

ASIAN DEVELOPMENT BANK

PPA: PAK 19076

PROJECT PERFORMANCE AUDIT REPORT
ON THE
KARACHI URBAN DEVELOPMENT PROJECT
(Loan 793-PAK[SF])
IN
PAKISTAN

December 1999

CURRENCY EQUIVALENTS

Currency Unit – Pakistan Rupee (PRe/PRs)

	At Appraisal	At Project Completion	At Postevaluation
	(Jul 1986)	(Nov 1997)	(Sep 1999)
PRe1.00 =	\$0.0591	\$0.0247	\$0.0193
\$1.00 =	PRs16.9	PRs40.4	PRs51.8

ABBREVIATIONS

ADB	–	Asian Development Bank
DSWM	–	Department of Solid Waste Management
EIRR	–	economic internal rate of return
FIRR	–	financial internal rate of return
KDA	–	Karachi Development Authority
KESC	–	Karachi Electric Supply Corporation
KMC	–	Karachi Metropolitan Corporation
KSDP	–	Karachi Special Development Program
KWSB	–	Karachi Water and Sewerage Board
NGO	–	nongovernment organization
OEM	–	operations evaluation mission
PCR	–	project completion report
PMU	–	project monitoring unit
PPAR	–	project performance audit report
PPTA	–	project preparatory technical assistance
SDR	–	special drawing right

NOTE

- (i) The fiscal year (FY) of the Government ends on 30 June. FY before a calendar year denotes the year in which the fiscal year ends. For example, FY1999 begins on 1 July 1998 and ends on 30 June 1999.
- (ii) In this report, "\$" refers to US dollars.

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BASIC PROJECT DATA
Karachi Urban Development Project (Loan 793-PAK[SF])
As per ADB Loan

KEY PROJECT DATA (\$ million)		Documents	Actual
Total Project Cost		69.30	69.50
Foreign Exchange Cost		32.80	42.50
Local Currency Cost		36.50	27.00
ADB Loan Amount/Utilization	SDR	45.62	41.10
	\$	55.20	59.65
Foreign Exchange Cost	\$	32.80	42.50
Local Currency Cost	\$	22.40	17.10
ADB Loan Cancellation	SDR	0.00	4.52
	\$	0.00	6.54

KEY DATES	Expected	Actual
Fact-Finding		5-16 May 1985
Appraisal		29 Sep-17 Oct 1985
Loan Negotiations		25-30 Aug 1986
Board Approval		14 Oct 1986
Loan Signing		19 Dec 1986
Loan Effectiveness	2 Jun 1987	2 Oct 1987
Project Completion	31 Mar 1990	31 Dec 1996
Loan Closing	30 Sep 1992	12 Nov 1996
Months (Effectiveness to Completion)	34	111

KEY PERFORMANCE INDICATORS (%)	AR	PCR	PPAR
Economic Internal Rate of Return (Part A)	63	45 ¹	< 0
Financial Internal Rate of Return (Part A)	6.4	3.1	-16.5
Financial Internal Rate of Return (Part B)	n.c.	n.c.	< 0
Financial Internal Rate of Return (Part C)	5.5	n.c.	< 0

BORROWER Islamic Republic of Pakistan

EXECUTING AGENCY Karachi Metropolitan Corporation
 Planning and Development Department,
 Government of Sindh
 Karachi Water Supply and Sewerage Board

MISSION DATA

Type of Mission	No. of Missions	Person-Days
Fact-Finding	1	—
Appraisal	1	114
Project Administration		
Inception	1	17
Review	20	291
Disbursement	0	0
Special Project Administration	0	0

¹ Estimated incorrectly.
 n.c. = not completed

Project Completion
Operations Evaluation

1
1

57
13

EXECUTIVE SUMMARY

In 1984, Pakistan's urban population was growing at a rate of 4.8 percent, largely because of the inability of the agriculture sector to absorb the rapid increase in the labor force. This rapid growth placed a severe strain on urban services and infrastructure, such as water supply, drainage, sewerage, urban transport, and solid waste disposal, as well as education and health care. Moreover, rapid and unplanned urban growth led to the proliferation of urban slums, known as *katchi abadis*. To address the urban infrastructure problems in Karachi, the Government of Pakistan embarked on a program of urban infrastructure rehabilitation and expansion, slum upgrading, and low-income housing development under the Karachi Special Development Program. The Government sought financial assistance from the Asian Development Bank (ADB) for 4 of the 17 program components. The Karachi Urban Development Project loan was subsequently approved by the ADB Board of Directors on 14 October 1986.¹ The Project was substantially completed in June 1996 compared with a completion date of September 1991 as envisioned at the time of appraisal.

