

CHALLENGES

Indian municipalities are facing the challenges of growing population, urban expansion, increasing power tariffs and acute water shortage. At present only about two-thirds of the urban population has direct access to clean, affordable and reliable drinking water services. At the same time, municipal water utilities in India spend upwards of 60 per cent of their budgets on energy used for water pumping. The typical Indian municipal water utility has the potential to improve water pumping systems by 25 per cent.

The southern state of Andhra Pradesh is experiencing rapid urban growth where the urban population has grown from 8,5 million in 1971 to 20,5 million in 2001. This puts tremendous pressure on the available water and energy resources. To be able to meet the increasing demand municipal officials need to take advantage of the opportunities to make water and energy systems more efficient.

BACKGROUND

The Andhra Pradesh Urban Services for the Poor (APUSP) program is a partnership between the government of Andhra Pradesh and the UK Department for International Development (DFID). The aim of the program is to achieve a sustained reduction in the vulnerability and poverty of the state's urban poor. The APUSP program began in April 1999 and covers 118 towns across the state, 32 of which are Class I (towns with a population exceeding 100 000).

In 2003 the Alliance to Save Energy entered into a partnership with APUSP to introduce the concept of Watergy to municipalities in Andhra Pradesh. The Alliance and APUSP selected two pilot towns – Vizianagaram Municipal Council and Karimnagar Municipal Council – to demonstrate the benefits of the Watergy approach. As a part of this exercise, the Alliance coordinated water and energy audits of the municipal bulk water supply systems in these two towns. APUSP committed to fund the implementation of capital intensive measures since it is a program that

aims to improve the sustainable provision and delivery of basic urban services of the poor. The program includes improvements to water supply, sanitation, solid waste management and street lighting equipment.

OBJECTIVES

The main objectives for Andhra Pradesh are to:

- Disseminate the Watergy concept to 32 towns covered by APUSP and extend it to all municipalities in the State of Andhra Pradesh.
- Build technical and managerial capacity at APUSP and set up an Energy Management Cell which will act as a state resource center for assisting municipalities in undertaking water and energy savings measures.
- Demonstrate the benefits of Watergy projects in APUSP by carrying out two municipal water and energy audits, identifying energy and cost saving opportunities, and assisting APUSP in the implementation of proposed energy saving measures.

APPROACH

In response to the urban water and energy challenges faced by municipalities in developing countries, the Alliance has developed sustainable Watergy solutions which emphasize the important nexus between municipal water and energy use. By taking advantage of untapped energy and water efficiency opportunities in their water systems, municipalities can optimize water energy use and improve water services while reducing water wastage and ultimately costs.

RESULTS

In May 2003, the Alliance undertook a scoping mission to Vizianagaram city which has a population of nearly 200 000. In August 2003 the Alliance followed up with energy audits of Vizianagaram Municipal Council's (VMC) bulk water supply and street lighting systems and proposed low/no cost energy savings measures.

Soon after the Alliance submitted the final audit report to VMC, they began implementing the suggested energy efficiency measures. As a result, VMC was accruing an annual energy savings of 101 MWh and an annual cost saving of about US\$ 61 900. The energy savings reduced VMC's annual energy bill for water pumping by 18 per cent and resulted in a reduction of 101 metric tons of CO₂ emissions annually. The simultaneous reductions in municipal water waste, through more effective supply and distribution, will allow the municipality to deliver water to more homes.

In Kariminagar Municipal Council, the second pilot town, the annual cost savings reached US\$ 16 300. CO₂ reductions amounted to 15 metric tons and energy savings of 15 MWh per year. The Alliances also assisted Vishakapatnam Municipal Corporation, which managed to cut costs by US\$ 58 600 annually and reduce their energy consumption by 1436 MWh resulting in a 1 436 metric ton reduction of CO₂ emission. With the Alliance's support of technical advice VMC has also passed a Municipal Order for inventory control for the procurement of energy efficient street lightning equipment. Also a handbook on energy efficiency in municipal water pumping systems was developed and distributed to all 118 municipalities in the state.

APUSP have now taken the initiative further and have initiated a Revenue Improvement Action Plan (RIAP) in 42 towns that primarily are focusing on energy savings in street lighting and water supply. According to their energy savings initiative results they hold a savings potential of about US\$ 2,93 million (Rs. 12.58 Crores) across the 42 project towns. It is estimated that 36 682 MWh can be saved per year in Andhra Pradesh. The cumulative energy savings up to Mars 2007 has resulted in Rs. 1179.92 Lakhs in cost savings.

Municipality, State	Annual Energy Savings (kVA & MWh)	Annual Cost Savings (US\$)	CO ₂ Emission Reduction (MT)
Vishakhapatnam, Andhra Pradesh	150 kVA + 1436 MWh	58,644	1,436
Vizianagaram, Andhra Pradesh	920 kVA + 101 MWh	61,889	101
Karimnagar Municipal Council, Andhra Pradesh	180kVA + 15 MWh	16,300	15
Total	1250 kVA+ 1552 MWh	136,833	1,552

For More Information:

Pradeep Kumar
Bangalore, India
pkumar@ase.org

Alexander Filippov
Washington, D.C.
afilippov@ase.org

<http://www.watergy.org>

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