Ashoka Trust for Research in Ecology and the Environment (ATREE),
Royal Enclave, Srirampura, Jakkur PO
Bangalore 560064, India

Dr. Veena Srinivasan

Researcher at the Pacific Institute, and an adjunct fellow at ATREE.

Will be presenting a talk on **"An integrated framework for analysis of water supply in a developing world city"**

Date: July 6, 2011 at 4 pm
Venue: Auditorium, ATREE

All are Cordially Invited

Abstract of the presentation:

Indian cities are facing a severe water crisis: rapidly growing population, low tariffs, high leakage rates, inadequate reservoir storage, are straining water supply systems, resulting in unreliable, intermittent piped supply.

Conventional approaches to studying the problem of urban water supply have typically considered only centralized piped supply by the water utility. Specifically, they have tended to overlook decentralized actions by consumers such as groundwater extraction via private wells and aquifer recharge by rainwater harvesting. An innovative integrative framework is formulated for analyzing urban water supply in Indian cities.

The framework is used in a systems model of water supply in the city of Chennai, India that integrates different components of the urban water system: water flows into the reservoir system, diversion and distribution by the public water utility, groundwater flow in the urban aquifer, informal water markets and consumer behavior.

Historical system behavior from 2002-2006 is used to calibrate the model. The historical system behavior highlights the buffering role of the urban aquifer; storing water in periods of surplus for extraction by consumers via private wells.

The model results show that in Chennai, distribution pipeline leaks result in the transfer of water from the inadequate reservoir system to the urban aquifer. The systems approach also made it possible to evaluate a wide range of centralized and decentralized policies. Three very different policies: Supply Augmentation (desalination), Efficiency

improvement (raising tariffs and fixing pipe leaks), and Rainwater Harvesting (recharging the urban aquifer by capturing rooftop and yard runoff) were evaluated using the model.

The model results suggest that a combination of Rainwater Harvesting and Efficiency Improvement best meets our criteria of efficiency, equity, system reliability, and utility profitability. Importantly, the combination policy emerges as optimal because of three characteristic conditions that are prevalent in Chennai: 1) Widespread presence of private wells, 2) inadequate availability of reservoir storage to the utility, and 3) high cost of new supply sources.

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