The Project had five major objectives: (i) to upgrade basic urban infrastructure and environmental conditions, particularly in the low-income areas of Karachi and in areas with severe infrastructure deficiencies; (ii) to improve the efficiency of delivery of urban services; (iii) to strengthen the institutional structure, management, and technical capabilities of the project Executing Agencies; (iv) to improve metropolitan resource mobilization, cost recovery, and financial management in Karachi; and (v) to contribute to the further development of general policies in the urban sector, particularly those related to land development and urban finance. The Project's objectives were to be achieved through the implementation of the four components. Part A, the *katchi abadi* upgrading component, was to provide infrastructure for Baldia and Orangi. Part B, the solid waste management component, was to increase the collection and disposal of street and household waste. Part C, the sewerage and sewage treatment plant upgrading component, was to triple the amount of sewage being treated. And Part D, the Metropolitan Resource Generation Study, was to review and recommend measures to strengthen the financial position of three local government agencies, the Karachi Metropolitan Corporation, Karachi Water and Sewerage Board, and Karachi Development Authority.

The design of the Orangi upgrading (Part A) was generally appropriate—water supply, sewage lines, road upgrading, and street lighting were provided in consultation with community groups. However, a design shortcoming was the lack of sewage treatment (sewage flows untreated into estuaries and then into the open sea). In Baldia, community groups were not consulted on the design, and upgrading resulted in duplication and nonutilization of the installed sewage system. Although water supply systems distribution was provided in Baldia and Orangi, the drought of the past several years in Karachi caused water shortages and an underutilization of the facilities. The road and walkway upgrading was poorly implemented without any coordinated plan, and the work is now deteriorating because of a lack of maintenance. The cost of Part A was to be recovered through the sale of leases for plots of land where the upgrading was implemented. Although a substantial number of leases were sold, the sale proceeds were below expectations because of low demand and low selling price. The low willingness to pay

¹ Loan 793-PAK: *Karachi Urban Development Project*, for \$55.2 million, approved on 14 October 1986.

and falling property prices were the result of the poor peace and security situation in Baldia and Orangi.

Part B, the solid waste management component, was appropriately designed and successfully implemented. The institutional strengthening part of this component (training, asset revaluation, and privatization study) was also successfully implemented. The original objective of Part B was to increase the solid waste disposal rate from 30 percent to 40 percent. By 1996, the rate exceeded the target, and the disposal rate was 60 percent, a rate that is still maintained in 1999.

The sewage treatment plant component (Part C) was to triple the volume of sewage given primary treatment, thus tripling the removal of suspended solids and doubling the removal of biological oxygen demand. The upgrading of the sewage treatment plants doubled their capacities and was implemented successfully. However, the design failed to include the upgrading and rehabilitation of sewer lines leading to the plants, which is needed to increase the inflow of sewage. As a result, the plant capacities are underutilized. Moreover, the cost of the plant upgrading was underestimated, and a substantial amount of funds from Part A were reallocated to Part C.

The Metropolitan Resource Generation Study (Part D) was developed in response to the weak financial position of local government agencies. However, the study took more time to complete than expected, and many of its recommendations were overtaken by events. Also, the Sindh government did not agree with some of the recommendations, particularly those that affected the government's revenue base. Thus, the study did not lead to any noticeable improvement in the financial position of local government bodies as intended.

The Project was completed for \$69.5 million, marginally more than the appraisal estimate of \$69.3 million. The provision of Government counterpart funds was timely. Contracting followed international and local competitive bidding procedures; and contractors, suppliers, and consultants generally performed well. The Project Monitoring Unit set up by the Government to supervise project implementation was appropriately staffed, but its role tended to be passive. ADB supervision of the Project was also less than satisfactory because review missions primarily focused on the implementation of the Project's physical components to the detriment of the financial and institutional aspects. Loan covenants related to implementation were generally complied with; however, those related to financial aspects were not.

The requirement under the loan to establish a benefit monitoring and evaluation system was not complied with, and thus the economic benefits of parts A, B, and C could not be estimated. However, property prices (a proxy for willingness to pay) in Baldia and Orangi fell during implementation of Part A. Thus, it is concluded that the economic benefits of the upgrading are minimal, and that the economic internal rate of return is likely negative. The financial internal rate of return (FIRR) for Part A is estimated to be negative in real terms. FIRRs for parts B and C are also likely negative because of inadequate cost recovery. The socioeconomic and environmental impacts of the Project were modest, and there was no obvious positive impact on women.

