagzari weir, Sai weir

including all pumping stations, electrical installations, WTP's, water reservoirs, connecting pipelines and distribution system .

This was India's first Source to Tap Integrated Management Contract being executed by the special purpose Vehicle "**Latur Water Management Company Limited**" formed by three companies **Subhash Projects & Marketing Ltd, UPL-EEL and Hydro-Comp Enterprises** and it includes the Operations and Maintenance covering:

- 3 Nos existing head works
- 90 Kms of Transmission Pipe lines.
- Master balancing reservoirs and 11 nos elevated service reservoirs.
- 600 Kms of distribution pipe lines
- 70,000 nos properties
- 40,000 nos connections

This paper outlines a unique model wherein management options ranging from operation, maintenance, repairs, billing and collection including energy audit, GIS, labor through outsourcing and delegating management of the system to a private operator under a Public-Private Partnership (PPP) contract with Tripartite agreement between Latur Municipal Council, MJP and SPV .

3. Main Objectives of the Project :

The brief scope of work for the contract period of 10 years.

- Taking over the operation, maintenance and repairs of Latur Water Supply Scheme comprising of water supply scheme from Dhanegaon dam, Nagzari weir, Sai weir with all pumping stations, electrical installations, WTP's, water reservoirs, connecting pipelines and distribution system.
- Deployment of operations and maintenance staff including some key employees under deputation from MJP and Latur Municipal Council.
- Maintenance of a minimum average water supply level of 100 LPCD with due pressure and required quality.
- Increasing coverage of piped water supply and achieving 100% metering. In that context provide and install EEC marked water meters and recover its expenditure from consumers including establishment of meter workshop.
- Provide labor for increasing minimum network expansion of 1 km every year.
- Manage requests for new connections including receiving applications, connection fees etc.

- Manage the regularization of illegal connections and impose penalties as specified by MJP.
- Implement Hydraulic modeling and Integrated Management Information systems
- Recover the cost of supply of water from the consumers as per the tariff rates fixed in the RFP
- Develop a customer information system including operating a 24 by 7 Call centre
- Collecting water supply system related data and performance reporting to MJP.

4. Salient Features of the Project :

MJP awarded the management contract for operation, maintenance and repairs including metering, billing and collection with all investments by operator (SPV) on the fixed and variable costs for a period of 10 years in September 2007. The tender is a performance based contract covering the entire scheme and has the following key deliverables.

- Operations, maintenance and repairs of scheme by operator.
- Deployment of resident staff, key visiting experts including 70 people from LMC/ MJP.
- Implement modern distribution management with equitable water supply to 100% population with due pressure and quality of water.
- 100% metering and recovery of cost from consumer as per tariff fixed by Maharashtra Government.
- Manage regularization of illegal connections, customer grievances and establish 24 by 7 toll free call centre.
- Leak detection, repairs and establishment of bench mark parameters, water audit, establishment of distribution Zones and institutional strengthening.
- k. Implement 24 by 7 water management systems in 2 years.

Value Proposition

The SPV has the following value proposition to MJP and LMC

- Provide Key expertise in the areas of utility management, energy monitoring and institutional strengthening through Hydro-Comp Enterprises and state of the art information system.
- High quality Class B meters from world renowned meter manufacturers with repair workshop at Latur.
- Invest in state of the art SCADA system and Infrastructure Development and bring in established international operational practices to make Latur water supply a model in India.

- The consortium will make a minimum payment payable over a period of 10 years for the use of the assets.
- The SPV will recover its costs mainly by bringing technology and operational engineering to maximize customer satisfaction and earn revenue out of the existing water connections as per tariffs defined for the next 10 years, regularization of illegal connections, energy management and bringing down the losses by deploying proven technologies and management for non revenue water.
- The consortium will be able to bring in immense benefits to consumers by suitable infrastructure investments every year as needed and bring in better public awareness, service quality, customer charter and also attain within 2 years the ideal 24 by 7 uninterrupted water supply thereby making Latur city the only model of its kind in India.

Risk Identification & Management strategies

The following risk factors are taken into account:

- Risks in the customer-project relationship, Contractual risks,
- Technological/technical risks,
- Risks caused by the size and complexity of the product,
- Risks in the development and target environments,
- Risks in personnel acquisition, skill levels and retention
- Risks to schedule and budget
- risks in achieving customer acceptance of the deliverables.

The contract will be managed and controlled by the MJP as Project management consultants and will ensure compliance as follows

- Ensure projects meet established criteria for outcomes, deliverable quality and compliance to project requirements;
- Provide objective evaluation and assessment of project progress, methodology and compliance to plans;
- Identify deviations from project plans, agreements, methodology and objectives and to advise and assist project managers in developing and implementing corrective actions as necessary;
- Evaluate corrective actions against planned outcomes and to report ongoing risk/quality issues to the Project Coordinator;
- Monitor and report on overall project portfolio activity and resource utilization;
- Monitor compliance to agreements;

Period of Contract

- Condition precedent Period – 6 months (100% metering)
- Operation & Maintenance Period – 10 years

Assumptions

Revenue

Revenues are made through direct sales to customers as per a fixed tariff structure varying per consumer type and escalated every 2 years as shown in the table below. Additional revenues can be realized through the installation/ fixing/ replacement of connections and meters. A suitable set of laws exist giving the right to the Operator of discontinuing the service if a customer refuses to pay and is part of the tripartite with MJP and LMC

Sl. no	Consumer Category	2007-08	2008-09 2009-10	2010-11 2011-12	2012-13 2013-14	2014-15 2015-16	2016-17 onwards
1.	Domestic	8.80	9.60	10.60	11.15	11.70	12.30
2.	Institutions	17.00	18.70	20.50	21.50	22.60	23.75
3.	Industrial & commercial	40.00	42.00	44.00	46.20	48.50	50.90

Special concessions have been provided to slums, un metered connections and social functions.

Network/ Supply conditions

- There are a total of 33,000 legal connections, although surveys estimate that the total number of connections exceeds 70,000 (including group metering of slums)
- Currently water is supplied to consumers about 6 hours a week. It is estimated that the current usage of water per connection is 382 litres per day (l/d/con).
- The population growth rate is conservatively estimated at 2.5% per annum.

Performance Improvements

It is assumed that various performance levels will be improved over the next 4 years as indicated in the table below.

Performance	Year 1	Year 2	Year 3	Year 4
Reducing Leakage	137.5	118.3	99.2	80.0
Reducing under billing (% theoretical billed)	40.0%	20.0%	10.0%	5.0%
Finding unknown connections (% of	40.0%	70.0%	90.0%	95.0%
Improving Demand per connection	10.0%	50.0%	100.0	100.0
Improving domestic Debt	45.0%	58.0%	71.0%	85.0%

Variable Costs

- Variable costs have been calculated based on actual costs incurred by the municipality over a period divided by actual volumes of water produced and pumped.
- The Contract stipulates that any escalation in the rates of these costs shall be absorbed by the Client and will not be for the account of the Operator.
- The old debts of Municipality towards Electricity and Raw water will be settled by LMC and the supply to SPV will not be stopped.

Expenditure

The SPV has the following expenditure both operational and capital works.

- Operational expenses- variable costs viz power, chemical and raw water.
- Operational expenses- Fixed costs Viz tools, equipments, consumables, office expenses, public awareness program, staffing cost, fixed payment to client for use of assets.
- Operational expenses – preparatory period viz survey, network validation, minor repairs
- Capital expenses – rezoning, bulk meters, network rehabilitation, laboratory, equipments, hardware, software and SCADA systems.
- MJP will invest on survey, satellite image, major repairs like replacement of old pipelines, additional pumping and storage reservoirs.

5. Project Status :

It is now widely accepted in India that 24 by 7 water supply is the preferred way forward and the contract discussed above helps to address the transformation of both the utility and distribution network. The standard practice to appoint operator to rehabilitate and operate a pilot area with the objective of extension to other parts is not well received due to high rehabilitation costs and the inherent shortcomings of an operator towards capacity building, institutional strengthening and short term objective.

This paper recommends a model which is being tried in Maharashtra where there is a three way partnership between Utility, government nominated nodal service provider and private operator where a clear framework of policy, legal, information dissemination, some risk sharing and project development funds from stakeholders are available to the concessionaire with long term tenure. This would help the Indian municipalities to meet the infrastructural gap and make them commercially viable and develop sustaining capacities to these ailing municipalities.

Water Supply and Sewerage Project (Tirupur, Tamil Nadu)

1. Project Description:

The first Water and Sanitation Project developed under PPP framework in the country is by the New Tirupur Area Development Corporation Ltd. (NTADCL) through a Special Purpose Vehicle (SPV) promoted by the Government of Tamil Nadu and Infrastructure Leasing & Financial Services Ltd. (IL&FS) to implement the Tirupur Area Development Programme.

Under the Project, water supply and sewerage schemes have been implemented. The project includes water supply to Tirupur Municipality, Local Village Panchayats and industries located in the Tirupur Local Planning Area to benefit about 3.46 lakh urban population, 4 lakhs rural and semi-urban population and 730 Units of industries as per 2001 Census. The sewerage and sanitation coverage includes 60% of the households.

The project envisages a total supply 180 MLD for the above mentioned beneficiaries. The raw water source is river Kaveri.

The estimated cost of the project is about Rs.1023 crore with funding arrangement of Rs.322.70 crore as security, Rs.613.80 crore as Senior Debt and Rs.86.50 crore as Subordinate Debt. The financial support to the project by the Government is Equity of Rs.30 crore, Unsecured Loan – Rs.25 crore, Debt Service Reserve Fund – Rs.50 crore and Water Shortage Period Fund – Rs.70.97 crore. The Equity and Unsecured Loan have been provided by the Government of Tamil Nadu to Tamil Nadu Water Investment Company Limited and invested in the Equity Capital of NTADCL as promoter contribution.

The project was commenced in November, 2002 and the Phase-I of the project has been completed in May, 2005, which provides water supply to industries and the Phase-II was completed in October, 2005, which provides water supply and sanitation facilities to domestic users.

The equity holders of the project are TWICL, AIDEC Fund (Mauritius), Wilbur Smith / Mahindra & Mahindra / United Utilities Consortium, LIC, GIC, Tirupur Exporters' Association, IL&FS and other nationalized banks. The Subordinate Debt mobilized from IL&FS and TWICL.

Water Quantity to be supplied	185 Million Liters per Day
Concession Period	30 years
Cost of the Project	Rs. 10230 Million
State Support	Equity Participation, Water Shortage Period Fund and Strong support for obtaining regulatory & Other requirements

2. Salient Features & Benefits of the Project:

- First Water & Sanitation Project in the country to be implemented on a Public-Private Partnership format.
- First water project in India to be funded on a Project Finance, non-recourse basis.
- Largest private investment in the Urban Infrastructure sector.
- Leverages State support by 19 times {Rs.550 million of state financing helps raise over Rs.10000 million for the project}.
- Provides a viable model for implementing other projects in the sector.
- Tamil Nadu is the first State in the country to set up a Public-Private Partnership based institution in the sector, namely Tamil Nadu Water Investment Company.
- New sanitation network covering over 60 per cent of Tirupur
- Low cost sanitation facilities for slum areas
- Providing quality water to the processing industries of Tirupur
- Improve health & hygiene conditions for households.
- Free-up waiting time, particularly for women for water collection from tankers.
- Dignity of life, particularly for women through private in-house sanitation.
- Help industrial growth.
- Create enhanced opportunities for employment and poverty reduction.
- Position Tamil Nadu as the premier location for textile (knitwear export) industry.
- Protect groundwater exploitation.
- Free-up ground water for agricultural growth, productivity and development.

