

# **Status of Improvement of Water and Sanitation Facilities in Metro Manila**

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## **Abstract**

The Manila Third Sewerage Project (MTSP) was conceived with the following aims: to increase the coverage and effectiveness of sewerage service delivery in participating areas of Metro Manila through an integrated approach involving septage management, sewage management, and heightened consumer awareness of water pollution problems and their solutions; and to establish the financial and technical viability of new approaches for sewage management in Metro Manila. The components of the project are: sewage management, septage management, and institutional strengthening. This wastewater project is expected to serve about 3.3 million people within its concession area in eastern Metro Manila by the year 2010 through a loan. MTSP is the biggest wastewater project in the country.

## **Introduction**

Water pollution in the Philippines is a growing problem due to rapid urbanization and industrialization. One major cause of water pollution is untreated domestic wastewater, which accounts for 48% of total BOD pollution. The annual economic losses from water pollution are estimated at PhP 67 billion (US\$1.3 billion), and include losses in health, fisheries production, and tourism. To mitigate the environmental impacts of water pollution, the Government of the Philippines has enacted many water-related laws, but enforcement is weak due to inadequate resources, poor statistics, institutional fragmentation, and weak cooperation between the central and local government units. The latest, government action is the enactment of the Clean Water Act of 2004, which is an integrated, holistic, decentralized and participatory approach to abating, preventing and controlling water pollution. This Act attempts to consolidate the different laws and unify efforts to fight water pollution.

Metro Manila, home to some 12 million people, is an important economic zone, producing 35.7% of GDP in 2003. It comprises 17 cities and municipalities subdivided into 1,700 barangays. All Manila waterways are heavily polluted. About 65-75% of pollution is caused by residential sewage, with the rest originating from industry such as tanneries, textile mills, food processing plants, distilleries, chemical and metal plants, as well as from solid waste dumped into the rivers. The key water courses, Marikina River and Pasig River are biologically dead. Pasig River is hydraulically important as it provides a two-way connection between Manila Bay and Laguna de Bay, and due to ocean tide variations, transfer of pollutants between the Manila Bay and the Laguna de Bay occur. The Laguna de Bay, south of Metro Manila, is a large lake and a crucial water source for the southern region. The Manila Bay, forming Manila's western seaboard, is a large shallow of coastal water with significant marine transport to Manila port, supporting thousands of fishing families, however, with little use for tourism due to pollution of water and beaches. While water is supplied to about 90% of Metro Manila population only about 15% is connected to a sewerage system, with only one half of it provided with sewage treatment. About 85% have septic tanks, which

are often poorly constructed; regular servicing of tanks started gradually only with implementation of Manila Second Sewerage Project (MSSP). For liquid wastes most residents rely on open drains to receive effluent from their septic tanks. Only a few living in high-quality developments have constructed separate sewers and small sewage treatment plants. Lack of sanitation facilities, coupled with potential human contact with raw sewage by the population, pose an increased health risk. In 2003, the Metro Manila's eastern concession area recorded about 9,700 cases of diarrhea indicating either the absence of water supply or sanitation, or both.

### **Objectives**

With this in mind, the Manila Third Sewerage Project (MTSP) was conceived with the following aims: to increase the coverage and effectiveness of sewerage service delivery in participating areas of Metro Manila through an integrated approach involving septage management, sewage management, and heightened consumer awareness of water pollution problems and their solutions; and to establish the financial and technical viability of new approaches for sewage management in Metro Manila. The components of the project are: Sewage Management which includes construction of 10 sewage treatment plants, upgrading of two communal septic tanks to secondary treatment, rehabilitation and construction of collection networks; septage Management which covers vehicles for pumping-out septage from septic tanks (fecal tankers), two septage treatment plants (SPTPs), and safe disposal of treated septage; and institutional strengthening component for (a) the carrying out of a public information campaign on the benefits of sewerage and sanitation services, and on the best practices of proper disposal of sewage, and (b) assistance in preparation of follow-up programs for wastewater and sanitation improvements.

