Sewerage and Sanitation: Jakarta and Manila

OED recently audited sewerage and sanitation projects in Manila, Philippines, and Jakarta, Indonesia—cities with high population densities, inadequate sanitation, a high incidence of waterborne diseases, and serious environmental pollution. In Manila, the Bank nurtured a dialogue that helped to strengthen and guide receptive, well-run municipal agencies committed to providing needed services and to improving the environment. In Jakarta, the Bank's advocacy of low-cost sanitation technology, against local advice, ultimately caused the project to fail. Neither project came to grips with the problem of final waste disposal.*

Background

By the late 1970s, Jakarta's population had topped 6 million and was still growing rapidly. But water supply and sanitation services remained well below standard: only about half of the residents had access to piped water, much of which was heavily polluted. With no sewer system, the people relied on septic tanks and leaching pits, often improperly designed. Open canals carrying raw sewage overflowed onto the streets. Waterborne diseases were rampant, infant mortality was high, and reported cases of cholera in Jakarta exceeded 1,000 annually.

With one of the highest urban densities in the world, Manila shared many of these problems. Some 2 million people live in slums. Again, only about half of the urban population had access to piped water supply, while a deteriorating sewerage system only reached about 17 percent of city dwellers. As in Jakarta, most septic tanks were poorly constructed and usually overflowed into roadside drains.

Topography was similar—both cities are flat, so that canals and water courses flow too slowly to carry garbage away. In Manila, what runoff that does occur is channeled into Manila Bay, creating high levels of pollution that endanger fishing and recreation.

Goals, preparation

Goals. By 1977, the Indonesian government had completed a waste disposal master plan for Jakarta that recommended phased construction of a conventional sewer system. The Bank was requested to finance the first stage but rejected it as too expensive and, accordingly, urged the borrower to choose a cheaper alternative. In 1979, after considerable debate, the Bank and the Indonesian government agreed on a pilot project that combined piped sewerage and low-cost sanitation. The project's goals were to (1) improve environmental and public health conditions in a target area that housed about 450,000 people, (2) create an institution to operate the sewerage system, (3) demonstrate the feasibility of low-cost sanitation solutions, and (4) improve the management of Jakarta's water supply.

A $22 million loan was approved in 1983. It consisted of laying some 57 km of sewers, converting a flood-storage pond to sewage treatment, improving drainage, constructing 3,000 leaching pits and 30 public wash/toilet facilities, and providing consulting services. Completion was projected for early 1987 and the establishment of the sewerage authority for April 1986.

The master plan developed by the Philippines authorities was similar to the Jakarta plan, recommending comprehensive piped sewerage. This project was larger and more expensive than the one in

Jakarta; its main objectives were to improve sanitation in the poor areas of metropolitan Manila and to develop an institutional strategy for building similar projects in the future.

The Bank approved a loan of $63 million in March 1980 to finance (1) an extension of the piped sewer network; (2) the design, implementation, and monitoring of a pilot sanitation system in low-income areas; (3) the construction of "combined sewers" in areas served by septic tanks; (4) the organization and equipping of a septic tank emptying service; (5) the establishment of a waste water laboratory and monitoring service; and (6) training and consulting services. In parallel, the Asian Development Bank (ADB) made a loan of $37 million for a comprehensive rehabilitation and reconstruction of the existing central sewer system.

Preparation. The preparation of the Jakarta project took nearly four years—a period marked by disagreements between the Bank and the Indonesian government on the size, composition, and location of the project. Change of staff and arguments over sector responsibility added to the difficulty of the preparation period. In addition, land use within the project area changed rapidly, which made the proposed technological solutions unsuitable.

The Bank and the government of Indonesia eventually agreed on a project that combined construction of a piped sewer system in central Jakarta with the provision of a demonstration scale low-cost sanitation system in densely populated, low-income areas of the city.

In the Manila project, the Bank adopted a consensus-building approach that took the views of the borrower into account. And it played an important role in redirecting attention to the segment of the population that needed improved sanitation the most—the poor.

Preparation was extensive and detailed. Selection of pilot project and low-cost sanitation areas was based on a citywide survey that classified the residential areas according to the degree of health hazards caused by sewage and waste. The survey not only helped project designers assign correct priorities for investment, but also provided an excellent overall picture of the sanitation and environmental conditions of metropolitan Manila.

Implementation

The completion schedules for both projects were much too optimistic. Long procurement delays plagued implementation in both cases. In Jakarta, too many agencies were involved in running the project; as a result, instructions to contractors and quality control decisions were often delayed because of the inexperience of supervisory staff and confusion over responsibility. Inadequate preparation and poor project design also took their toll. Delays soon began to accumulate and by 1985, midpoint of the project timetable, only 7 percent of the Jakarta project had been completed.