Water Project (Nagpur, Maharashtra)

1. Project Description:

All new assets created since 1999 are managed through service contracts. Existing assets also managed through service contract for pumping station / water treatment plant O&M / Value operations / billing distribution / annual maintenance contract for zonal level. The concept has its own disadvantages as well as advantages. Some of the disadvantages were :

Dis-advantages :

- It is only a labour contract replacing retired employees
- No link with performance
- No accountability towards consumer
- Short term contracts break up in small parts with no feasibility for private investment.

Advantages :

- Reduced number of NMC employees as of now 80% of assets managed by private contractors.
- Short term annual contracts can be replaced by better contracts
- Non performing contractor can be replaced by better one
- Reduced O&M cost
- Over the period of time capacity building of local contractors in O&M
- Prepared the ground for larger involvement of private participation without affecting the NMC employees Hence less resistance for PPP.

2. Present Approach for Private Sector Participation :

- Performance based long term contracts
- Private Participation in Capital cost from operator
- Technology by operator for lower life cycle cost
- New assets to generate income rather than increase financial burden on NMC or at least reduce financial burden on NMC
- Better service to consumer and urban poor
- Asset ownership with NMC
- JNNURM funding for better viability of project and reduced cost of capital
- No NMC employee for operating the new assets for augmentation to water supply projects

3. PPP in Un-interrupted Water Supply - Objectives

- Uninterrupted water supply at desired pressure
- 100% meterisation including NMC properties
- Optimise the UFW (Real+Apparent Losses) < 15%
- Efficient billing mechanism

- Sufficinet supply to meet the water demand of urban poor (slums)
- Reduction in consumer complaint and redressal within 48 hours
- Improved satisfaction for stakeholders
- Implementation of successful experience in other parts of the city

4. Performance Contract for Operator:

- Water Account : cut off ratio 60-70% for bonus / penalty
- Billing : Bonus for additional billing over baseline
- Pressure : Penalty for not maintaining the prescribed pressure at minimum 10 observation points for cont. 24 hours
- Quality : Penalty on Failure to meet the desired chlorine level.
- Customer Complaint : Penalty on unsolved complaints within 3 working days.

5. PPP Projects Undertaken:

a) Pench-I Water Treatment Plan Improvement and Upgradation Project (Rs. 6.42 crore)

Rated Capacity	:	113 mld
Actual Operating capacity before Rehabilitation	:	90 mld
Age	:	25 Years

Key Features of the Project

- Upgrade capacity from 113 to 136 mld
- Rehabilitate / replace equipment for additional 10 years of service
- Improve energy efficiency (saving of 30% in energy cost).
- 70% grant from JNNURM and balance investment to come from concessionaire (operator)
- Technology for upgradation by concessionaire (operator)
- 5 years O&M contract to concessionaire (operator)
- PMC to give monthly payment (fixed charges + variable charges) +/- performance linked bonus / penalty

b) North Zone STP (Rs. 130 crore)

Existing Capacity	:	100 mld
Operates at	:	70 mld
Existing O&M Expense	:	Rs. 4-5 crore p.a.

Key Features of the Project

- Upgrade capacity from 113 to 136 mld
- Rehabilitate / replace equipment for additional 10 years of service
- Improve energy efficiency (saving of 30% in energy cost).

- 70% grant from JNNURM and balance investment to come from Mahagenco (power generation company)
- Plan will be operated by Mahagenco for 30 years
- Mahagenco will pay 15 crore per year for 30 years to Nagpur Municipal Corporation for raw sewage of 110 mld
- Mahagenco will use treated sewage for power plant
- Agreement between NMC and Mahagenco is finalised.

c) Kanhan Water Treatment Plan Up-gradation (Rs. 65 crore)

Existing Capacity : 120 mld
Age : 70 Years

Key Features of the Project

- Upgrade capacity to 240 mld
- Rehabilitate / replace equipments
- Improve energy efficiency (saving of 20% in energy cost).
- Reduce water losses and operating cost per mld
- 70% grant from JNNURM and balance investment to come from operator
- Technology to provided by operator
- O&M contract for 15 years
- PMC to give monthly payment (fixed charges + variable charges) +/- performance linked bonus / penalty
- Reduction in water cost / mld to NMC by 10% with commitment for 15 years.

Construction of Water Treatment Plant (25 MGD) on BOT basis and Operation & Maintenance of Water Supply System (Haldia, West Bengal)

1. Project Description:

At present the water supply system of Haldia is having a 20 MGD Water Treatment Plant at Geonkhali, reservoirs and booster pumping stations at Chaitanyapur and Basudevpur and a distribution network. The existing WTP has been augmented by 5 MGD by technology upgradation by HDA. At present on behalf of HDA the PHE department is operating and maintaining the water supply scheme. All the expenditures for operation and maintenance are borne by HDA. The efficiency and performance of WTP and distribution network and quality of water requires special efforts. The production losses, distribution losses, unaccounted for Water, un-metered connections etc. not only leads to revenue losses but also makes the precious water not available to user and leads to shortage. The demand of water is also increasing day by day and needs immediate construction of a 25 MGD WTP. Since there are huge numbers of industries coming up in Haldia and also the urban population is growing, there is a need to improve the performance of the water supply system in terms of reducing losses, increasing production and enhancing quality of water and services.

2. Present Scenario : Production and Losses:

Year	Installed Capacity (MGD)	Production of Water (MGD)	Production Losses (%)	Water quantity available / sold / billed (mgd)	Distribution Losses (%)	Total Losses (%)
2002-03	23	17.99	21.8	10.17	43.5	55.8
2003-04	23	17.48	24.0	13.12	24.9	43.0
2004-05	23	19.05	17.2	13.12	31.1	43.0
2005-06	23	18.24	20.7	13.49	26.0	41.3
2006-07	23	16.52	28.2	14.62	11.5	36.4

Revenue Scenario

Year	Installed Capacity (MGD)	Production of Water (MGD)	Amount realised (Rs.)	Expenditure (Rs.)	Net Amount (Rs.)
2002-03	23	17.99	103911557.00	64562046.00	39349511.00
2003-04	23	17.48	157244568.00	71201558.00	86043010.00
2004-05	23	19.05	170227334.00	84361124.00	85866210.00
2005-06	23	18.24	178279737.00	76734619.00	101545118.00
2006-07	23	16.52	214887876.00	93239613.00	121648263.00

3. Justification for Innovative Approach:

- Huge production losses (> 20%) and distribution losses (> 15%)
- Poor quality of water and poor services
- Very poor maintenance thus reducing the life of plant , Machineries and building
- Huge operation cost and huge Unaccounted for Water / Non-revenue water

Steps Taken so far :

To ensure assured water supply to Industries and the city population at Haldia, in terms of quantity and quality, and to improve the performance and efficiency of existing Water Treatment Plant and Distribution Network, Board of HDA decided to identify an agency with adequate experience suitable for operating the existing 25 MGD water supply system and to Build Operate and Transfer (BOT) a new 25 MGD WTP.

In order to have flexibility in deciding the model for concession agreement it was decided that bids shall be invited for two package / options :

Package 1 : Operation and Maintenance of the existing plant with capacity of 113.5 MLD (25 MGD) and series tube wells of 13.62 MLD (3 MGD) capacity and New WTP of 113.5 MLD (25 MGD) constructed by HDA from its own funds and complete existing and new distribution network added by HDA during the concession period including reservoirs, pipelines and boosting pumping stations up to consumer levels during the authorization period (10 years).

Package B : Construction of new 113.5 MLD (25 MGD) Water Treatment Plant in two equal modules on BOT basis and Operation and Maintenance of the existing plant of 113.5 MLD (25 MGD) , series tube wells of 13.62 MLD (3 MGD) capacity and complete existing network including reservoirs, pipelines and boosting pumping stations upto consumer levels and O & M of new distribution network added by HDA during the authorization period (25 years).

4. Bidding Process:

A transparent bidding process consisting of following steps was adopted –

- Request for Qualification (RFQ) / EOI was invited through press (Telegraph, Anand Bazar Patrika and Economic Times (all India Editions) and HDA website.
- A detailed qualification criteria were specified.
- The RFQ document was issued to the parties free of cost. The RFQ could also be downloaded from HDA web site.

10 Parties had shown interest for Package – 1 & 2 (both) and 1 (one) party had shown interest for only Package-1. The PQ bids submitted were evaluated and the bidders eligible to be issued RFP (Request for Proposal / bid) documents were as below-

Package 1&2 Ramky, Ranhill, Veollia, JWIL, Tally, Salcon, Veollia, SPML

Package 1 Only bid submitted by JUSCO was qualified.

The main terms and conditions of the bids are as follows :

- I) The concession period for package 1 shall be 10 years and for package 2 shall be 25 years.
- II) The parties were asked to quote license fee per year for both the packages, for 10 years. The license fee for 11th year in case of Package 2 shall be the highest figure of first ten years. Thereafter the license fee shall be increased by 3% every year.
- III) The revenue from sale of water beyond a specified limit indicated in the RFP Vol 1 shall be shared equally by HDA and concessionaire.
- IV) To take care of the inflation etc. the water tariff shall be increased by 3% every year. Revenue due to increase in water tariff beyond 3% shall be shared by HDA and concessionaire in the ratio of 70:30.

- V) The expenditure due to increase / decrease in power cost shall be shared equally.
- VI) For rehabilitation of the existing system an investment of Rs10.0 Cr is envisaged. This investment shall be shared equally.
- VII) The financial liability of existing workers (221 nos.), engaged by the private contractors at present, shall be taken by the concessionaire.

Evaluation of the price / financial bids (informed to all bidders):

- i) The evaluation was carried out separately for both the packages.
- ii) The license fee quoted by the parties for the 10 years was discounted @ 12% and the Net Present Value (NPV) was calculated.
- iii) The party with highest NPV was selected as the preferred bidder.

Financial / Price Bids :

For package 1, three (3) bids were received from :

- I) M/S JUSCO,
- II) VEOLLIA Water and ILFS JV and
- III) Ramky

and for package 2, three (3) bids from :

- I) Ranhill, JUSCO, IDFC JV,
- II) Ramky, and
- III) JINDAL Water ,Manila Water JV .

The technical bids were evaluated by the consultants and all the bids were found technically acceptable.