This wastewater project is expected to serve about 3.3 million people within its concession area in eastern Metro Manila by the year 2010 through a loan. MTSP is the biggest wastewater project in the country. This project is intended to increase sewerage coverage and sanitation services in the eastern portion of Metro Manila to 30 per cent from the current 10 per cent over the next five years. Manila Water, a unit of Ayala Corporation, supplies potable water to about 5 million residents under a 25-year concession agreement with the government. Since the sewerage system is partly combined some of the connected population also have septic tanks.

The viability of the project has been evaluated using environmental impact assessment. Economic valuation of the impacts of the project was conducted. This study shows the benefits that will be derived from the project as well as learning lessons.

The project will increase sewerage coverage from about 8% to 30%, and sanitation services from around 1.5% to 100% in the East concession area. Additional benefits of the project include: (a) reduction in total domestic BOD load in Manila Water concession area by about 15,400 to 37,700 tones/year; (b) improvements in public health and well-being. The risks of the community coming into contact with raw wastewater are lessened, and the resultant benefit has been estimated at about PhP 300,000 per 1,000 persons/year. The reduced risk benefit of people coming in contact with raw wastewater from overflowing septic tanks has been estimated at PhP 150,000 per 1,000 persons/year avoided health costs due to loss indirect income and medical costs; (c) improvement in soil condition and crop yields in lahar-affected areas, where treated septage will be applied; and (d) information on the viability of new approaches for sewage management in Metro Manila. Institutional benefits through

improved approaches on sewage management is also expected. The project is the first of two pilots on the use of combined sewers for sewerage systems in the country. Lessons learned from the project will help improve the design of subsequent investments on sewerage and sanitation that are more socially, economically and politically acceptable.

Experience with privatization has been mixed-the Manila Water Company Incorporated (MWCI) concession in the east has been successful, while Maynilad Water Services Inc (MWSI) in the west has run into difficulties. MWCI has in large part met (and in some cases exceeded) its concession targets, is in good financial health, and the standards and coverage of water, sewerage and sanitation services have increased significantly since privatization. On the other hand, the west concession has encountered significant problems. MWSI's heavy debt burden, exacerbated by the Asian Financial Crisis and multiple devaluations of the Philippine peso, and its less successful strategies for service expansion, caused MWSI to suspend payment of its concession fee in 2002 and to enter into arbitration with Metropolitan Waterworks and Sewerage System (MWSS). Restructuring of the company is on-going, but in the meantime, MWSI's fiscal problems have had a profound negative impact on its ability to successfully fulfill its service obligations.

World Bank's support for the sewerage and sanitation sectors in Metro Manila has spanned more than 20 years, commencing with the Manila Sewerage and Sanitation Project in 1980. The Manila Second Sewerage Project (MSSP) was approved in 1996. MSSP was prepared as a public sector project with MWSS as the implementing agency, and included components to rehabilitate several sewerage networks and a sewage treatment plant, to expand septage management in the city, and to conduct pilots of ocean disposal of septage. After privatization, MWCI and MWSI took over implementation of the components in their respective concession areas. Implementation of the project has been satisfactory and is almost completed.

Under MSSP septage was dumped into the ocean on a pilot basis during a nine-month period from October 2001 to July 2002. After completion of the trial, and during the evaluation period of the pilot, a complaint was lodged by a Philippine-based NGO to the Inspection Panel (IP). After investigation by the IP, it was concluded that improved septage management should be expanded in Metro Manila through this project, and that ocean disposal should not be continued in Metro Manila. Instead, it was recommended that the lahar-affected area north of the city be investigated for suitability as a treated septage disposal site. This analysis was completed during preparation and is now an integral part of MWCI's sludge management plan.

The proposed project includes a significant septage management component that would achieve the goals set out by the Bank management and GOP in response to the IP.

### **Opportunities and Limitations of Metro Manila's Concession Agreements**

Concessions bring opportunities and challenges: while creating strong incentives for the Concessionaire to act efficiently to meet contractual obligations, a concession arrangement also constrains the responsiveness of a sector because the incentives are focused on the obligations as strictly defined by the contract. Even when conditions change rapidly, the concession system locks implementation into pre-defined plan, which can only be amended during agreed formal renegotiation periods. In contrast, a public service provider is often provided greater flexibility, and can take a broader view to refine and revise the implementation plan to meet changing circumstances.