This project performance audit concludes that the Project was unsuccessful in meeting its objectives. There were few economic benefits from the upgrading of Baldia and Orangi, the capacities of the sewage treatment plants are underutilized, and the Metropolitan Resource Generation Study resulted in little improvement of the financial position of local government bodies. The Project contributed little to the further development of general policies for land development and urban finance. Only the solid waste management component met and exceeded its objectives. The main lesson learned was that urban development-type projects are complex in nature, and piecemeal solutions are inadequate. Urban development programs need to integrate all aspects of urban infrastructure in a single plan. Thus, there is a need for better and more detailed project preparation for urban development-type projects. Community involvement in the design of project components is also of paramount importance. Cost recovery issues related to the provision of urban services need to be reviewed in light of the weak financial position of local government bodies. Although the Metropolitan Resource Generation Study was comprehensive, closer collaboration between the consultant and the Sindh government would have resulted in more relevant and mutually acceptable recommendations. The project performance audit recommends investment in (i) sewage system upgrading to improve the utilization of sewage treatment plant capacities, and (ii) solid waste disposal because of the large positive externalities.

I. BACKGROUND

A. Rationale

1. In 1984, Pakistan's population was estimated at about 96 million and growing at a rate of 3.1 percent. About 30 percent of the population was urban; Karachi, the largest city had 6 million people. The urban population was growing at a rate of 4.8 percent, largely because of the inability of the agriculture sector to absorb the rapid increase in the labor force. This rapid growth placed a severe strain on urban services and infrastructure, such as water supply, drainage, sewerage, urban transport, and solid waste disposal, as well as education and health care. Moreover, rapid and unplanned urban growth led to the proliferation of urban slums, known as *katchi abadis*. To address the urban infrastructure problems in Karachi, the Government embarked on a program of urban infrastructure rehabilitation and expansion, slum upgrading, and low-income housing development under the Karachi Special Development Program (KSDP).

B. Formulation

2. The KDSP was first brought to the attention of the Asian Development Bank (ADB) during the aid consortium meeting in December 1983. Feasibility studies for the various components of the KSDP were undertaken in 1984 with World Bank assistance. On the basis of these studies, the Government sought ADB financial assistance during country programming in February 1985 for 4 of the 17 KSDP components that were not being financed by the World Bank.¹ ADB agreed and a fact-finding mission was fielded in May 1985. No project preparatory technical assistance (PPTA) was provided in advance of fact-finding. The Appraisal Mission visited Pakistan from 29 September to 17 October 1985. The Karachi Urban Development Project loan was subsequently approved by ADB on 14 October 1986.² This was ADB's first loan to the urban sector in Pakistan.

C. Objectives and Scope at Appraisal

3. The Project had five major objectives: (i) to upgrade basic urban infrastructure and environmental conditions, particularly in the low-income areas of Karachi and in areas with severe infrastructure deficiencies; (ii) to improve the efficiency of delivery of urban services; (iii) to strengthen the institutional structure, management, and technical capabilities of the project Executing Agencies; (iv) to improve metropolitan resource mobilization, cost recovery, and financial management of Karachi; and (v) to contribute to the further development of general policies in the urban sector, particularly those related to land development and urban finance.

¹ IDA Credit No. 1652-PAK: Karachi Special Development Project for \$70 million approved on 14 January 1986 and closed on 30 September 1994.

² Loan 793-PAK: *Karachi Urban Development Project*, for \$55.2 million, approved on 14 October 1986. The long delay between appraisal and Board approval was due to the long time needed to resolve the nonpayment of electricity charges by local government bodies to the Karachi Electric Supply Corporation (KESC). After the Government of Pakistan provided assurances that the issue would be resolved and that local government bodies' electricity arrears to KESC would be reduced, the loan was approved.

The Project's objectives were to be achieved through the implementation of the four components: (i) Part A, the katchi abadi upgrading component, to provide infrastructure in Baldia and Orangi; (ii) Part B, the solid waste management component, to increase the collection and disposal of street and household waste; (iii) Part C, the sewerage and sewage treatment plant upgrading component, to triple the amount of sewage being treated; and (iv) Part D, the Metropolitan Resource Generation Study, to review and recommend measures for strengthening the financial position of three local government agencies, the Karachi Metropolitan Corporation (KMC), Karachi Water and Sewerage Board (KWSB), and Karachi Development Authority (KDA).