Financial Evaluation :

The financial bids were opened and as per NPV calculation the preferred bidders are as below-

For Package 1 –

S.No	Bidder	Years	1	2	3	4	5	6	7	8	9	10	NPV @ 12% discounted rate
1	JUSCO	Licence Fee for the existing system	21	21	21	25	25	25	25	25	25	25	229.99 Cr
		License fee for new WTP	0	6.45	10	27	27	27	27	27	27	27	
		Total	21	27.45	31	52	52	52	52	52	52	52	
2	IL&FS, Veolia JV	Licence Fee for the existing system	20	20	20	20	20	20	21	21	21	22	190.95 Cr
		License fee for new WTP	0	0	18	19	19	19	20	20	20	21	
		Total	20	20	38	39	39	40	40	41	42	42	
3	JWIL, Manila Water JV	Licence Fee for the existing system	20	20	20	20	20	20	20	20	20	20	129.96 Cr
		License fee for new WTP	3	3	3	3	3	3	3	3	3	3	
		Total	23	23	23	23	23	23	23	23	23	23	

For Package 2-

Sl. No	Bidder	Years	1	2	3	4	5	6	7	8	9	10	NPV@ 12% discounted rate	
1	JUSCO Ranhill, IDFC JV	Licence Fee for the existing system	21	21	21	25	25	25	25	25	25	25	201.66 Cr	
		License fee for new WTP	0	3.2	3.5	20	20	20	20	20	20	20		20
		Total	21	24.2	24.5	45	45	45	45	45	45	45		45
2	JWIL, Manila Water JV	Licence Fee for the existing system	20	20	20	20	20	20	20	20	20	20	129.96 Cr	
		License fee for new WTP	3	3	3	3	3	3	3	3	3	3		3
		Total	23	23	23	23	23	23	23	23	23	23		23
3	Ramky	Licence Fee for the existing system	20	20	26.1	26.1	26.64	26.64	26.64	26.64	26.64	26.64	26.64	179.28 Cr
		License fee for new WTP	0	2.07	6.03	10.08	10.08	11.07	11.07	11.07	11.07	11.07	11.07	
		Total	20	22.07	32.13	36.1	36.72	37.71	37.71	37.71	37.71	37.71	37.71	

Based on the above comparative statement for Package 1 “JUSCO” is the successful bidder and for Package 2 “Ranhill, Jusco and IDFC JV” is the successful bidder.

Considering the present performance of the WTP and Distribution Network it has been noticed that there is shortage of demand at present which would become critical within a year as committed demand from the upcoming industries in next one year would be huge, therefore requiring for immediate construction of a new 25 MGD along with associated distribution network including reservoir and boosting pumping station. Hence, there will be huge requirement of fund for about Rs. 40 crores for New 25 MGD WTP and approx. Rs. 100 crore for associated distribution network. Considering this aspect it was decided that Package 2 i.e, “Construction of 25 MGD Water Treatment Plant on BOT basis and Operation & Maintenance of existing WTP (25 MGD) and existing and New Distribution Network (for 25 years)” would be in the best interest of the HDA.

Justification for recommendation of Package-2 :

Due to huge urgent demand of about 20-25 MGD additional water in 1-2 years immediate

construction of WTP is required, which a private Concessionaire can undertake in the shortest possible of time because they have already committed a fixed license fee for that to HDA and would like to be benefit from this at the earliest.

HDA will be able to save about Rs. 40 crores fund which would have been required immediately.

HDA can concentrate in development of distribution network including pipelines, reservoirs and boosting pumping station to meet the demand of upcoming industries in new locations with the limited fund which would be made available from State/Central Government.

At the end of the concession period HDA will get a functional 25 MGD new WTP without investing fund for it.

The proposal along with all the documents pertaining to the bid process were send to the Govt. for approval to accept the bid so that the Authorisation / Concession Agreement with the successful bidder for construction of 25 MGD WTP on BOT basis and O & M of the existing 25 MGD WTP and distribution network for 25 years, in line with the “Terms & Conditions of the Bid Document” may be signed by HDA.

Present Status :

This Land Mark PPP Project in the water sector has duly been approved by U.D. Department, Government of West Bengal vide memo no. 1421-UD/O/M/SB/-18/01(Pt.-II) dtd. 10.04.2008. The Concession Agreement is expected to be signed in the month of July, 2008 and existing facility will be handed over to the successful bidder on and from 1st September, 2008.

Solid Waste Management

Centralized Biomedical Waste Treatment Facility (Surat, Gujarat)

1. Project Description :

Biomedical Waste (Management & Handling) Rules 1998, stipulates that occupier of every organization generating biomedical waste (as defined in the Rules) must manage its biomedical waste as prescribed in the Rules so as not to cause any harm to the environment and in turn to society in general. It may not be possible for small nursing homes, dispensaries, clinical laboratories and other small organizations or individual medical professionals to carry out themselves, treatment and disposal of biomedical waste as per the methods prescribed in the Rules. Neither it is economical for even bigger hospitals to have their own facilities. A (Common Biomedical Waste Treatment Facility) CBMWTF is an ideal and perhaps only solution to all such problems. Concept of common waste treatment facility has been applied in the field of treatment of industrial effluents for a number of years. Looking to the requirement for establishment of a **common biomedical waste treatment facility, Surat Municipal Corporation decided to set up a CBMWT facility on ‘BOOT’ (Build, Own, Operate, and Transfer) basis.** The facility was made operational in 2003 and currently, 1922 health care units in and around Surat are being serviced by this facility. This includes 638 Hospitals, 165 pathology Laboratories, 900 Clinics and 219 other units.

2. Salient Features of the Project :

- SMC adopted transparent procedure of floating tender for selection of a private partner, viz, ENVISION for establishment of CBMWTF.
- A reasonable time frame of seven years was provided to the private agency to enable him to invest and recover his investment.
- Schedule of charges to be collected from private healthcare units as well as SMC run healthcare units were decided during the tendering process only.
- Specifications of the equipments and plant were also laid down during the tendering process as per requirement of biomedical waste (M & H) rules.
- Transportation of Bio Medical Waste from Hospitals/ designated Urban health centers up to facility is to be carried out by private agency.

- Collection and Transportation of waste is carried out as per Bio Medical Waste (Management & Handling) Rules. Total cost of operation of facility to be borne by private agency and Treated Bio Medical Waste is to be disposed off at Sanitary Landfill site of SMC.
- SMC facilitated by providing waste collection centers for smaller clinics and individual medical practitioners at SMC run Urban Health centres. This is a unique feature of the waste collection system and it helped in keeping the treatment and disposal charges at lowest level.
- SMC facilitated the bidder by providing 2400 sqm land at token annual rent for establishment of CBMWTF as per the requirement of Biomedical (M & H) rules.
- The working of centralized Bio-medical waste treatment plant is as per the norms and emission standards prescribed by regulatory authority (i.e. Gujarat Pollution Control Board) and being monitored by regulatory authority. SMC being one of the important stakeholders in the facility also carries out monitoring of the facility at regular intervals.

Technical and Financial details of CBMWTF, Surat

Installed capacity

- a) Incinerator - 100 kg/hr.
- b) Auto clave - 125 kg/hr
- c) Shredder - 150 kg/hr.

Minimum guaranteed quantity of waste by Surat Municipal Corporation- 200 Kg/day.

Year wise quantity of waste received from healthcare units

Sr. No.	Year	Total Quantity (kg)	Average per Month (kg)	Amount recovered
1	2003	44141	3678.42	109911.09
2	2004	81031	6752.58	170975.41
3	2005	143925	11993.75	248990.25
4	2006	200474	16706.16	174412.38
5	2007	322954	26912.83	280969.98
6	2008 up to March	94416	31472.00	39654.72

Month wise List of Numbers of Clinical units registered with Centralized Bio-Medical Waste Treatment Facility

Sr. No.	Month	Total Units Covered
1	January -2008	1757
2	February-2008	1798
3	March-2008	1833
4	April-2008	1852
5	May-2008	1861
6	June-2008	1881
7	July-2008	1922

3. Benefits of the Project :

- SMC has been a pioneer in this field since the CBMWT facility became operational on 1st January 2003 i.e. even before the guidelines for common biomedical waste treatment facility were published by Central pollution control board.
- Healthcare units are benefited as their biomedical waste will get disposed at very nominal cost because of the unique collection system designed under this project.
- Safe and proper management of biomedical waste has become easier for all the healthcare units in Surat and thus it helped in improving the environment and thus quality of living in the city.
- Apart from Surat, several smaller towns in South Gujarat are also being served by this facility. Cost of treatment and disposal for a kilogram of biomedical waste would have been exorbitant, if such a facility were to be developed in each of these towns.
- SMC also receives some amount as administrative charges from the party depending upon the waste collected by him from private healthcare facilities.
- As the total investment is done by the private agency which has to recover the same from the users, the agency took sufficient care in selection of proper technology and in maintenance of the plant.
- The model can be replicated in providing services on PPP basis for door to door collection of municipal solid waste, recyclable waste etc.

- The most important advantages of such model are that it is self sustaining and no investment is required from local bodies.

4. Conclusions :

The healthcare units are charged on per Kg. of the waste deposited by them in the entire month, hence the health care units should provide adequate waste for the system to be viable and effective. The sustainability of the model is dependent on following factors.

- Support of local medical association.
- Awareness of hazards of biomedical waste in common public.
- Strictness of the regulatory Authority.

Integrated Solid Waste Management Project (Alandur, Pallavaram and Tambaram Municipalities, Tamil Nadu)

1. The Project Description:

This project intended to cater the need of Solid Waste Management in Alandur, Pallavaram and Tambaram Municipalities which are peri-urban areas of Chennai and situated along the Grant South Trunk Road.

The total project area of 3 Municipalities is 58.22 sq.kms. Alandur Municipality has an area of 19.5 sq.km, Pallavaram Municipality has an area of 18 sq.km. and Tambaram Municipality has an area of 20.72 sq.kms.

Its population as per 2001 census was 428843 and its present population is around 503012 (2008). The projected population of the city by 2013 is 565259. **Average quantity of waste collected and disposed at present is 256 MT/day, which is projected to be 327 MT/day by 2013.**

Storage of waste at source after proper segregation, primary collection, intermediate storage, secondary collection, transportation & treatment and disposal of waste in this project.

2. Salient Features of the Project:

- In order to cater to the future need, the three Municipalities have purchased a site measuring 50 acres in Vengatamangalam near Tambaram having a distance of 15 KMs.
- The total Project cost is Rs.44.21 crores. In this 50% is shared by Government of India and Government of Tamil Nadu in the ratio of 35% and 15% respectively. The balance 50% i.e. Rs.22.11 crores has been proposed to be funded by PPP partner.
- The primary collection with source segregation up to transfer station is the responsibility of the respective Municipalities.

- Concessionaire to **plan, design, built, finance, operate and maintain the integrated Municipal Solid Waste Management facility** consisting of the following for the entire term of the concession period.
- **Land will be provided by Municipality at an annual lease rental as specified by Government of Tamil Nadu.**
- **Establishing transfer stations** at specified (1 No. for each Municipality) locations, establishment of Material recovery facility and the Operation and Maintenance of the same
- **Procurement of necessary vehicles** at transportation of municipal solid waste through bulk refuse carriers from transfer stations to processing and disposal site.
- **Establishing a processing facility to process MSW**, including aerobic composting and other suitable and viable options such as RBF, Bio Methanation etc., and operation and maintenance of the same.
- **Construction and development of sanitary land fill facility (SLF)** and operation maintenance of the same for the disposal of Inert in line with MSW Rule 2000.
- To ensure that the project is able to receive, handle, transport, process and dispose the MSW generated in the Municipalities as per the terms of the concession agreement.
- To ensure that the project **meets stipulated pollution norms** and guidelines and that the Municipal Solid waste is handled and managed in compliance with the MSW Rules 2000 and Guidelines of the Manual on Solid Waste Management published by CPHEEO, MoUD, BIS etc.
- The **Municipalities in turn pay to the concessionaire in terms of tipping fee payable per MT generated by the respective Municipalities.**

Waste Management Facilities (Haldia, West Bengal)

1. Project Description:

Waste is generated from industries, factories, healthcare establishments, municipalities & market places and is classified as hazardous, bio-medical waste and municipal solid waste. These are required to be properly disposed in a manner that does not pollute air, water & soil and does not cause any harm to human beings and habitat.