The Metro Manila concession agreements, originally signed in 1997, include a provision for renegotiation of both rates and service targets during rate rebasing, which is carried out once every five years. The first rate rebasing occurred in 2003, with the second due in 2008. This project has been developed based on the 2003 rate rebasing targets which are the legally enforceable concession conditions.

Implementation experience from MSSP shows that there are four key problems which limit the efficient implementation of environmentally optimum sewerage and sanitation projects in Metro Manila: (a) The concession agreements and 2003 rate rebasing were based on outdated plans, which do not maximize environmental benefits, (b) The public has a very low awareness of the societal benefits of sewerage and sanitation, and is therefore not very sympathetic to the disruption caused when retrofitting sewerage; (c) The public's willingness to pay for sewerage and sanitation is low and the current tariff structure does not provide sufficient incentive to make dedicated connections to separate sewerage systems; and (d) The capacity and experience of the concessionaires in sewerage provision is limited.

The proposed project will bring significant benefits because the activities undertaken during preparation (and planned for implementation) specifically address the above key constraints. With the experience and information gained through the implantation of this project and associated activities, the 2008 rate rebasing is expected to greatly contribute to reducing many of these barriers. Each of the four constraints is discussed in more detail below.

*Planning.* The sewerage targets of the 1997 Concession Agreements were based on a master plan which envisaged a highly centralized sewerage system and the phasing out of septic tanks and sanitation services throughout Metro Manila.<sup>6</sup> However, after privatization, it became clear that the public was not willing to pay for such a large and expensive separate sewerage. This master plan was completed in 1996 using JICA grant financing system. Other impediments to implementation of that plan included a lack of available land for the proposed treatment facilities, and little tolerance (from the public and local governments) of the immense disruption during implementation. While these barriers were identified in the late 1990s, the Government has not, to date, undertaken a master plan update to address these concerns.

Despite this lack of a formal master plan update, the concessionaires had to create business plans for their own investments. As a result, during the 2003 rate rebasing exercise, MCWI proposed, and the Metropolitan Waterworks and Sewerage System/ Regulatory Office (MWSS RO) agreed, to downscale the sewerage targets and to allow for a decentralized approach using combined sewerage, where appropriate. This was compensated, at least in part, by an increase in targets for the provision of sanitation services. Significantly, the concessionaires, not the Government, drove the changes made during the 2003 rate rebasing. Therefore, the targets focused on increasing service levels evenly around the consumer base, to minimize the tariff impact in any particular municipality. They did not, however, consider maximizing the environmental benefit that could be achieved from the limited available investment. While not ideal from the environmental perspective, there is merit, at least in the initial stages, of implementing projects throughout the city, to raise awareness and build a constituency for the sector. Moreover, the existing tariff structure would make it very difficult to concentrate on the "hot spots" as households in many of these areas may not have either piped water or the capacity to pay the additional sewerage charge. Spreading service evenly around the city is not justifiable in the long-term because it does not maximize the

environmental benefits of investments. The Government has recognized this and wishes to align the concession targets more closely with environmental goals during the 2008 rate rebasing. To achieve this, considerable work needs to be done to strengthen the information base and planning for sewerage and sanitation in Metro Manila.

During project preparation, MWCI updated its own sewerage and sanitation master plan, which has led to improvements in the selection of components and design of the project, as well as prospects for improved demonstration effect and environmental benefits from the project investments. MCWI has also undertaken extensive information gathering on existing drainage systems and outfalls within its concession area. The planning work that has been done by MCWI during preparation has increased the awareness of the concessionaire's staff of the importance of prioritizing environmental benefit and seeking the most cost effective solutions for the provision of sewerage and sanitation. This has increased capacity with the company leading to the 2008 rate rebasing. However, MWCI's planning is not a satisfactory replacement for Government strategy, as it does not address sewerage and sanitation issues in the entire Metro Manila region.

