

Lessons Learnt in Bundled Municipal Energy Efficiency Projects by Energy Service Companies

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ALLIANCE TO
SAVE ENERGY
Creating an Energy-Efficient World

What is the Alliance to Save Energy?

- Established in 1977; Non-Profit
- Mission: “To promote energy efficiency worldwide to achieve a healthier economy, cleaner environment & greater energy security”
- A leader in energy efficiency in all relevant sectors:
 - buildings • industry • water
 - utilities • appliances • transportation
 - research • policy • education
 - federal government (e.g., FEMP)
- Experience in over 30 countries
- Recognized as the municipal water and energy efficiency expert in India

Municipal EE Potential



- Energy Consumption by Public Water Works
 - 2.57% relative to total Energy Consumption by all Sectors
 - **11791 million kWh in absolute terms (2006-07)**
- Energy Consumption by Public Lighting
 - 1.17% relative to total Energy Consumption by all Sectors
 - **6131 million kWh in absolute terms (2006-07)**

Source: Central Electricity Authority Statistics

Water and Energy Efficiency

- Benefits to Municipalities



- Huge Savings potential: at least 25% saved from energy costs; much higher possible
- Reduces O&M cost
- Quick Payback
- Ensure access to sustainable water and energy resources for the urban poor
- Reduces the need for new infrastructure
- Improved Municipal Services with enhanced service level
- **In National Interest**
 - Reduced energy intensity will help climate change mitigation efforts
 - Reduce demand and supply gap at the national/state level

Municipal energy efficiency (EE) projects is one of the few cost effective opportunities available for meeting the growing demand for services such as street lighting, water and wastewater treatment

Energy Efficient Equipment for Water Pumping and Street Lighting

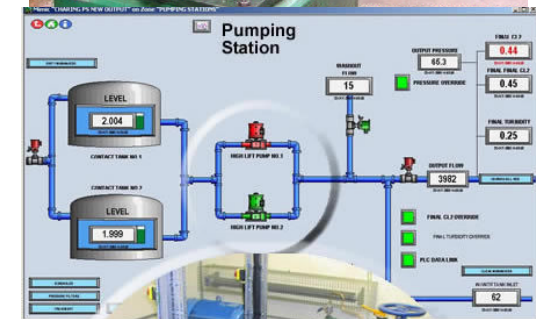


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By updating infrastructure such as:

- Pumps
- Motors
- Impellers
- Capacitors
- VSDs
- Automation Systems – Electrical Panels
- Metering Equipment – Flow Meters, Electricity Meters, Sub Meters
- Monitoring Systems
- EE Lighting and Fixtures

improved utility services can be provided at reduced financial and environmental cost



ESCOs implementation challenges in India



- Lack of knowledge and awareness about ESCOs and Energy Performance Contract implementation among stakeholders
- Availability of financing options
- Payment guarantee mechanisms to ESCOs
- Disputes over quantifying savings resulting from the projects and distrust between the project parties



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ESCO Implementation Solutions

- Well understood public private partnership
- Strong project facilitators or project committee
- Availability of financing
- Securing Repayment of ESCO investment
- Using International Performance Measurement and Verification Protocol (IPMVP)



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Municipal EE project Approach

Municipal EE Project Cycle

Stage 1

Stage 2

Program conceptualization

- *Top level buy in and commitments
- *Discussions with stakeholders
- *Assessment of project size
- *Initial basic data and inventory details
- *Implementation strategy

Procurement

- *Expression of interest
 - Evaluation
 - Short listing
- * Development of RFP and model performance contract
- *Issue RFP
 - Technical and financial evaluation
- *Select ESCO
 - Award contract/ Issue work order

Investment Grade Audit

- *Start IGA study
 - Draft IGA report submission
 - IGA report review by project committee
 - Draft report discussions with ESCOs
 - Fine tuning
- *Final report submission
 - Freezing and acceptance of EE proposals
 - Baseline and M&V methodology

Financing and Implementation

- *Signing Energy Performance Contract
- *Arrange for 3rd party financing
- *Establish TRA/ESCROW account
- *Procure equipment and services
- *Post installation
- *M&V report- (Hiring of 3rd party verifier)
- *Repayment
- *Training