Integrated Common Hazardous Waste-Treatment, Storage and Disposal Facility (CHW-TSDF) for the benefit of industries in Haldia and West Bengal has been developed and implemented by West Bengal Waste Management Limited (WBWML) in a joint venture initiative of Haldia Development Authority (HDA) and Ramky Environ Engineers Ltd. in a land of about 70 acres.

2. Salient Features:

WBWML will manage the facility for 25 years on Build Own Operate Transfer (BOOT) basis, post completion monitoring period is 25 years.

Total investment in the project is Rs. 54 crores.

HDA has provided land at a concessional rates for this environment friendly infrastructure project.

The CHW-TSDF operates under the aegis of Hazardous Waste (Management Handling) Rules, 1989 and as amended it serves the Hazardous Waste Disposal requirements of industries in West Bengal.

Facilities in the Hazardous waste unit are:

- Secured landfill
- Sophisticate laboratory
- Intractable and incinerable waste stores
- Containerized crane operated trucks
- Logistic facilities
- Waste stabilization facilities
- Incinerator
- Autoclave equipment

- Waste separator facilities
- Weigh bridge & waste analysis facilities
- Lawn & green belt.

3. Present Status:

Disposal & Management of Solid Waste, Bio-medical Waste and Municipal Waste is in operation. Collection of domestic waste from house to house within Municipal area will start soon.

Possible Public Private Partnership initiatives in the Projects approved under JNNURM

Name of the Scheme	Solid Waste Management Scheme for Chennai Municipal Corporation	
Name of the city	Chennai	
State	Tamil Nadu	
Total approved cost	Rs.245.77 crore	
Population - 2001 Census Design (year)	43.43 lakh 61.83 (2016 AD)	
Components envisaged and cost break up	Equipment & machinery for primary collection and storage	Rs.38.26 crore
	Transportation & transfer station	
	Compost plant (4 units each of 320 MT capacity) including auxiliary facilities	Rs.78.75 crore
	RDF Plant 110 MT/day	Nil
	Inert handling (brick manufacturing)	Rs.12.09 crore
	Infrastructure facilities for waste processing	Rs.32.29 crore
	Sanitary Landfill (5 years)	Rs.82.00 crore
	Closure of existing landfill	Nil
	Site development, power connection, IEC, etc.	Rs.11.93 crore
	Deduct XIIth Finance Commission grant	Rs.9.55
Total waste generation	755 MT	
PP arrangement	It has been proposed to involve PPP for setting up of compost plants through PPP and for further operation & maintenance of these plants by marketing the compost.	
Target date of completion	March 2010	
Implementing Agency	Chennai Municipal Corporation	

Possible Public Private Partnership initiatives in the Projects approved under JNNURM

Name of the Scheme	Solid Waste Management Scheme for Coimbatore city	
Name of the city	Coimbatore	
State	Tamil Nadu	
Total approved cost	Rs.96.50 crore	
Population - 2001 Census Design (year)	10.09 lakh 10.91 lakh (2011 AD)	
Components envisaged and cost break up	Equipment & machinery for primary collection and storage	Rs.15.40 crore
	Transportation	Rs.17.77 crore
	Transfer station (4 nos.)	Rs.8.48 crore
	Compost plant (375 MT)	Rs.16.50 crore
	RDF Plant	Nil
	Sanitary Landfill (5 years) (355 MT/day)	Rs.24.47 crore
	Closure of existing landfill	Rs.8.75 crore
	IEC, compound wall, etc.	Rs.5.13 crore
Total waste generation	730 MT	
PP arrangement	Compost plant will be set up through PPP. Private sector will contribute the Urban Local Bodies's contribution and also operate and maintain the compost plant, by marketing the compost.	
Target date of completion	March 2009	
Implementing Agency	Coimbatore Municipal Corporation	

Possible Public Private Partnership initiatives in the Projects approved under JNNURM

Name of the Scheme	Solid Waste Management Scheme for Faridabad Municipal Corporation	
Name of the city	Faridabad	
State	Haryana	
Total approved cost	Rs.76.54 crore	
Population - 2001 Census	10.54 lakh	
Design (year)	18.21 lakh (2013 AD)	
Components envisaged and cost break up	Equipment & machinery for primary collection and storage	Rs.8.28 crore
	Transportation & Transfer station	Rs.22.19 crore
	Compost plant (350 MT) including auxiliary facilities	Rs.16.96 crore
	RDF Plant 125 MT/day	Rs.5.94 crore
	Sanitary Landfill (5 years)	Rs.9.45 crore
	Closure of existing landfill	Rs.3.00 crore
	Site development, power connection, IEC, etc.	Rs.10.72 crore
Total waste generation	730 MT	
PP arrangement	Faridabad Municipal Corporation has signed MOA with private firm for setting up of the compost plant and operation & maintenance of these plants for next 30 years without any burden for the Corporation. However, there is no contribution by the private firm on capital investment for setting up of these plants.	
Target date of completion	August 2009	
Implementing Agency	Faridabad Municipal Corporation	

Possible Public Private Partnership initiatives in the Projects approved under JNNURM

Name of the Scheme	Solid Waste Management Scheme for Madurai Municipal Corporation	
Name of the city	Madurai	
State	Tamil Nadu	
Total approved cost	Rs.74.29 crore	
Population - 2001 Census Design (year)	9.40 lakh 13.49 lakh (2016 AD)	
Components envisaged and cost break up	Equipment & machinery for primary collection and storage	Rs.6.49 crore
	Transportation	Rs.11.75 crore
	Transfer station	Nil
	Compost plant (300 MT) including auxiliary facilities	Rs.18.02 crore
	RDF Plant	Nil
	Sanitary Landfill (5 years) (296 MT/day)	Rs.13.01 crore
	Closure of existing landfill	Rs.17.36 crore
	Administrative block, electric sub-station, laboratory, IEC activities, etc.	Rs.7.66 crore
Total waste generation	600 MT	
PP arrangement	Compost plant will be set up through PPP. Private sector will contribute the Urban Local Body's contribution and also operate and maintain the compost plant, by marketing the compost.	
Target date of completion	March 2010	
Implementing Agency	Madurai Municipal Corporation	

Urban Transport

City Bus Service on PPP (Surat, Gujarat)

1. Background:

Surat is one of the fastest growing cities in Asia, the population having gone up from about 15 lakh (1991) to 24.8 lakh (2001) to an estimated 35 lakh (2007). This, combined with rapid economic development, has resulted in very high levels of vehicle ownership. The total vehicles registered with RTO Surat went up from 7.61 lakh in 2001 to 13.36 lakh in 2007, with almost 80% of these being two-wheelers. A study conducted by CRRI in 2004 revealed that, of the daily passenger vehicular trips in Surat, over 40% were on two wheelers and 20% by cycle and 16 % by auto rickshaw. This had contributed to traffic congestion and air pollution. A number of measures have been undertaken to deal with these issues; such as expansion of road network, construction of flyovers, traffic islands and road dividers, and conversion of all auto rickshaws to CNG fuel. However, the situation clearly indicates the dire and urgent need for a public transport system in Surat. In this background, the Surat Municipal Corporation decided to commence a bus based city transport system.

2. Project Description:

Till recently, the city of Surat had negligible public transportation system run by State Transport Corporation (GSRTC), with 15 buses on city routes. Looking to the problems faced by the conventional models of operating such service it was considered appropriate to adopt a private-public partnership approach to creating a city public transport system in Surat. Accordingly, Surat Municipal Corporation obtained the approval of the Government of Gujarat and has started operation of city bus services through private agencies in Surat since August 2007. Within a short period of a year, 102 buses have been deployed which are carrying over 45000 passenger trips every day on 42 identified routes in the city. By end of 2008, the number of buses is expected to reach 200.

3. Salient Features of the Project:

- SMC obtained the statutory approval from Transport department of Government of Gujarat to run the city bus service through private participation.

- Transparent methodology was adopted by SMC for selecting operator by inviting tenders. Three operators were selected for running the city bus service.
- The selected operators make the entire capital investment in respect of purchase of buses, creation of infrastructure and operations (CNG fuel, drivers, maintenance, and control).
- Surat Municipal Corporation has allotted two plots at token rent to the concessionaires for setting up workshop / fuel stations and four check post cabins as depots.
- The service parameters such as bus specifications, bus fares, routes and frequencies of bus trips are decided by SMC with approval of Regional Transport Authority.
- Service levels are being monitored jointly by the private operators and SMC. A system of weekly review by the Traffic department of the Corporation has been put in place.
- SMC will be paid a fixed annual premium @ of Rs.10500 per Bus by operators for 200 Buses for 5 years. The bus operators have been awarded the right to display advertisements on the buses.
- The pick up stands are being put up by SMC on BOT basis or at own cost. Private Investment of approximately Rs.9.5 crore for construction of 267 Bus-stands on BOT basis with advertisement rights is being sought, against which SMC can expect to receive fee revenue of up to Rs. 75 lakhs as premium per year from the successful bidders.
- All stakeholders like Operators / traffic police / citizens / NGOs are involved in decision making process.
- The innovative features such as daily passes, student passes, and free travel for freedom fighters, announcements on bus and bus stations have also been introduced.

4. Conclusions:

The experiment has proved to be successful in its introduction. The factors that assisted the smooth introduction of this innovative model as follows:

- Vision and Professionalism in selection of a financially prudent and sustainable model.
- Past experience of Corporation in PPP based services such as construction of bus stands, pay and use toilets etc.
- Selection of concessionaires after proper scrutiny of economic and technical aspects.

- Complete confidence of elected wing in the administrative wing of the Corporation in respect of operational matters. No interference in operational matters (such as selection of routes) by political wing.
- Complete and full cooperation of City Traffic Police to make city bus service a success (training of drivers, traffic flow etc).
- Cooperation of RTA (District Collector) is providing prompt approvals for stage carriage permits.
- Availability of wide roads on major routes.
- Mix of 18-seater and 36-seater buses to cater to inner city areas with narrow roads.
- Free and frequent communication between Corporation and concessionaire.
- Enthusiastic response of the citizens of Surat.

At the same time, there were some lessons learnt from the experience as follows:

- Need to manage uninformed opposition from auto rickshaw associations with a firm hand and by assuaging their fears of being driven out.
- Need to create no-parking and no-hawking zones near bus stops to allow easy access to bus stops.
- Constant supervision and traffic training for drivers.

In a nutshell it can be said, that by attracting private investment, Surat Municipal Corporation has made available a popular city bus service which provides cost effective, efficient and eco-friendly public transport option to the citizens of Surat. In the coming years, it is proposed to expand the Bus service to the newly merged areas covering almost the full city. Low floor buses shall be deployed very soon and AC buses are under consideration. Further, Surat Municipal Corporation has also initiated the BRTS project, initially on 2 corridors of about 30 km length.

Modern Central Bus Terminus cum Commercial Complex (Haldia, West Bengal)

1. Project Description:

The existing bus terminus was built in 1970. The infrastructure in the existing bus terminus is in a completely dilapidated condition and has virtually no passenger amenities. Over the years there has been an increase in bus passenger traffic resulting in a multifold increase in the required scale of operations, thus justifying setting up the new Bus Terminus.

Haldia's steady growth in the commercial, industrial and other service sectors have resulted in increased inter and intra city traffic. In view of this, H.D.A. has identified this civic infrastructure of modern Bus Terminus to be developed under a Public Private Partnership format.

The 11 acre land near the HPL Township has been identified as proposed site. With coming up of this Bus Terminus the commercial value of area around it is expected to enhance.

