

Nagpur, India

Water sector audit: efficient use of water and energy resources in one of India's largest metropolises

A water sector audit conducted by the Nagpur Municipal Corporation (NMC) in 2005 assessed the sector for its performance and energy efficiency. Implementation of the recommendations resulted in improved distribution systems and monetary savings from efficient energy and water usage.

Urban NEXUS Case Story 2014 - 29

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The project in brief

In 2000, the Nagpur Municipal Corporation (NMC) prepared a water sector master plan with the objective of augmenting Nagpur's water supply. In order to identify losses in transmission and distribution networks the NMC conducted a water audit, followed by an energy audit of the water supply. The results of the audits targeted two areas of intervention: the replacement of faulty pipelines and the strengthening of accountability for the maintenance of plants. The final result of the 2005- 2009 efforts included a supply increase of 60 million liters per day (MLD) from the improvement of pipelines, as well as 22 MLD of savings from increasing water treatment plant maintenance oversight. The system was supported by telescopic water tariffs to incentivize water savings on the premise of equitable distribution to extend the supply network coverage to 100%. Funding for the project was provided under the Jawaharlal Nehru National Urban Renewal Mission (JnNURM), an urban renewal scheme, allowing the Government of India and the NMC to share the costs. Additionally, a new wastewater treatment plant was planned for via a Private-Public-Partnership (PPP) model between MahaGenCo, a private electricity generation utility, and the NMC under the JnNURM scheme.

What makes it "Urban NEXUS"?

Institutional integration between the NMC and the national level with the JnNURM scheme, along with new PPP delivery models resulted in increased efficiency within the water supply and distribution sector for enhanced productivity. While losses in the water distribution system were the primary concern which compelled the water audit, the NMC maximized the opportunity to simultaneously target the energy efficiency of the water sector as well. The integration of the water and energy audits led to augmented water, energy and monetary savings, both through technical measures and by ensuring the institutional accountability of the service provider. This service integration is also evident in the planned water treatment plant that will treat the City's waste water and use it to cater to the water requirements of a new thermal power plant.



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| Date | 2005-2009 (first phase) |
| NEXUS Sectors | Water-Energy-Economy |
| NEXUS Innovations | Design and Technology; Institutions, Delivery Models |
| Scale | City-wide (2,405,421 inhabitants) |
| Budget | EUR 4.5 million (INR 280 million) |

Urban NEXUS Definition

The Urban NEXUS is an approach to the design of sustainable urban development solutions. The approach guides stakeholders to identify and pursue possible synergies between sectors, jurisdictions, and technical domains, so as to increase institutional performance, optimize resource management, and service quality.

It counters traditional sectoral thinking, trade-offs, and divided responsibilities that often result in poorly coordinated investments, increased costs, and underutilized infrastructures and facilities. The ultimate goal of the Urban NEXUS approach is to accelerate access to services, and to increase service quality and the quality of life within our planetary boundaries.

ICLEI / GIZ 2014

Further Reading

ICLEI Case Studies 110, 2010, Nagpur India. Water sector audit enables efficient use of water and energy resources in Nagpur: http://www.iclei.org/fileadmin/PUBLICATIONS/Case_Studies/ICLEI_cs_110_Nagpur_2010.pdf (20 Aug 2014)

Nagpur Municipal Corporation official website: <http://www.nmcnagpur.gov.in/>

GIZ and ICLEI, 2014, Operationalizing the Urban NEXUS: towards resource efficient and integrated cities and metropolitan regions, GIZ Study: www.iclei.org/urbannexus

Scope for improvement

This project focuses entirely on improvements at the institutional and technical levels. Further gains could be realized by designing the water tariffs such that they incentivize water saving at the household level, in addition to educational campaigns involving the citizens to promote behavioral change.

Replication

The Nagpur water audit has been administered under the JnNURM scheme of the central government which supports 63 urban areas in India. Thusly there is a large institutional incentive for replicating the successful project in other regions where the scheme is operational. According to the Ministry of Urban Development, numerous JnNURM cities in India, such as Aurangabad and Thane, have adopted the Nagpur model of audits and action. Participating JnNURM cities are encouraged to learn from one another through the Local Renewables Model Communities Network project. For instance, in April 2010, Nagpur and Coimbatore exchanged information and experiences of various environmental initiatives. Networking events such as these could aid replication while providing opportunities for inter-urban cooperation.

Acknowledgements

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On behalf of:



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