Case study: Tamil Nadu 2007-09

-Background



- One of the most urbanized states in India
- Hub for several industrial activities
- Suffers from severe energy and water shortages
- Many inhabitants of the state only enjoy running water for a few hours a day



Objective

- Create confidence in the use of performance contracts in public sector among all stakeholders by ensuring the success of the Tamil Nadu Municipal Energy Efficiency Program



renewable
energy
& energy
efficiency
partnership

Tamil Nadu 2007-09

- Addressing financing issues



Issues

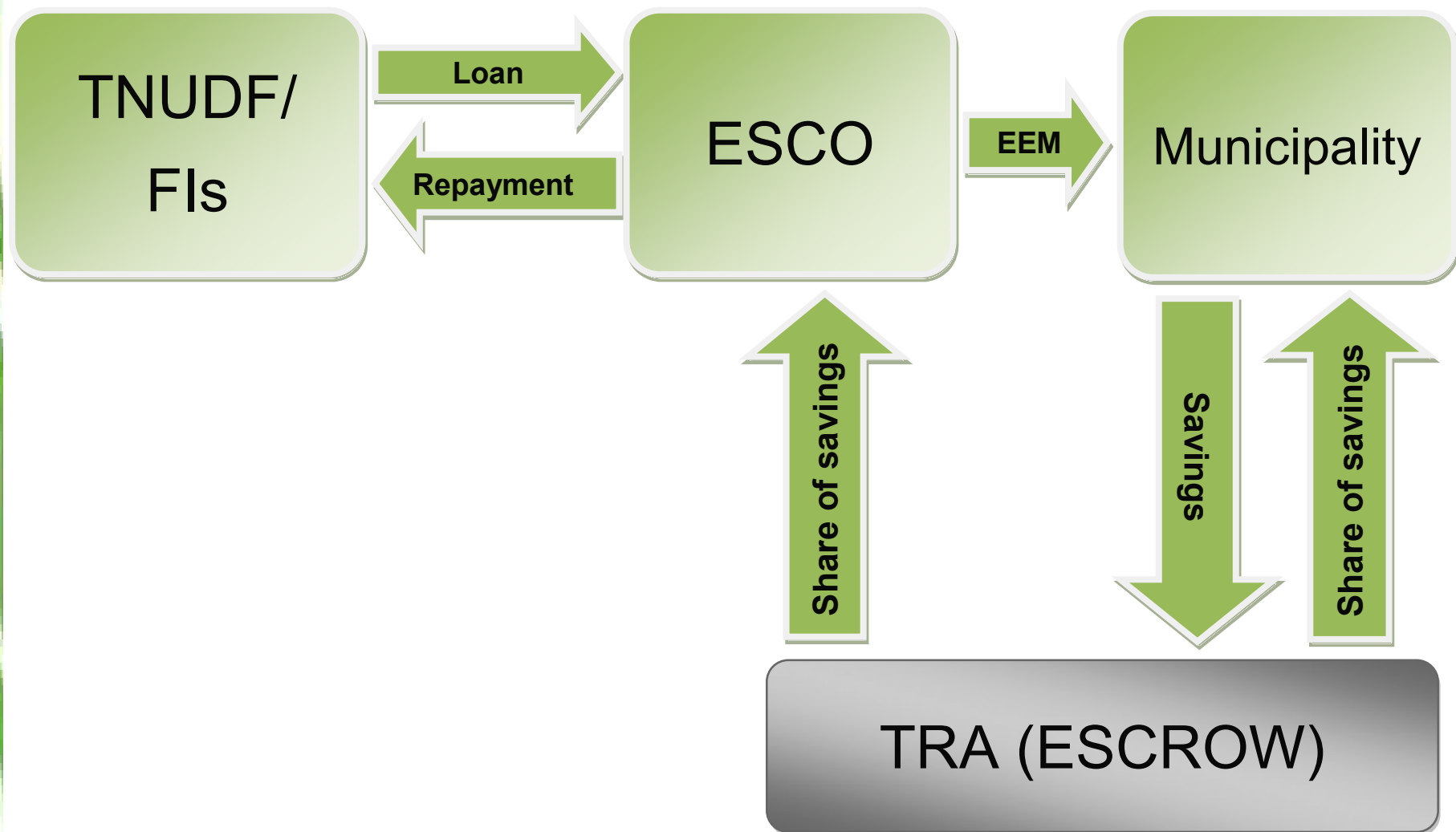
- Availability of Finance to ESCOs.
- Payment Guarantee Mechanism to ESCOs
- ESCO projects in India often falter if not fail due to disputes over quantifying energy savings resulting from the project

Solutions

- TNUISL / TNUDF willing to finance ESCOs
- Setting up of TRA Account with electricity bill payment escrowed
- Using The International Performance Measurement and Verification Protocol (IPMVP).