2. Key Features of the Project:

- Out of this 11 acres the private partner would develop modern Central Bus Terminus on 7 acres land with modern facilities and amenities of international standards and operate it for a period of 20 years and then will hand over the asset to HDA.
- Balance 4 acres land will be developed commercially by the PPP partner and operated and maintained for 50 years and handed over to HDA thereafter.
- The following payment terms have been agreed by the successful bidder:
 - One time upfront payment of Rs. 1.75 crores
 - Annual concession fee of Rs. 1 lac per annum
 - 5% of the gross receipts from services / lease of the commercial complex and commercial space in Bus Terminus also.

- On the basis of a competitive bidding process, the highest financial bid has been received by a consortium of M/S. Suryachakra Power Corp. Ltd., a leading infrastructure company based in Hyderabad and M/s. Zekon Bhd, a leading construction company in Malayasia (technical collaboration).
- The project has been developed by IL & FS Ltd. one of the leading infrastructure development agencies of the country.

3. Present Status:

This proposal has duly been approved by U.D. Department, Government of West Bengal. Concession Agreement has been signed on 13.02.2008 between HDA and M/S Suryachakra Power Corporation Ltd. Financial Closure is about to complete and Process for Environmental Clearance has been initiated.

Construction of Dividers, Installation of Railings and Greenery (Indore, Madhya Pradesh)

Project	Construction of Dividers, Installation of Railings and Greenery at MG Road and RNT Marg
Cost of the Project	80.00 lakhs
Description	<ul style="list-style-type: none"> • The concessionaire was vested with the responsibility of constructing dividers, installation of railings and greenery at MG road and RNT marg. • Corporation continues to own the land • After the concession period, the built-up structure will be transferred to the Corporation by the concessionaire. • The concessionaire was given the right to charge for advertisement to recover its investment. • At the time of award of concession, it was estimated that a profit of Rs. 100 lakh will be accrued from the venture, which will be shared by the concessionaire with the Corporation. • Within the period of 15 years, the Corporation is expected to receive a profit share of Rs. 48.44 lakh from the concessionaire.
Benefits of the Project	<ul style="list-style-type: none"> • For Smooth Traffic Management & Operation • Environment • Road Safety

Construction of Bus Stops (Indore, Madhya Pradesh)

Project	<p>Construction of Bus Stops</p> <p>50 in Group Co 1</p>
Cost of the Project	65.00 lakhs
Description	<ul style="list-style-type: none"> • The land was allotted to the concessionaire to construct the bus stops by the Corporation • Corporation continues to own the land • After the concession period, the built-up structure will be transferred to the Corporation by the concessionaire. • The concessionaire was given the right to charge for advertisement to recover its investment. • At the time of award of concession, it was estimated that a profit of Rs. 300 lakh will be accrued from the venture, which will be shared by the concessionaire with the Corporation. • Within the period of 15 years, the Corporation is expected to receive a profit share of Rs. 137 lakh from the concessionaire.
Benefits of the Project	<ul style="list-style-type: none"> • Citizen will get proper structured bus stops • Concessionaire will also set up LID Monitor which will provide information on bus schedule

<p>Project</p>	<p>Construction of Bus Stops</p> <p>50 in Group Co 2</p>
<p>Cost of the Project</p>	<p>65.00 lakhs</p>
<p>Description</p>	<ul style="list-style-type: none"> • The land was allotted to the concessionaire to construct the bus stops by the Corporation • Corporation continues to own the land • After the concession period, the built-up structure (bus stop) will be transferred to the Corporation by the concessionaire. • The concessionaire was given the right to charge for advertisement to recover its investment. • At the time of award of concession, it was estimated that a profit of Rs. 150 lakh will be accrued from the venture, which will be shared by the concessionaire with the Corporation. • Within the period of 15 years, the Corporation is expected to receive a profit share of Rs. 61 lakh from the concessionaire.
<p>Benefits of the Project</p>	<ul style="list-style-type: none"> • Citizen will get proper structured bus stops • Concessionaire will also set up LID Monitor which will provide information on bus schedule

Construction of Multi-storey Parking (Indore, Madhya Pradesh)

Project	Construction of Multi-storey Parking
Cost of the Project	150.00 lakhs
Description	<ul style="list-style-type: none"> • The land was allotted to the concessionaire to construct the Multi-storey Parking by the Corporation • Corporation continues to own the land • After the concession period, the built-up structure (Multi-storey Parking) as well as “Right of Occupation” of Shops will be transferred to the Corporation by the concessionaire. • The concessionaire was given the right to recover its investment from the premium received for “Right of Occupation” of the constructed shops. • At the time of award of concession, it was estimated that a profit of Rs. 150 lakh will be accrued from the venture, which will be shared by the concessionaire with the Corporation. • The Corporation is expected to receive a profit share of Rs. 150 lakh from the concessionaire.
Benefits of the Project	<ul style="list-style-type: none"> • Parking Space

Project	Construction of Multi-storey Parking at Shubah Chawk (Second Phase)
Cost of the Project	70.00 lakhs
Description	<ul style="list-style-type: none"> • The land was allotted to the concessionaire to construct the Multi-storey Parking by the Corporation • Corporation continues to own the land • After the concession period, the built-up structure (Multi-storey Parking) will be transferred to the Corporation by the concessionaire. • The concessionaire was given the right to recover its investment from the premium received for “Right of Occupation” of the constructed shops and Parking Fee from the users. • At the time of award of concession, it was estimated that a profit of Rs. 20 lakh will be accrued from the venture, which will be shared by the concessionaire with the Corporation. • The Corporation is expected to receive a profit share of Rs. 7 lakh from the concessionaire.
Benefits of the Project	<ul style="list-style-type: none"> • Parking Space

Modern Interstate Bus Terminal (ISBT) (Dehradun, Uttranchal)

1. Project Preparation & Development Phase:

Feedback Ventures was appointed as project advisor for project configuration, structuring, bid process and award

Project Structure Salient Features:

- Project configured as Integrated ISBT bus Complex and Commercial cum Entertainment Complex
- Developer's Scope: Design, Finance, Build, Operate & Maintain for the entire concession period of 20 years, extendable to 30 years
- Revenue model for the Developer is Adda Fee from the scheduled 750 buses per day (as per RFP document) (Annexure II), lease rental & other forms from commercials and user fee from value added services
- MDDA to get annuity payment from Developer

2. Bid Process Stage:

Process of selection of Developer was two stage; RFQ (Pre Qualification) and RFP. Post RFQ thirteen firms of national repute were short-listed to participate in RFP stage (technical and financial bid submissions)

- Pre-bid meeting was held on 25.04.03 with short-listed bidders
- RPF security as Bank guarantee of Rs. 25.00 Lakhs was sought
- Date of submission of bid was 10.06.2003

Post evaluation of bids, Ramky Infrastructure Ltd was declared as successful bidder, **offering highest annuity payment to MDDA.**

Project Award & Signing Stage: Negotiation took place where certain issues were agreed upon, before signing of concession agreement between MDDA (the Concessioneing Authority) and Ramky Infrastructure Ltd (the Concessionaire) on 26.07.2003

3. Benefits Accrue to MDDA & the Government:

- No cash exposure in construction and O & M.

- Guaranteed Annual Revenue of Rs 81 Lakhs (inflated every year by 5% and to be paid by developer after the lapse of moratorium period), which would aggregate to the tune of Rs 19.16 Crores over the entire concession period.
- Ultra Modern Bus Terminal with all modern facilities and amenities
- Showcase project for the city: MDDA's pride
- Developer's ingenious design
- Efficient O&M
- Dehradun city to have first Mall cum Multiplex Complex which shall act as one of the finest Leisure Entertainment' or Family Entertainment Center (FEC) for residents of Dehradun and floating populace.

4. Project Implementation Stage:

- Ramky Infrastructure Ltd post signing established a Special Purpose Vehicle (SPV), MDDA Ramky ISBT Ltd (MRISBTL) for implementing the project.
- Construction started on 15 August 2003
- The project was to be executed in two phases:

Phase I, ISBT complex and **Phase II**, Commercial cum Entertainment Complex. The phase I of the project got constructed well within timeframe of twelve months from date of commencement.

The ISBT complex is up operational from June 3rd 2004.

The phase II of the project got deferred due to delay in Financial Closure (raising of term loan) but now since it has been achieved, the preliminary activities are on with design ready, project team execution in place and site clearance started off.

The phase II of the project has been positioned as Mall cum Multiplex Complex with lease able area to the tune of 69771 sqft out the total permissible area of 81566 sqft (the area of 11795 sqft already has been constructed in ISBT Complex as Shops, kiosks, restaurants).

Key Features of the Project :

Location : At the junction of Saharanpur road and the Haridwar bye pass road.

Land Area : 10.40 Acre (41954 Sq. m). Excluding area under.H.T. line.

Area to be developed :

Sl. no	Description	Area(Sqm)
1	Built-u Area Terminal Buildin 2 Platform Area	10604
2	Platform Area	3315
3	Road Area	33905
4	Idle Parking Area	7902

Other area to be developed :

Sl.No.	Description	Area (sqm)
1	Terminal Parking (for two wheelers/ four wheelers)	6250
2	Taxi- T S R Stand	1712
3	Office Parking Area	840
4	Driver's Canteen and Rest Room	225
5	Toll Booth	39

Bus Bays :

Sl.No.	Type of Bus Bays	Area (sqm)
1	Long Route and Short Route (Inter State)	50
2	Local Buses	10
3	Idle parking – Interstate	36
5	Idle Parking	09

Toll Fee for Buses :

Sl.No.	Description	Adda Fee (Per Trip)	
		Short Stay < 4 Hrs.	Long Stay > 4 Hrs. <24 Hrs.
1	Interstate Buses (Long route-one trip in 24 hrs)	Rs. 50.00	Rs. 100.00
2	Interstate Buses (Short Route-Two trips in 24 hrs)	Rs. 40.00	Rs. 80.00
3	Interstate Buses Near Dehradun	Rs. 30.00	Rs. 60.00
4	Local Buses within city any no. of trips in 2 Hrs.	Flat Fee Rs. 50.00 Per Bus Per Day	

Construction of Over-bridge and Traffic Direction Boards (Indore, Madhya Pradesh)

Project	<p>Construction of over bridge and traffic direction boards at the prominent crossings / roads.</p> <p>2 over bridges 50 Direction Boards 500 Traffic Signal Boards</p>
Cost of the Project	500 Lakh
Description	<ul style="list-style-type: none"> • The concessionaire was given the right to charge for advertisement to recover its investment. • At the time of award of concession, a profit of Rs. 500 lakh was estimated which the concessionaire will share with the Corporation. • Within the period of 18.6 years, the corporation is estimated to receive Rs. 216 lakh from the concessionaire. • The ownership of land continues to remain with the Indore Municipal Corporation. • The concessionaire was given the right to build the structure which will be given back to the Corporation on the expiry of the concession period.

Sardar Patel Ring Road (Ahmedabad, Gujarat)

1. Project Description:

The Sardar Patel Ring Road was conceptualized in the revised Development Plan of 2001 of Ahmedabad Urban Development Authority. The out most ring road encircling Ahmedabad Urban agglomeration was conceptualized to

- Reduce traffic congestion on arterial and peripheral road so Ahmedabad
- Segregate regional and urban traffic
- Increase connectivity of Ahmedabad city areas to the region
- Guide the development and expansion of Ahemdabad. The revised Development Plan proposes an additional 64 sq. km of urbanizable land over the next 10 years. This area has been contained within the ring road.

