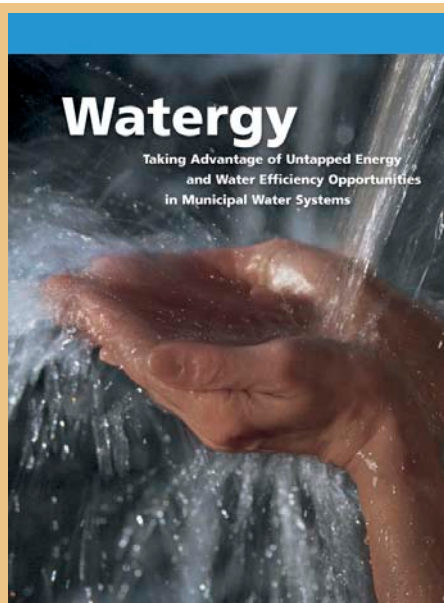




Watergy: Water and Energy Efficiency

Activity:	Promoting Energy Efficiency In The Developing World Through Policy Development And Project Implementation
Program Area:	Urban Energy
Implementer:	Alliance to Save Energy
Geographic Focus:	Africa, Asia & Near East, and Latin America & Caribbean
Countries:	Brazil, Mexico, India, South Africa, Sri Lanka, and Philippines
Duration:	September 2000 – September 2005



The Watergy Handbook is available at www.watergy.org

Project Background


Energy costs draw precious budgetary resources from other important municipal functions such as education, public transportation, and health care. In the developing world, the cost of energy to supply water may easily consume half of a municipality's total budget. Even in developed countries' municipal water systems, energy is typically the second largest cost after labor.

Between 2 and 3 percent of the world's energy consumption is used to pump and treat water for urban residents and industry. Energy consumption in most water systems worldwide could be reduced by at least 25 percent through cost-effective efficiency actions.

USAID's efforts seek to reduce the energy consumed by this sector, working to improve overall system efficiency, reducing costs and negative environmental impacts, while expanding water and wastewater services to the country's underserved populations.

Development Objective

The effects of unreliable water supply impact 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. 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.

Approach

In response to these daunting energy and water challenges, USAID and the Alliance to Save Energy has developed a strategy designed to assist municipalities to best manage the resources available to them.

Currently USAID in partnership with the Alliance is implementing Watergy – Water and Energy Efficiency initiatives in five countries. These efforts all seek to reduce energy used to provide consumers with water and wastewater services, while also educating water users about how they can reduce the amount of water consumed on a daily basis. Some key areas of focus are:

- Raise awareness of the opportunities and benefits offered by energy efficiency in the water sector.
- Propose ideas, means and solutions for implementing energy efficiency
- Develop models for improving management and operational systems for increasing efficiency

- Identify energy efficiency funding resources and how these funds can be obtained.
- Disseminate a toolkit to include case studies, software, video clips of audit techniques, and other tools to facilitate water and energy efficiency actions.

Project Partners

In each of the countries where the Alliance has initiated a Watergy program, project partners have included local municipalities, key government institutions, equipment manufacturers, consulting engineers, and technology and service providers.

Some examples of these partnerships include, in India, Karnataka's Urban Development Department, the 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 Research Institute (TERI).

In Mexico, key partners include the National Water Commission (CNA), the National Association of Water and Wastewater Utilities (ANEAS) and Financing for Energy Savings (FIDE). Water technology providers and consultants have been key to the success of the technical workshops in Mexico. Badger Meters, Grundfos, Goulds, Constructora Cosatla and Ergon Plus have partnered with the Alliance to offer their expertise and equipment.



Project Activities

Watergy seeks to provide municipalities with a framework for addressing long-term water needs. The program to date has focused on the following activities:

- Partnering with municipal water utilities to develop case studies of energy efficiency savings potential
- Perform workshops on technical topics to demonstrate the potential for savings through energy efficiency measures
- Energy audits of the water treatment and distribution systems
- Recommend low and no-cost energy efficiency measures and work for implementation
- Work with utilities and outside agencies to fund higher capital cost measures
- Collect data on implementation of energy efficiency measures, tracking amount of energy saved, amount of money saved and level of service improvement
- Encourage in-house monitoring and verification of energy efficiency indicators

Project Results

In Brazil, CEGECE - a water utility in Ceara - continues to save about 5 MW of reduced electricity demand based upon improvements implemented in 2002. Additional consumption savings of 42 million kWh were realized in 2003. To date, CAGECE has registered demand

savings of over 15MW, and a corresponding increase in service, providing approximately 200,000 previously un-served residents with water connections.


Additional accomplishments include an energy management procedures manual, based upon CAGECE's comprehensive energy management approach, case studies outlining both water and energy efficiency improvements within the utility's water treatment and delivery systems, efficiency upgrades to motor, pump and valve systems, and expansion of demand-side management activities that include education campaigns to reduce water use by consumers.

In India, audit findings show that the municipalities can save between 15-40% of their annual energy costs by implementing energy efficiency measures. The six project towns/cities will have saved over 15 million kWh. Through capacity building, the Karnataka KUIDFC Energy Management Cell has become a resource center with developed capacity to share technical knowledge throughout the state.

Development Impact

This activity is helping to provide high quality affordable water service to residents, while decreasing the per capita cost of delivering water and treating wastewater.

Not only does the Watergy model assist in meeting the water needs of local populations, but it provides an effective alternative to constructing capital-intensive



new supply and treatment facilities, preserving resources while reducing negative environmental impacts such as over extraction of ground and surface water. Energy efficiency also combats poor air quality by reducing reliance on fossil fuels for energy to power pump and motor systems for distribution and treatment.

Lessons Learned

Energy efficiency has such a broad applicability to the water and sanitation sector that the work done so far has only set the stage for achieving the energy savings possible. The Alliance has been able to effectively spread the word about energy efficiency as a valuable resource for extending the available water and sanitation services available.

In Brazil, through extensive discussion with key stakeholders in both the energy and water sectors, the Alliance has determined that the creation of an independent group focused on improving the way both water and energy resources are utilized is the most appropriate response to advancing efficiency within the sector.

In India, 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.

USAID Contact:

Simone Lawaetz
Office of Infrastructure and Engineering
+1 202 712 4915
slawaetz@usaid.gov

Project Contact:

Chris Godlove
Alliance to Save Energy
+1 202 857 0666
cgodlove@ase.org