



## CASE STUDY

# India: Diversion of household sewage for improving urban lake water quality

## Summary

The city of Bhopal in Madhya Pradesh is mainly receiving its water from Upper Lake. However, in the past decades, water quality has steadily been deteriorating. This has led the government to take action and implement an integrated lake conservation program. The case demonstrates that all the stakeholders, especially, Urban Local Bodies and the public representatives should be involved in the decision making from the very beginning of such projects.

## Background

Approximately 40% of the water supply to the city of Bhopal in Madhya Pradesh comes from Upper Lake. Until 1947, the water quality of Upper Lake was so good that it required no treatment before supply to the public. However, due to the tremendous population growth of the city (from 70,000 in 1951 to 1.4 million in 2001) and rapid urban development, the lake has been subject to various environmental problems. Prior to 2004, these areas had no organized sewerage system. As a result, untreated sewage flowed into these lakes, causing a serious deterioration of their water quality. A major initiative to address this alarming situation, the State Government of Madhya Pradesh implemented an integrated project (Bhoj Wetland Project) for the conservation & management of Upper & Lower lakes of Bhopal.

The development of a sewerage system was very important since its main aim was to prevent untreated domestic sewage from the urban catchment and from flowing to the lakes. The scheme involved the diversion and treatment of sewage and its disposal outside the catchment area of the lakes.

As per the 74th constitutional amendment, the entire responsibility of water supply and provision of sewerage system for cities rests with the Municipal Corporation of the city (in this case the BMC). However, in this instance the BMC lacked the necessary technical resources to take on the required skills for planning and implementation. Therefore, a division of the Public Health Engineering Department (PHED) of the State Government was entrusted with this responsibility.

## Actions taken

The Government of Madhya Pradesh implemented an integrated lake conservation program (1995-2004) that included a sewerage scheme based on the diversion, treatment and disposal of sewage outside the lake catchment area.

Due to undulating topography, work involved the laying of 68.73 km trunk sewer line and 24.78 km force mains; construction of as many as 10 large and 5 small sewage pump houses; as well as 4 waste stabilisation ponds for the diversion and treatment of the sewage. Emphasis was placed upon low cost, labour intensive and less energy requiring treatment technology in order to minimise operation and maintenance costs.

The State Public Health Engineering Department (PHED) was primarily responsible for the planning and designing of the scheme. The Bhopal Municipal Corporation (BMC) was to be responsible for the operation and maintenance of the scheme. Subsequently a division of PHED under the control of the Project Directorate implemented the scheme, with the understanding that the scheme would be handed over to the BMC on completion.

In 2000, the BMC passed the by-laws making it mandatory for house owners to make individual sewerage connections to the new system. However, at the end of the project period in 2004 when the sewerage system was to be handed over to BMC, the BMC refused to take over the responsibility of operation and maintenance of the system.

The Government consequently decided to allocate a budget directly to PHED, on the understanding that it would take over the responsibility of operation and maintenance of the system through one of its divisions. However, progress in ensuring individual household connections to the main sewer lines has been poor, due to lack of willingness on the part of BMC to cooperate with the PHED.

## **Outcomes**

Individual household sewerage connections have still not taken place. Meanwhile, the Govt. along with the municipal corporations of Bhopal, Indore, Gwalior and Jabalpur has started executing the M.P. Urban Water Supply & Environment Improvement Project with funding from the Asian Development Bank. The works are executed by a Project Implementation Unit under the Municipal Corporation with the assistance of Design and Supervision Consultants. One of the project components for Bhopal relates with to a functional sewerage system for the city. The BMC would be utilizing the infrastructure created under the Bhoj Wetland Project and has decided that the individual household sewerage connections would be completed by the them under one of the packages of the project without any cost to the users. However, users have to pay the annual service charges as fixed by the BMC.

## **Lessons Learned**

Urban local bodies have the mandate for providing sanitation services and generate resources for operation and maintenance of the system. In this case the BMC had enacted the by-laws for individual connections well in advance.

There should have been a separate platform for consultation among the Project Directorate, BMC & public representatives of the wards where the sewerage system was being implemented which enabled the negotiation of an amicable solution for implementing household connection.

Local bodies lack expertise and technical manpower for development works related to

sanitation. Therefore, the relevant government departments execute the schemes and then hand over the works for operation and maintenance by the local body.

In the process it is easy for the urban local bodies to become disconnected from the process leading to problems in the future.

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Bhopal Municipal Corporation India

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**Related IWRM Tools**

Integrated Urban Water Management Plans, Local Authorities, Pollution Charges

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