In Manila, political unrest and the resulting disruption of the economy was one cause of delay, but bureaucratic red tape in bid specifications also hindered progress, as did import regulations.

Outcomes

Jakarta. The poor quality of planning in the Jakarta project was reflected in every aspect of the project's outcome, which is rated unsatisfactory.

- The sewerage part of the project was scaled down due to slow progress but, more important, because the limitations on the capacity of the treatment pond were overlooked at the design stage.

- The sanitation improvements, which were to demonstrate the feasibility of low-cost sanitation, did not improve sanitary or health conditions in the target area. Most of the 3,000 planned leaching pits could not be built because of insufficient space or unsuitable soil conditions. (Initial surveys identified these conditions but the Bank insisted on proceeding anyway.) The public toilets turned out to be exceptionally expensive at about $2,600 per toilet seat. Moreover, neighborhood surveys showed that the facilities were used less than 30 percent of the time partly because people thought the entrance fee of Rp 100 was too high.

- Plans to improve drainage also proved a failure, in large part because of the deplorable condition of the main drainage canals in rich and poor neighborhoods alike. As in Manila, these canals are brim full with stagnant sewage and the flow is blocked by solid waste or lack of maintenance. Disposing of more liquid wastes (from septic tanks or leaching pits) into the drains has only exacerbated already unacceptable environmental conditions in most areas of Jakarta and once again illustrates how trying to solve one part of the problem has merely created others.

Manila. The Manila project had a satisfactory outcome. The so-called combined sewers component of the project provided roadside drainage channels in mostly low-income areas. Small bore pipes connected the septic tanks to drains, which disposed of the liquid overflow.

The drains have been highly effective in removing sewage from around houses, and health surveys report significant improvement in local health conditions.

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The ADB-financed sea outfall, pumping stations, and main sewers also work well and are well built.

Problems remain, however. The relatively new but well-organized and well-managed Sewerage System Department has limited funds and equipment. As a result, the rehabilitated trunk sewer facilities are not being maintained properly. The proper functioning of the sea outfalls is particularly important in view of the increasing pollution of Manila Bay. A recent study of the bay did not raise special concerns but fishermen have reported plumes of sewage on the bay’s surface.

The roadside drains also pose a problem. They discharge their contents into larger drainage canals or water courses (all of which ultimately lead to Manila Bay). But because the large canals are usually choked with garbage, the flow of sewage from the roadside drains is causing progressively higher levels of pollution and, obviously, health hazards.

This aspect of environmental degradation either escaped the attention of the designers or was considered outside the scope of the project. The problem is aggravated by the divided responsibilities for sewerage and drainage. Although the Manila Waterworks and Sewerage System (MWSS) was responsible for designing and building the combined sewers and drains, responsibility for new construction was turned over to the Metropolitan Manila Commission for operation and maintenance.

Discharge of sludge from the septic tanks has also had environmental consequences. The quarry where the sludge is dumped is only meters away from where people pump drinking water.

Despite these shortcomings, the project helped to increase environmental awareness in Manila and the Philippines as a whole. New effluent standards and water quality regulations issued in 1990 set satisfactory control standards. However, their effectiveness and the level of enforcement is yet to be determined.

The project made a major contribution to institutional development by giving management much more experience with sewer system construction. Financial management, monitoring, and reporting have all improved as a result. The MWSS is now a mature organization with well-qualified staff, led by an able administrator. The fledgling Sewerage System Department is also well run but is hampered by its status as the “poor relative” of the Water System Department, receiving limited attention and resources. In view of expected rapid development of Manila’s sewerage system, this part of the utility will need much greater support.

Sustainability

In Jakarta, the sustainability of the limited benefits that materialized is rated as unlikely.

In Manila, MWSS established a well-run Sewerage System Department but failed to endow it with adequate resources for effective day-to-day operations, let alone expansion. This failure can potentially endanger the sustainability of the new or reconstructed facilities and is clearly damaging to the morale of the unit. Hence sustainability is rated as uncertain.

Lessons

Ownership matters. The crucial difference between the two projects is that in Manila, the Bank adopted a collaborative approach that resulted in a receptive and well-run institution committed to improving the environment, whereas in Jakarta, disagreements between the Bank and the implementing agencies, combined with inadequate technical design, ultimately caused the project to fail.

• Sewerage and sanitation projects require a comprehensive approach that takes into account the final disposal of waste. Solving a problem in one area only to create more problems elsewhere can damage public health and the environment. Both projects involve unfinished business with respect to effective urban and environmental planning.
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