Total length	76.31 km
Right of way	60 m
Villages en-route	23 villages
Structures	2 brides on river Sabarmati, 2 railway over bridges and 1 railway under pass.
Junctions	19 major roads of various categories either connect or cross the SP road
Ahmedabad area Coverage	Encompasses an area of about 400 sq km and covers a population of 40 lakhs

2. Project Component and Phasing:

- **Phase I** includes two laning of the entire stretch and four laning of major structures.
 - Cost : Rs. 230 crore
 - Status : Commenced in 2001 and completed in 2006
- **Phase II (PPP Project)** includes extension of existing two lanes to four lanes.
 - Cost : Rs. 378 crore
 - Status : Four laning is being done on BOT model. The BOT document was floated in February, 2006 and work was awarded to a joint venture.

- **Phase II** includes extension of the ring road with facilities like :
 - Control Access, 17 flyover, 5 underpasses, 2 rail over bridges
 - Service roads, cycle tracks and exclusive bus lanes for Bus based rapid transit system (BRTS) and walk ways on both sides
 - Plantations with 7 rows of trees and shrubs for the green fort.
 - Cost – estimated as Rs. 460 crore

3. (PPP Model for Phase II) – Key Features :

- Using BOT model for implementing phase II and for recovering cost incurred by AUDA from its internal resources to complete Phase I.
- Private Sector Involvement for all technical inputs from initial stage of the project in
 - Planning, technical and financial feasibility studies, surveys, detailed design, construction, supervision and construction quality control to achieve efficiency
- Private participation for
 - Junction development
 - Plantation along the road
 - Toll tax collection
 - Signage development
- Land development through use of town planning scheme mechanism
- Vision and dynamic leadership of the Authority
 - People supported the project and gave their land willingly for the ring road
 - A system of incentives for timely completion of tasks and penalties for delays was introduced to ensure timely completion of ring road
- BOT model brings forth an integrated partnership between AUDA and the private party, enabling AUDA to transfer responsibility of design, procurement, construction, operation and maintenance of the road and its facilities to the private party.
- The private company generates revenue by collecting fees in the form of toll tax from people using the ring road during the operation and maintenance period.

- The viability of the BOT package has been established after analyzing the capital cost, traffic forecast, user fee structure and operation and maintenance expenses.
- Concession Period : 20 years
- Project Cost and Revenue
 - The Project will cost a total of Rs. 2347 crore
 - Rs. 230 crores for payment to AUDA
 - Rs. 192 crores for additional two lanes
 - Rs. 294 crores for maintenance of 20 years
 - Rs. 131 crores for toll collection and management for 20 years
 - Rs. 1500 crores as interest on installment of capital and maintenance cost (on reducing basis)
 - Total toll revenue is estimated as 2350 crores in 20 years.
 - As viability gap funding, AUDA will have to pay Rs. 36 crores as grant to the concessionaire in two years period.

4. Key Learnings:

- A participatory approach results in creation of urban infrastructure in a rapid and efficient manner.
- Strong political and administrative leadership is required to undertake large scale infrastructure projects.
- Professional approach to planning and implementation of infrastructure projects is important
 - Efficient project management facilitates timely implementation of large scale city infrastructure projects
 - Such projects should be conceptualized in totality and implemented by scaling up through stages
- Land development through TP scheme leads to an equitable, democratic and fair mechanism as compared to the Land Acquisition model to create urban infrastructure.

Miscellaneous

Construction of Commercial Complex (Indore, Madhya Pradesh)

Project	Construction of Commercial Complex at Ranipura Market
Cost of the Project	150.00 lakhs
Description	<ul style="list-style-type: none"> • The land was allotted to the concessionaire to construct the Commercial Complex, by the Corporation • Corporation continues to own the land • After the concession period, the built-up structure (Commercial Complex) will be transferred to the Corporation by the concessionaire. • The concessionaire was given the right to recover its investment from the premium received for “Right of Occupation” of the constructed shops. • At the time of award of concession, it was estimated that a profit of Rs. 200 lakh will be accrued from the venture, which will be shared by the concessionaire with the Corporation. • The Corporation is expected to receive a profit share of Rs. 100 lakh from the concessionaire.
Benefits of the Project	<ul style="list-style-type: none"> • Marketing facility

Street Lighting Project (Nasik, Maharashtra)

1. Project Description:

The Nasik Municipal Corporation (NMC) project is the first ESCO (Energy Saving Company) project to be implemented in Maharashtra state on the concept of “shared savings basis”.

Sahastratronic Controls Private Limited (SCPL), a company of the Sakar group was appointed by NMC as the ESCO to implement the project for upgrading the existing street lighting facilities on the end users’ (NMC’s) premises.

NMC awarded the contract to SCPL for supply of 486 nos. of energy saving devices catering to almost half of the total requirement of NMC. Under the Energy Services Agreement (ESA), SCPL was required to invest to implement energy efficiency measures, namely Street Light Controllers (SLC), including capital assets, and maintain the same for a period of 5 years.

Based on the ESA, ICICI Bank provided financial assistance of Rs 8.3 million to meet part of the cost of the project out of a Rs. 20.0 million Line of Credit (LoC) facility sanctioned to the ESCO through USAID’s ECO Programme. Repayments were secured by means of a direct payment mechanism by NMC through an escrow arrangement.

Energy audit studies had estimated energy savings potential of at least Rs 7.5 million annually. **SCPL had guaranteed a minimum 25% of energy savings. A large part of the savings was to be shared with SCPL as compensation for establishment and maintenance.** SCPL and NMC finalized locations for 361 panels for the first phase and 125 panels for the second phase. The first phase of the project consisting of 361 panels with a total load of 4000 kVA was successfully commissioned in December 2004 to the satisfaction of NMC. Subsequent to the successful implementation of this project, NMC awarded the second contract on a shared savings basis to the ESCO for which ICICI Bank sanctioned a rupee term loan of Rs 3.8 million out of the existing line of credit sanctioned to them.

2. Situation Prevailing Earlier & Major Issues:

Nasik Municipal Corporation (NMC), catering to the requirement of Nasik city in Maharashtra is one of the major progressive municipalities covering an area of 260 sq km and managing essential services for a population of about 1.2 million with 36 wards and 108 corporators. Like other parts of Maharashtra, Nasik city also currently faces an acute shortage of power supply. In addition, the cost of power has been increasing in the recent past. This has created an additional burden on the coffers of NMC. One of the major civic responsibilities of NMC is to provide street lighting in city/municipal area limits for vigilance & surveillance. Street lighting is thus one of the major costs incurred by NMC.

Before the project implementation commenced, **NMC was drawing about 5000 kW of energy per hour in a 12-hour day, through out the year for their street lighting application. This was equivalent to an energy bill of about Rs 5.5 million per month payable to MSEB on street lighting alone.**

3. Factors on Which the Solution was based:

The existing street light design was based on a nominal voltage level of 220 V where the lux levels are about 30 lux against an acceptable lux level of 15 to 20 lux at different traffic conditions. The actual requirement of illumination level differs substantially over a time period. The existing system in use was not intelligent enough to cater to this requirement. All the existing lighting fixtures in use by NMC used conventional gearboxes. These control boxes do not vary the voltage according to lumen requirements & are designed for maximum requirements of light output & hence are not energy efficient as the light output depends upon the voltage fed to the lamp. Thus NMC thought it appropriate to devise a strategy to reduce the power consumption of street lighting, keeping the requirement of illumination intact.

4. Elements of the Solution & Logic:

SCPL, the ESCO, carried out an energy audit/survey at all the street lighting locations of NMC considered under the proposed project. The baseline consumption norms were thus finalized in consultation and approval of NMC for each location. Based on these norms, SCPL suggested various energy efficiency measures to achieve savings. The same was approved by NMC. As per the agreed terms, SCPL, jointly measured the energy consumption to arrive at the actual energy consumption norm. Based on this data (baseline), the savings accrued were computed on a half yearly basis. Besides, the

agreement had a provision of joint inspection and verification after a period of six months at the discretion of NMC. This project envisaged installing about 490 SLC's catering to about 19,000 streetlights, to improve the overall operating efficiency at various locations in the NMC jurisdiction.

The energy efficiency project was to be implemented on NMC premises. Under the project, the energy saving devices were installed at predetermined locations, decided mutually between the SCPL and NMC, so as to maximize the savings potential. As per the Energy Services Agreement (ESA), NMC agreed to give unhindered access to the personnel of SCPL at all times during the implementation of the project and thereafter for maintenance.

5. Salient Features of the Energy Saving Agreement :

1. NMC would make payments to SCPL within 30 days from receipt of the bills from SCPL. In case the payment was delayed beyond the due date NMC would pay delayed payment charges of 12% per annum.
2. SCPL would be responsible for design, manufacture, supply, erection and commissioning of the microprocessor based energy saving devices (SLC's) and all the required supporting infrastructure, accessories for the street lighting in the allotted jurisdiction on a BOOT basis.
3. SCPL would be responsible for maintenance of these devices until termination of the agreement.
4. The savings would be shared as follows:

Year	NMC Share	SCPL share
1 st	70%	30%
2 nd	60%	40%
3 rd	50%	50%
4 th	35%	65%
5 th	19%	81%

5. NMC would issue a no objection certificate for hypothecation of assets owned by SCPL installed in the NMC area to the lender, in a format acceptable to the lender. NMC required SCPL to execute an indemnity bond to indemnify NMC against all transactions of raising funds by SCPL for the project.

6. NMC was agreeable to enter into a tripartite agreement if required by the lender but would not be responsible for any defaults by the company.

If required by the lender, NMC also agreed to issue payments due to SCPL directly to the lender in a designated account of the company with the lender, subject to such a request from SCPL.

6. Implementing the solution:

The Street light Controller (SLC) was proposed by SCPL as a device that could be used to monitor the light & optimize its application. A large savings potential existing specifically between midnight and early morning thus could be tapped using this device. The main function of SLC is to give sufficient power to start the lamp & control the output of the lamp according to the requirement. The device has a microprocessor-based controller that controls the output of the lamp. Other salient features of the SLC are as follows:

Salient Features of SLC

- It would be a micro-processor based unit with a real time clock (RTC).
- It will have three modes of operation (START, RUN & DIM modes).
- In START mode the voltage is corrected to a level which is specified by the lamp manufacturer for starting so as to ensure the life from the bulb and that it glows.
- After stabilization period of 5 minutes, the microprocessor changes the mode from START to RUN in which the voltage is set to a level giving acceptable light level.
- After the programmed time interval of RUN mode, the DIM mode starts in which the voltage is set to a level where in the light interval is reduced to an agreeable value. There is a possibility of DIM 1 & DIM 2 options also.

7. Cost Benefit analysis & Results Achieved:

NMC draws about 5000 kW of energy per hour in a 12-hour day, through out the year for their street lighting application. This amounts to an energy bill of about Rs 5.5 million per month payable to MSEB (at a tariff of Rs.3 per KWhr) or an annual expenditure of around Rs. 65.0 million on street lighting alone. The actual load for the purpose of the street lighting project, for the area given to the ESCO (both phase 1 and 2) was about 3800 KW. On this basis, the energy bill payable to MSEB per month worked out to about Rs. 50.0 million. On the basis of 25% assured savings the savings for this area was

estimated to be $0.25 \times 50.0 = 12.5$ million. As against this estimate, the NMC project has over a period of 2 years realised energy savings of about Rs 30.7 million on a total load of 6000 KVA and a capital investment of Rs 16.6 million. The average savings per year have worked to $30.7 \times 0.5 / 50.0 = 31\%$ with peak savings on some sub-sections being as high as 44%. As on March 31, 2008, SCPL has repaid Rs 7.5 million out of the total assistance of Rs 8.3 million sanctioned.