Tamil Nadu project 2007-09

- Financing Model



Tamil Nadu 2007-09

- Highlights



- Partnership with Tamil Nadu Urban Infrastructure Financial Services Limited (TNUIFSL), CMA, ULBs
- Implementing energy efficiency projects in 29 municipalities in water pumping and street lighting
- 2 Energy Service Companies implementing the project
- Bid Evaluation Process:
 - EOI – 13 Responses
 - RFP issued to 8
 - Responses to RFP - 6
 - LOI issued to 2 ESCOs
- IGA reports in discussion
- EPC between ULBs and ESCOs will be signed soon



Estimated Cost savings

US \$ 800,000/year

Gujarat 2007-09

- Background



- Statewide Program – 159 ULBs
- Energy Efficiency in Water Supply & Street Lighting
- Unique Team – Gujarat Urban Development Company + USAID ECO III + IL&FS
- Combination of Program Management, Infrastructure Development, and Energy Efficiency Technical Experts
- Implementation Strategy – Phased Approach
- Phase I – 10 ULB (ongoing) – DSCL and Asian Electronics awarded Water Pumping and Street Lighting respectively
- Phase 2 – 149 including all Corporations – Responses received to EOI and evaluated
- 149 ULBS divided into 3 Zones
- Time Line –2 years

