



# Public-Private Partnership Stories

## India: Bhubaneswar Street Lighting



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Street lighting infrastructure in Bhubaneswar, the capital of the Indian state of Odisha, is outdated, inefficient, and in poor condition. Small streets and residential areas have poor, if any, lighting. Resource inefficiencies also make it expensive, creating a burden on the city's budget. The city's municipal authority, the Bhubaneswar Municipal Corporation, asked for IFC's assistance to design and structure the transaction, and manage a public-private partnership bid process to identify a qualified private sector partner to upgrade and manage the street lighting system.

Shah Investments, Financials, Developments, and Consultants Private Limited, an Indian Energy Services Company, was awarded the tender. It will invest in and manage Bhubaneswar's street lighting system and receive payments generated by realized energy savings. The city's citizens will benefit from better street lighting without adding to the city's financial burden. The contract was signed on October 5, 2013.

This series provides an overview of public-private partnership stories in various infrastructure sectors, where IFC was the lead advisor.

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## BACKGROUND

The municipal authority of Bhubaneswar, the capital of the Indian state of Odisha, knew it had a street lighting problem. Although the main roads were well-lit, smaller streets and residential areas were lit with dim, patchy lighting or none at all. The city's street lighting fell far below national standards, leading to constant complaints from the public. To make matters worse, owing to poor quality equipment, energy consumption for street lighting was extremely high, straining the city's finances.

The cause of these problems was no secret. First, street lighting infrastructure was outdated and in poor condition. Second, the entire system was operated manually and with only a few personnel available, maintenance was insufficient. Only six people handled procurement, installation, and replacement of luminaires, and customer complaints for a city with about 20,000 street lights. Third, no monitoring system was in place—over 75 percent of the street lights lacked meters and no inventory records existed. The city could neither monitor nor control burning hours.

Bhubaneswar Municipal Corporation (BMC), the responsible authority, understood that it did not have the technical or financial capacity to modernize and manage its street lighting system. It considered entering into performance-based contracts with the private sector, whereby an Energy Service Company (ESCO) would upgrade the street lighting infrastructure and improve management through metering, remote monitoring, compliance with national lighting standards, and the use of inventory records. ESCO would recover its investment by claiming a share of energy savings realized. But the track record of ESCO contracts in other Indian cities was mixed: many failed because of poor preparation and risk allocation.

To avoid these pitfalls, BMC and its parent department, the Housing & Urban Development Department (H&UDD), requested IFC's assistance to design and structure the transaction, and manage the bid process for an ESCO-based street-lighting project in Bhubaneswar. The project marked the beginning of IFC's relationship with the Government of Odisha.

## IFC'S ROLE

IFC worked closely with BMC throughout the process. The team carried out technical, commercial, and legal due diligence, designed the transaction structure, drafted bid documents, marketed the project, and provided assistance throughout the bidding process. IFC also analyzed similar projects in India and interacted with several ESCOs to identify best practices and potential impediments. The findings were integrated in the project design.

Early on, the scope of the technical due diligence was expanded from sample-based studies to an exhaustive survey of all streetlight points in the city, including road classification. The survey showed that BMC was being billed for approximately 20,000 light points out of a total of 30,000 and which could be included in the project scope. This made it the biggest street lighting ESCO project to be attempted in India at the time. Based on these results, the project was designed to ensure a complete system overhaul including meter-based billing, remote switching, replacement of existing luminaires with energy

efficient technology, and proper inventory management by ESCO. IFC also convinced the distribution utility to adopt the meters installed by ESCO for its own billing.

## TRANSACTION STRUCTURE

Typical street lighting networks in Indian municipalities are operated with minimum investments or maintenance planning. Cities simply replace burned-out bulbs to minimize costs. The ESCO Shared Savings model recommended by IFC, however, was designed so that efficient street lighting upgrades would be paid for and maintained by an ESCO, which in turn would receive payment through energy savings realized by BMC. In addition to energy consumption savings, IFC estimated BMC could also expect additional savings on the maintenance side and recommended that it share some of it as an operations and maintenance fee to be paid to ESCO. This created a powerful incentive for better efficiency.

The bid variable for the project was the energy savings committed by ESCO to BMC, subject to a 30 percent minimum. The winning ESCO and BMC would undertake a joint survey to establish the baseline energy consumption. BMC would use the data for monitoring and verification, including deviations from baseline, computations of adjustments, and determination of penalties.

IFC consulted with potential investors to identify potential deal breakers. Feedback from ESCOs operating in the public lighting space in India enabled IFC to mitigate risks such as project viability, lack of payment security, and ineffective monitoring and verification. IFC recommended innovations never before used in Indian municipal street lighting PPPs. For example, IFC advised BMC and H&UDD to institute payment security mechanisms including advance payments using escrow accounts and automatic approval of 75 percent of operator invoices. These project features significantly increased investor confidence in the project and in BMC as a partner.

## BIDDING

Sixteen companies expressed interest in the project, of which four submitted bids. The winning bidder was a consortium led by Shah Investments, Financials, Developments, and Consultants Private Limited. The ESCO contract was signed on October 5, 2013.

### EXPECTED POST-TENDER RESULTS

- Expected to generate annual savings to government of \$100,000.
- Mobilized \$4.8 million in private sector investment.
- Will reduce greenhouse gas emissions by an estimated 10,500 annually.

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