8. Important Statistics:

- Date of award of phase I contract: May 2003
- Date of award of phase II contract: Jan 2005
- Area covered under contract for both phases : Panchvati, Nasik (East), Nasik Road
- Start of phase I project: Dec 2003 (completed Mar 2004)
- Start of phase II project: Apr 2005 (completed Nov 2005)
- Total load under the project 3.8 MW
- Energy bill for project area prior to implementation of project:
 - Rs 4.1 million/month (Rs 50 million p.a.)
- No. of panels installed: 486 nos (phase I –361 nos, phase II -125 nos)
- Street lights covered: ~19,000 nos (phase I – 12,000 nos, phase II –7,000 nos)
- Savings achieved in both phases (till 31.03.2007):
 - Rs 48.1 million (17.4 million units)
- Savings achieved in both phases per annum
 - Rs 16.0 million (5.8 million units)
- Savings achieved in both phases per month
 - Rs 1.3 million (0.5 million units)
- Avg savings realized 32% p.a. with peak savings on some sections as high as 44%

9. Impact:

The project being the first of its kind in the country has served as a model for other ULB's/ municipalities and government organizations to follow. Successful execution of the project and timely repayments to the bank is a demonstration for other municipal corporations to undertake similar street lighting projects to achieve significant savings from energy efficiency using the public private partnership route.

There is no financial risk in entering into the contract by the municipal corporation, since the ESCO is the borrower. Moreover energy savings being

substantial, the additional cash flows can be utilized by the municipal corporation for funding other priority schemes, such as health and education. The saved energy can be utilized by the utility either to improve power supply to rural areas and for new industrial development.

ESCO (Energy Service Company) Financing for Municipalities

Among the various prospective sectors for ESCO's in India, one of the most promising are urban local bodies where projects for improving energy efficiencies, especially in areas of public lighting and water pumping, are presenting new business opportunities for ESCO's to establish and run these projects. Municipalities spend approximately over one-half of their revenues on energy costs for public lighting and pumping drinking water. Existing public lighting and water pumping facilities are of vintage technology, and contemporary technologies are superior in performance and energy efficient. Similarly, lighting efficiencies are low. Further, there is tremendous scope for restructuring the working to make it more productive and efficient. Energy audits have helped them see the vast potential and chart out a clear course of action to be pursued. It may be possible to save up to one-third of the existing energy bills. Besides, project payback can be as low as 1-2 years.

Fiscal constraints have hamstrung municipalities from undertaking major capital expenditure programs to address the issue of reforming their existing lighting and water pumping systems. At the same time, increased awareness, widening fiscal deficits and service considerations are compelling municipalities to improve performance efficiencies and cut costs. Municipalities have been slow to pursue such projects largely because of their procedures, budgetary constraints and lack of awareness. Of late, increasing power bills and growing needs are driving the need to reduce energy costs. Some of the financially stronger municipalities would be in a position to undertake projects on their own. Alternatively, ESCOs working on the concept of shared savings provide a viable option for municipalities to implement

energy savings projects. Municipalities are open to collaborating with ESCOs to undertake projects, whereby the ESCOs will build, operate/ maintain and transfer the capital assets against assurances of energy savings. Municipalities also have assured revenues from local taxes and cesses, and have sufficient financial independence to ensure that the projects are viable and bankable. However, the deteriorating financial position of a large number of municipalities necessitates the creation of a strong financial structure to help realize the monies of the ESCO and the banks who finance the project.

There are over 1000 municipalities and urban local bodies in India who could take up EE projects of a viable size. There is an increasing trend of municipalities borrowing from the open market in addition to state support, and various financial support

mechanisms are already in place in the Indian market. This trend is limited for the financially strong ULB's. Therefore suitable financial structures can be devised to improve creditability of projects and mitigate lending risks. Besides, lending through ESCOs reduces the project and performance risks. Business opportunities for both municipalities and ESCOs, assuming average investment of Rs 40 million and a population of 200 projects, could be in the range of Rs 6 to Rs 8 billion. The other big issue is the number of credible ESCO's to implement these projects is very limited and therefore graduating more energy auditors as entrepreneurs is an important task that remains to be accomplished. A fund administered by an appropriate agency at the Central Government level that would subscribe to equity in upcoming ESCOs could perhaps show the way forward.

The first municipal ESCO project on a shared savings basis was funded by ICICI Bank.

Establishment of High Capacity Wireless Infrastructure in (Pimpri Chinchwad, Maharashtra)

1. Background:

Pimpri-Chinchwad, the industrial hub of Maharashtra, is part of the Pune-Mumbai corridor and the golden triangle (Pune-Mumbai-Nashik). Pimpri-Chinchwad's population is growing at the rate of 100% in the last two decades and at more than 150% in the previous decades. Today, Pimpri-Chinchwad is a major industrial centre of the Pune Metropolitan Region (PMR) for the state of Maharashtra and the country. Pimpri-Chinchwad's growth rate is expected to be on the higher side for the three subsequent decades due to the all-round economic development of PMR. Accordingly, the estimated present population of 12.5 lakhs is estimated to reach 15.07 lakhs and 21.50 lakhs by 2011 and 2021 respectively.

Being one of the major industrial city in Maharashtra State, PCMC was always keen in bringing latest technologies in municipal e-governance. Hence, PCMC has decided to e-transform their operations within & services to citizen. To achieve this objective **PCMC is establishing a city wide high capacity wireless infrastructure through Public Private Partnership (PPP) mode.** The Project is towards creation of wireless infrastructure and to manage the infrastructure on revenue sharing basis. **The private partner is expected to make the investment from its sources for the expenses of the infrastructure, bandwidth, management, human resources and maintenance of services, collection of revenue and all other expenses necessary for smooth functioning of the project and for achievement of objectives.** PCMC will also utilize the infrastructure to the extent it is required for their day to day operations and to deliver services to the citizens.

2. Project Description and Bidding Process:

PCMC on 15th December 2007 had called for tender on competitive basis for PPP project on revenue sharing basis to create infrastructure and management of :

1. ISP services for PCMC offices, business and citizen in the PCMC area
2. Ubiquitous IP wireless infrastructure
3. Extending services to citizens including internet and value added services such as e-governance, e-education, e-health etc. over the proposed infrastructure.
4. commercial transactions with revenue sharing with PCMC

The pre-bid meeting for the project was scheduled for 4 January 2008 and about 11 companies attended the meeting. Thereafter PCMC received on two bid offers which were evaluated by an independent party (Science and Technology Park, Pune) and IL&FS along with its joint venture (Software Technology parks of India, Fujitsu India Ltd and Lifestyle Networks Ltd.) partners were selected for providing wireless infrastructure on competitive basis.

The IL&FS and its joint venture partners would perform the following roles in the projects :

IL&FS would be Lead Business Associate and will play the role of system integrators, project finance and over all programme manager role.

STPI with “A” class ISP license would play the role of providing data communication and billing management.

Fujitsu India Ltd. would offer Data centre services along with application development for the proposed E-governance services.

Lifestyle Network Ltd. is the wireless infrastructure creator and manager.

Note : PCMC has passed a resolution for award of contract to IL&FS and its joint venture partners. The contract document is under finalization phase and PCMC is planning to implement the project before the start of the Common Wealth Youth Games in October 2008.

3. Key Features:

- Tenure of the project : 10 years
- Estimated cost of the Project for 10 years : Rs. 42.84 crore
- IL&FS and its joint venture will invest in all the required infrastructure
- PCMC to provide land for setting up infrastructure, on rental basis.
- Revenue sharing

Details of the Revenue sharing

Year	Amount to be funded by PCMC to bidder	Amount to be paid to PCMC by IL&FS and its Joint Venture	Proposed Minimum revenue share to be paid to PCMC (Rs Lakh)
1 Year	Nil	2.5% on the first Rs. 25 crore revenue & 4% on the remaining amount	As per the percentage share
2 Year	Nil	2.5% on the first Rs. 25 crore revenue & 4% on the remaining amount	As per the percentage share
3 Year	Nil	2.5% on the first Rs. 25 crore revenue & 4% on the remaining amount	64
4 Year	Nil	2.5% on the first Rs. 25 crore revenue & 4% on the remaining amount	80
5 Year	Nil	2.5% on the first Rs. 25 crore revenue & 4% on the remaining amount	97
6 Year	Nil	2.5% on the first Rs. 25 crore revenue & 4% on the remaining amount	116
7 Year	Nil	2.5% on the first Rs. 25 crore revenue & 4% on the remaining amount	138
8 Year	Nil	2.5% on the first Rs. 25 crore revenue & 4% on the remaining amount	161
9 Year	Nil	2.5% on the first Rs. 25 crore revenue & 4% on the remaining amount	186
10 Year	Nil	2.5% on the first Rs. 25 crore revenue & 4% on the remaining amount	214

Public-Private Partnership Projects in Pune – An Approach

1. Background :

In a move to promote Public Private Partnership, the Pune Municipal Corporation (PMC) has started BOT cell in February 2000. Among the types of public private partnership names, service agreements, leasing and concession, concession allows the highest autonomy to service provider (service provider pays concession fees and has authority to collect and retain service tariffs), hence PMC has opted for it. The BOT Committee of PMC assesses the projects and if found feasible grants permission to the BOT project, or recommends to Standing Committee or General Body for permission as per the requirements.

PMC has identified BOT projects of three types, namely, Non Commercial, Commercial and Donation type of Projects.

- a) Non-Commercial Projects, where the developer does not have any commercial motive. Works like chowk and road beautification, nalla beautification, development of traffic islands, etc fall under this category. In this case no advertisements accept the log and title of the sponsor is displayed as an acknowledgement.
- b) Donation Type of Projects wherein developers construct the facility in lieu of christening the facility with a specific name to be decided exclusively by the developer
- c) Commercial Projects wherein the lands under reservation as per the PMC development plan or lands owned by PMC are developed by inviting tenders. The developer offering the highest premium is granted permission to develop the land after taking the requisite permission from the General Body. The developer is allowed to recover his investment by levying tariff (in case of parking lots), lease of the shops, offices (in case of commercial complexes), display of advertisements (signage-with prior approval from the General Body), etc. during an agreed concession period.

BOT committee takes decision about non commercial & donation types of BOT projects. Commercial BOT projects are submitted to Appropriate Authority (Standing Committee and / or General Body of PMC) for approval depending on the project cost.

2. BOT Projects Completed by PMC:

Since its establishment BOT Cell, PMC has undertaken variety of projects & completed almost 125 projects till May 2008. Total cost of completed and partly completed BOT projects is around Rs. 47 crores. Among the implemented projects, projects mainly are of Non-commercial type involving beautification of roads, chowks, nallas, gardens, etc.