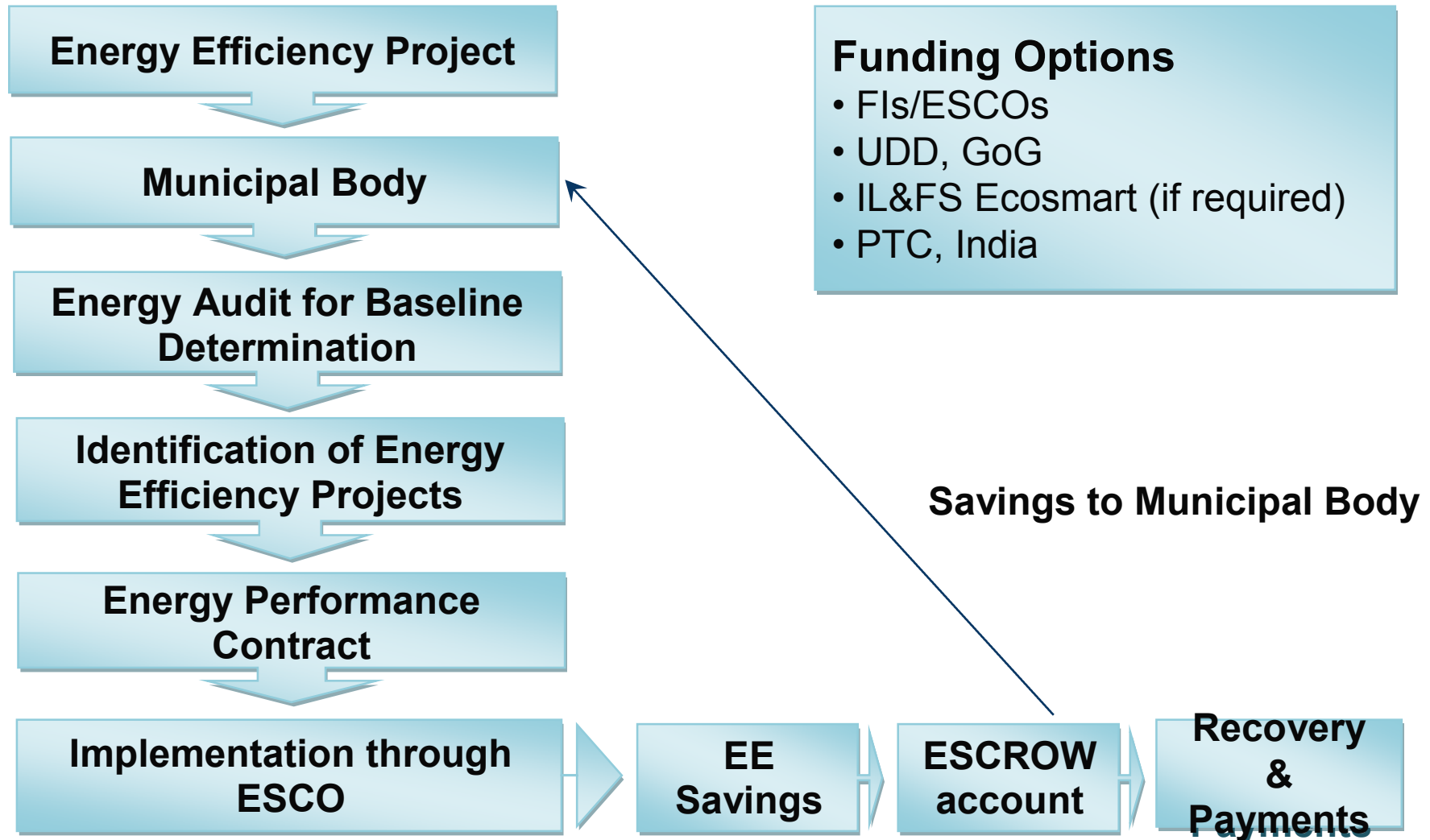


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Gujarat 2007-09

- Project cycle



Gujarat 2007-09

- Highlights and Unique Features

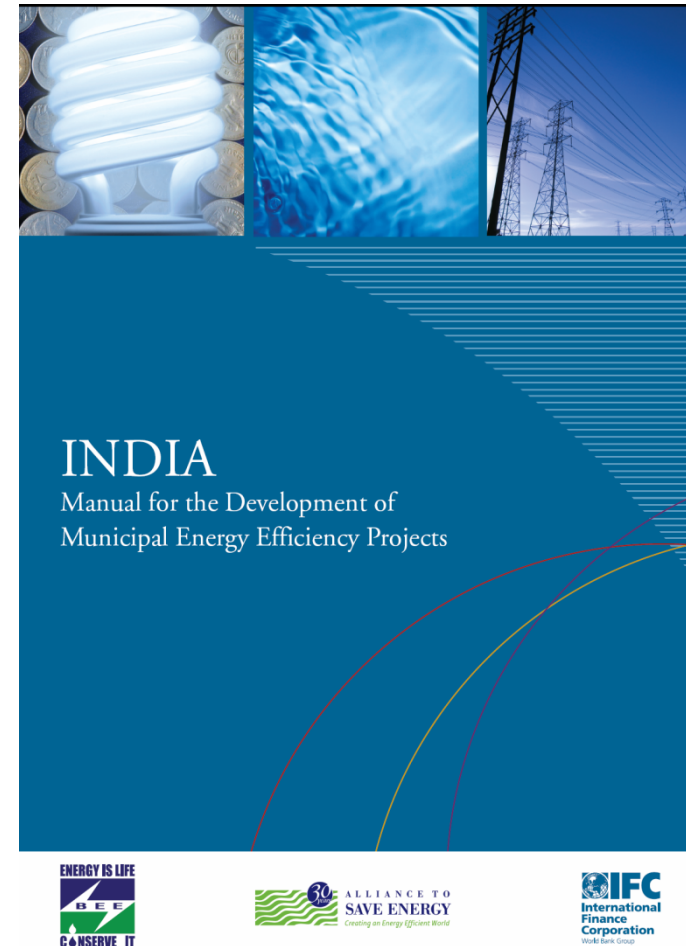


- International Best Practices – FEMP and IPMVP used
- PTC India Super ESCO
 - MoU with GUDC Rs. 300 Crores
 - Awarded Saurashtra Zone
- Project Management Company – key role as Project Facilitator
- Successful project implementation will put Gujarat in the lead

Guidelines to develop municipal EE projects for performance contracting



- Released in India in March 2008 but generally applicable
 - Jointly released with Bureau of Energy Efficiency
- Targets:
 - Municipalities
 - EE services providers
 - Financial institutions
- Contains:
 - Step by step guidelines
 - Templates (RFPs, PCs, etc)
- Tested in two Indian states



For More Information



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