First, during this planning exercise MCWI has been required to respect its current contractual obligations, the 2003 rate rebasing targets, and therefore the problems described above are still inherent in this master plan update. Second, MCWI can consider, at most, a planning time horizon stretching to the end of the concession period (2022), at which point, according to the concession agreement, the cost of all investments must be recovered. This limits MWCI's capacity to plan implementation of any major projects in the latter half of the concession because recovery of the investment over the remaining short period of the concession would require tariffs to be elevated to unaffordable levels. Third, MWCI's planning does not consider the transfer of sewage across the boundaries of the two concession areas in order to utilize the most overall cost effective solutions. Finally, no environmental analysis has yet been carried out on MwCI's master plan update, and therefore, the extent to which it would achieve maximum environmental benefits for Metro Manila's waterways is unknown.

MWSS and MWSS RO are currently carrying out studies on: possible subsidies required for the sector; review of tariff arrangements under the current 2003 rate rebasing; review proposals to reduce barriers to connect to sewerage systems; and, are view and first-stage revision of the sewerage master plan in both concessions. In addition, DENR, as the lead agency on behalf of the Government, and as the agency responsible for the implementation regulations of the Clean Water Act 2004, plans to request support from the Global Environment Facility (GEF) under the World Bank GEF Pollution Reduction Investment Fund for Large Marine Ecosystems of East Asia to initiate institutional coordination for the Pasig River –Laguna de Bay- Manila Bay watershed; identify environmental hotspots in the capital region; and to prepare Standard sand allowable discharge regulations for the key watercourses in Metro Manila. The outputs of this study would establish priorities for the environmental cleanup in Metro Manila. These ongoing and planned activities would enable Government to provide strong guidance to the 2008 rate rebasing exercise.

Low public awareness and limited experience of sewerage in Philippines: Experience during MSSP has shown that low public awareness of the health and environmental benefits of sewerage and sanitation, weak political support for sewerage services, and the limited experience of the concessionaires in this sector, constrain implementation of sewerage and sanitation projects. The establishment of seventeen independent municipalities and cities

within Metro Manila has fragmented and reduced the fiscal and regulatory capacity of local governments to plan, support and enforce coordinated sewerage and sanitation strategies. LGUs are not aware of the importance of sewerage and sanitation. The concessionaires do not have sufficient leverage to convince unwilling local governments to support sewerage and sanitation investments.

Investments under the project will enable MCWI to gain technical experience in construction and management of both combined and separate sewerage systems in areas with septic tanks. Moreover, the project will demonstrate to the public and to local government the viability of different types of sewerage systems. This is expected to show that a "one size fits all" strategy is not the most beneficial in Metro Manila, and that the 2008 rate rebasing should consider a variety of possible technical solutions for the sector. The demonstration effects of the project would be transferable to the west concession area.

The Institutional Strengthening component of the project would support increasing public awareness of the importance of sewerage and sanitation through a public awareness campaign using the mass media.

Limited willingness to pay: The public's limited willingness to pay for sewerage service has been exacerbated by the design of the tariff within the concession agreements. Sanitation services are currently supported by a mandatory environmental charge, equal to 10% of the water charge, paid by all water consumers. A sewerage charge of 50% is levied when a household connects to a separate sewerage system. As households are unwilling to pay the additional 50% charge, concessionaires have failed to meet the connection targets. For example, under MSSP, MWSI only completed 86 of a planned 10,000 sewer connections. MWCI completing 12,000 sewer connections, thanks to its strategy of strong public consultation; nevertheless, some of the communities dropped out during implementation.

### **Conclusions and Policy Implications**

The 2003 rate rebasing confirmed that combined sewerage systems could be piloted in Metro Manila. Combined sewerage schemes in Metro Manila do not require individual household connections, because households are, in general, already connected to the drainage system. In addition, MWSS RO plans to consider an amendment to the tariff structure in 2008, and has expressed support for the abolition of the 50% sewerage charge, with a corresponding increase in the mandatory environmental charge levied on all customers.