Details of major POT Projects

Project	Total Cost of the Project	Status
Subway at Modern High School Chowk, Jangali Maharaj Road	Rs. 3 crore	Implemented
Computerisation of Octroi Posts and Administration Building	Rs. 25 crore	Implemented
Directional overhead Signages and Foot Over-Bridges on Main Roads	Rs. 5.5 crore	Implemented
Development & Maintenance of Firodia Garden, Model Colony, Nalla Garden, Off S Bapat Road and Gul Poonawala Gardn, Salusburry Park, Pune	Rs. 80 lakhs	Implemented
Construction & Maintenance of Extension to SNTD FOB, Marve Road	Rs. 20 lakhs	Implemented
Setting up and running Trauma Centre and Hospital at Bopodi, Pune	Rs. 10 crore	Under Implementation
Construction and Maintenance of Public Toilets	Rs. 50 lakhs	Under Implementation
Development & maintenance of Nalla Garden, Model Colony & Nalla Garden at Prabhat Road, Jogging Track at Bund Garden Pune	Rs. 75 lakhs	Under Implementation
Installation & maintenance of Solar Traffic Signals, Red Signal, Balance Time Indicators & Inverters at various junctions	Rs. 25 lakh	Under implementation
Cleaning of Roads	Rs. 1 crore	Under implementation
Beautification & maintenance of junctions & road dividers	Rs. 1.25 crore	Under Implementation
Re-development of municipal colonies	Rs. 77 crore	in pipeline
Re-development of municipal vegetable markets	Rs. 25.5 crore	In pipeline
Development of road – side vendor markets	Rs. 10 crore	In pipeline
Setting up & running maternity and general hospital at Kothrud, Pune	Rs. 6 crore	In pipeline

Key Learnings

PPP CASE STUDIES IN URBAN INFRASTRUCTURE

Key Learnings

Background :

The advantages Public Private Partnership (PPP) in Infrastructure has been well documented and are reiterated below.

- a) ***Augmenting Funds***: The requirement of funding for Infrastructure is immense – in India for example the ***requirement for Infrastructure over the next 5 years has been estimated at USD 500 billion***. Governments more often than not are unable to meet this level of funding and look to augment this by private sector investments
- b) ***Superior Project Delivery*** : Superior project delivery is seen to be more potent an objective of government than augmentation of funds. Financial closure, Project commencement and Project completion schedules are typically built into the agreements with penal clauses for non adherence. Measurable parameters for project quality and maintenance are documented in the Agreements and deviations are typically penalised.
- c) **Improve Efficiencies & Competitive Environment** : There are two critical components; first ***PPP improves efficiencies***, as alluded through rigorous and disciplined contractual mechanisms. The second critical aspect is the ***more competitive environment*** that helps to improve efficiencies and reduces costs.

Key Learnings :

Typically PPP model has been adopted by Local Urban Bodies / Cities to achieve one or more than one the following objectives

- a) Improving Governance
- b) Superior Project Delivery
- c) Improving quality of service
- d) Investment required
- e) Reducing tariffs
- f) Reduce costs to government

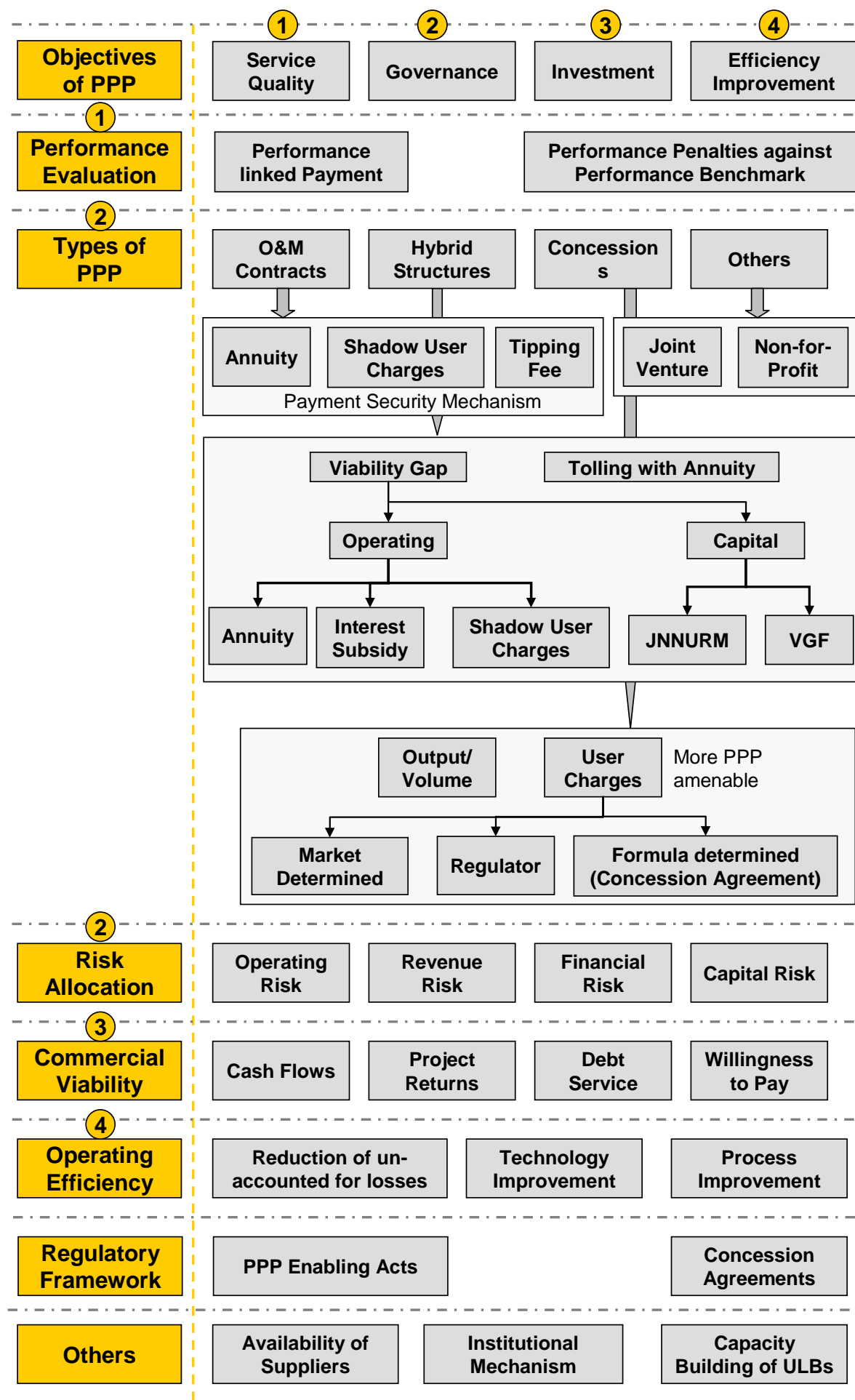
- A. **Reducing Tariff** : The transaction structure and bid process are derived from the above objectives. *The objective of the Water projects is to reduce tariffs and hence, tariff is the bid parameter in the Salt Lake water supply and sewerage project promoted by KMDA.*
- B. **Improve Quality of Supply and Reduce Cost** : The objective of the SWM projects is to improve quality of supply and reduce costs, therefore there are *penal clauses for non conformance to Standards of Quality (SOQ) and the tipping fee is the bid parameter.*
- C. **Operating Efficiency and Improving Service Standards** : The objective of PPP can also be achieving operating efficiency and improving service standards. *Latur management contract specified various service quality parameters as well as performance parameters for improvement of operating efficiency.*
- D. **Leveraging Funds** : The increasing urbanization and consequent stress on existing urban infrastructure needs huge investment by local authorities. PPP can be useful for leveraging the funds available with them. *Haldia Water Treatment Plant project was envisaged with a need to reduce operating losses, to increase production and to enhance quality of water and services.*
- E. **Regulatory Mechanism** : The regulatory mechanism for the Project might also have been prescribed by the concession or license agreements. *The contractual agreement in the Chandrapur water supply project specified the water quality measurement system and penal provisions for deficiency in specified water quality parameters.*
- F. **Payment Security Mechanism** : There are specific issues when the Government or parastatal is a user of the services, there are issues regarding Payment Security Mechanism, whether escrows or default security mechanism. The Tipping Fee would ideally require to be paid through an escrow agent. *In case of Nasik street lighting project, repayments to supplier of energy saving devices were secured by means of a direct payment mechanism by Nasik Municipal Corporation through an escrow arrangement.*

- G. Commercial Viability :** Viability analysis requires technical studies to determine the physical requirements of the project. Traffic or demand analysis is parallelly done so as to determine one component of the revenue stream. To make projects more PPP amenable, certain amount of volume or capacity utilization is being guaranteed by the Government. *Chennai Metropolitan Water Supply & Sewerage Board entered into a Bulk Water Purchase Agreement, specifying 95% of the contracted capacity will be the minimum quantity to be off taken.*
- H. Tariff Determination :** Tariff determination, the other segment of the revenue stream could either be a *bid parameter* as it is in the Water sector, *determined ex ante to the bid* as it is in the transportation case studies or *determined by the Regulator*. The tariffs could alternately be *market determined* and then neither the Regulator nor the Concession Agreement specifies the tariff but is at the discretion of the *Concessionaire in the case of the Commercial complex in Indore.*
- I. Revenue to Local Authorities :** The viable projects can generate funds to local authorities for financing their other infrastructure initiatives. *Haldia Development Authority generated additional upfront and annual revenues in addition to central bus terminal by giving commercial rights of the commercial complex on 11 acres of land to a consortium of Suryachakra Power and Zekon Bhd.*
- J. Viability Gap Funding :** In case of non-viable projects, the Government might need to pay operating or capital grant. This grant could be a capital grant under the VGF scheme or the JNNURM schemes. *Several Water and Solid Waste management projects have availed the JNNURM grant of 35% from GOI. In the KMDA Salt Lake water & sewerage project, the developer was given a capital subsidy of 35% of project cost from JNNURM funds.*

Alternately an *operating subsidy* could be granted to the Concessionaire for project viability. The operating subsidy could be in the nature of an *Annuity* by the public party. The annuity projects will result in investment of required facilities and infrastructure without large upfront funds. *Surat Municipal Corporation achieved this benefit through private city bus service, wherein the SMC will pay fixed annual premium per bus by operators for 200 buses for 5 years. Simultaneously, SMC will get annual premium from advertisement rights at city bus stands constructed by SMC.*

The third type of operating fee is the *shadow user charges*, where the traffic risk is assumed by the private sector. The tipping fee is a close corollary of the shadow user charge, in both cases the government pays the Concessionaire and in both cases the amount is linked to the actual use by the consumers. *Integrated Solid Waste Management of Alandur, Pallavaram and Tambaram municipalities envisages such tipping fee payable per the ton of waste generated by the municipalities.*

- K. Institutional Mechanism (SPV) :** The *institutional mechanism* for development of projects will be a special purpose company (SPC), either *joint venture or non-for-profit organization*. The SPC can be jointly formed by government, users and private developers. *The SPC for Haldia Waste Management Facility was a joint venture between Haldia Development Authority (HDA) and Ramky Environ Engineers Ltd. The SPC for the Tirupur water supply and sewerage project was joint promoted by Tamil Nadu Water Infrastructure Company (concessionaire) and Tirupur Exporters Association (users association).*
- L. Capacity Building :** Development of PPP projects requires *capacity building of staff of local bodies*. Even though each sector of urban infrastructure will require specific skillset, but general understanding of project structuring, contractual provisions and risk transfer can be utilized in each sector. *Pune Municipal Corporation has started BOT cell for project development. BOT committee takes decision about non-commercial and donation types of projects, while commercial projects are submitted to appropriate authority (Standing Committee and/or general body of PMC) for approval depending on project cost.*





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