India
Watergy: Water and Energy Management

Title:	Promoting Energy Efficiency In The Developing World Through Policy Development And Project Implementation
Program Area:	Urban Energy
Implementer:	Alliance to Save Energy
Geographic Focus:	Asia & Near East
Countries:	India
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Officials overseeing municipal water utility operations.

Project Background

Increasingly irregular monsoon rains, growing populations, and rising energy tariffs, leave municipal officials with the ever greater challenge of meeting urban water demand in a cost effective manner. Often options are limited, and many Indian municipalities must pump water over long distances, requiring the costly conveyance infrastructure and elevated energy costs associated with these systems.

Municipalities without the means to make these investments are forced into the difficult situation of simply not meeting user needs, often supplying water just a few days each week. This work seeks to develop the capacity of local officials charged with managing water systems to improve the efficiency of these systems in order to make use of existing water resources currently being wasted due to leaks and other system inefficiencies.

Development Objective

The effect of unreliable water supply impacts urban populations in multiple ways, resulting in detrimental health impacts, as well as significant social and economic costs. More efficient delivery systems translate into measurable energy savings due to reduced pumping requirements.

Reduced pumping means lower energy costs and reduced environmental impacts, with the improved service customers want. By reducing rates of unaccounted-for water, as well as through other water

efficiency and water conservation efforts, significant energy savings can also be realized.

Systems operating at higher efficiency levels deliver higher quality water to consumers, as these systems are less prone to cross contamination resulting from the multiple points of entry found in systems with high rates of leakage. Better quality water for consumers leads to improved living and health conditions and the associated benefits that accompany them.

Water pumping station at the Bangalore Water Supply and Sewerage Board in Karnataka, India.

Approach

The widespread water and energy challenges faced by Indian municipalities led the Alliance to focus efforts upon an outreach and capacity building effort in Karnataka, and more recently in Andhra Pradesh, both are states with high rates of urban development in southern India. This work is designed to develop municipal efficiency models suitable to local needs, and to spread the word on how municipal efficiency measures can be implemented. This phase of work seeks to go beyond India's largest cities, reaching out to the country's small and medium sized municipalities.

USAID Role in Project

While water provision is the immediate concern of water utilities, energy for water pumping and treatment is one of the main elements affecting a water utility's total costs. In India, this basic service often represents over 70 percent of a municipality's total energy expenditure. The fact that a large number of Indians still lack sufficient access to water places increasing pressure upon decision makers to develop sustainable energy and water management strategies to bridge this gap.

USAID in partnership with the Alliance to Save Energy seeks to provide municipalities as well as the senior state officials overseeing the state's municipal operations with a framework for addressing the state's long-term water needs.

Project Partners

To effectively target this effort, the Alliance initiated partnerships with local institutions in the southern state of Karnataka and is working closely with Karnataka's Urban Development Department, Directorate of Municipal Administration, the Karnataka Urban Infrastructure Development and Finance Corporation (KUIDFC), the Karnataka Urban Water Supply and Drainage Board (KUWS&DB), and The Energy and Resources Institute / Tata Energy Research Institute (TERI).

Project Activities

The capacity building aspect of this project works to build the energy efficiency expertise of state urban management organizations, those groups focused upon the development of urban service infrastructure. To this end, KUIDFC, with USAID and Alliance support, established an Energy Management Cell (EMC) within its operational structure. This partnership stems from KUIDFC's established role as a leading state authority in the all areas of municipal infrastructure development.

TERI is working with the Alliance to perform the water-energy audit phase of the project. The audits are establishing the current status of the municipal water infrastructure in four select municipalities, and have laid out the no and low-cost options available to local officials. As the initial audits are completed, findings and recommendations are being shared through a series of workshops with other municipalities throughout the state.

As these audits are conducted and efficiency measures identified, KUIDFC's efficiency cell has become increasingly involved and integrated in promoting water and energy efficiency within the state. As the work of the efficiency cell has expanded, KUIDFC has become more active as an advocate for efficiency, pursuing implementation of more costly infrastructure upgrades within water and street lighting systems. While the costly measures are more difficult to enact, they have rapid paybacks, very often in the range of one to one and a half years.

Project Results

To date capacity building efforts in Karnataka have concentrated upon the work with KUIDFC's EMC, which has been instrumental in the development of two technical trainings reaching over 522 individuals and 125 institutions. Upon the completion of this component of the project, all of the state's 208 urban local bodies will have received this training. As part of this work KUIDFC has committed funds from their budget to implement an additional eight audits and is currently seeking to implement efficiency measures outlined in two of the Alliance funded audits.

The first of the outreach seminars was held in the municipality of Hubli in December 2002. Over 200 state and municipal officials attended to hear the results of the first round of audits. Some of the efficiency opportunities available to Hubli include the potential for US$325,000 of energy savings, with an investment of US$87,000. The identified annual energy cost savings potential works out to 14.5 percent of annual energy costs. As of result of these findings KUIDFC and TERI have established an MOU focused upon continuing the water and energy auditing work with state funding for interested municipalities. Through this MOU TERI has already completed six water and energy audits for interested municipalities.

Development Impact

The work of this activity is helping to address the desire of many Indian states to provide high quality affordable water service to residents. Water scarcity will continue to present major challenges to

these states; however, through the development of applicable efficiency models suitable to local conditions, major strides can be made in meeting these challenges. Not only can these models assist in meeting the water needs of local populations, but they will provide effective alternatives that preserve resources while reducing negative environmental impacts such as over extraction of ground and surface water, and poor air quality by reducing reliance upon fossil fuels for energy powering pumping and treatment equipment.

Lessons Learned

Focusing efforts at the state level allows for much greater interaction with relevant decision makers, while still presenting opportunities for leveraging infrastructure funding from other donor institutions. While the state level provides many interesting opportunities, it continues to be important to have well defined and mutually agreed upon milestones for accomplishing efficiency objectives.

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