D. Financing Agreements

4. ADB provided a loan of SDR45.622 million (\$55.2 million) equivalent from its Special Funds resources on 14 October 1986 to finance the entire foreign exchange cost of the Project and \$22.4 million equivalent of the local currency costs (Appendix 1.) The loan had a term of 40 years, including a grace period of 10 years, with a service charge of 1 percent per annum. ADB financing covered 80 percent of the total project costs of \$69.3 million equivalent as estimated at appraisal. The borrower was the Islamic Republic of Pakistan. The Government of Pakistan provided budgetary funds for the balance of the project cost. The Government of Pakistan relented the loan funds to the Sindh provincial government on the same terms. The Sindh government in turn lent the loan funds to KMC and KWSB for a term of 25 years, including a grace period of 5 years, at an interest rate of 7 percent per annum (inclusive of the foreign exchange risk fee).

E. Completion

5. The Project was substantially completed in June 1996 compared with September 1991 envisioned at appraisal. A project completion report (PCR), prepared by ADB's Pakistan Resident Mission in November 1997, discusses the design, scope, implementation, and operational aspects of the Project, and provides detailed project information. The PCR calculates the economic and financial internal rates of return for only Part A, the katchi abadi upgrading component, as the benefit monitoring and evaluation system for the Project had not been implemented as required. However, the technique employed for calculating the economic internal rate of return (EIRR) in the PCR was not appropriate because the benefits were based on hypothetical values rather than on willingness to pay. Moreover, the econometric model used to estimate economic benefits did not fit the data well, and all explanatory variables except for one lacked significance. Therefore, the estimated EIRR of 45.4 percent is questionable. The calculation of the financial internal rate of return (FIRR) was also faulty as the incremental revenue stream included lease revenues for the fiscal years (FY) 1990 to FY1994. According to KMC data, lease revenues began only in FY1995. Without the lease revenues in question, the FIRR would have been negative. The PCR identifies some of the issues faced by the Project and makes project-specific recommendations. However, the PCR assessments may have been too positive in light of the Project's shortcomings and the lack of attainment of its main objectives. The PCR rated the Project as partly successful.

F. Operations Evaluation

6. This project performance audit report (PPAR) focuses on the pertinent aspects of the Project and presents the findings of the OEM (OEM) to the project area from 6-16 September 1999. The PPAR presents an assessment of the Project's effectiveness in terms of achieving its objectives and generating benefits, and of the sustainability of the Project's operations.

7. The PPAR is based on a review of the PCR, the appraisal report, material in ADB files, a report prepared by a consultant engaged by the OEM, and discussions with staff members of ADB, and the Executing Agencies. Copies of the draft PPAR were provided to the Government and ADB staff concerned for review and comments. Comments received were taken into consideration in finalizing the report.

II. IMPLEMENTATION PERFORMANCE

A. Design

8. The Project comprised four parts. Part A, the katchi abadi upgrading component, was a response to poor sanitary conditions in Baldia and Orangi where the lack of water supply and sewage services had led to serious health problems among residents. Part A also included components such as road upgrading and street lighting to improve public safety; reservation of areas for community facilities such as schools, health centers, parks, and playgrounds; and training of Executing Agency staff. The upgrading cost was to be recovered through the sale of land leases to the Baldia and Orangi residents, and the proceeds from these sales were to have financed a revolving fund for future katchi abadi upgrading schemes. The design of Part A was based on feasibility studies prepared by domestic consultants, to which community organizations and KMC provided inputs based on their previous experience with upgrading katchi abadis. During implementation, there were some minor changes to the design of Part A. The installation of 2,600 community taps was canceled because almost all households obtained water connections directly from KWSB. The street lighting component was canceled because it was undertaken by KESC on its own account. The community facilities were canceled and were provided by KMC, also on its own account. Two water storage tanks, each with a capacity of 675,000 liters, along with a pumping station were added in Orangi.

9. The overall design of Part A in Orangi was generally appropriate. The participation of community groups and nongovernment organizations (NGO) ensured that community needs were taken into consideration. The main design shortcoming was the lack of connection of the sewer system to any sewage treatment plant. As a result, sewage flows through the sewer system into open estuaries, then into the Lyari River, and eventually out to sea. In Baldia, the beneficiaries were not consulted; this resulted in a duplication of effort for the sewerage system. Baldia residents had previously laid open surface drains in the back lanes to which the house latrines were connected. The Project laid underground sewer pipe in the front lanes, which are unconnected and dry. The design failed to take into account the work already done on the sewerage system. Moreover, the project sewer system will not be able to pick up the flows from the open drain system because the gradients are in the opposite direction. While the residents regularly maintain the open drains, they cannot maintain the underground sewers. Some NGOs felt that the waterborne sewerage that was installed is a sophisticated means of sewage disposal and is not common in most low-income areas of developing countries. Simpler technology, such as double-vaulted pit latrines, water-sealed aqua privies, or septic tanks, would have been preferable. However, this view is not shared by KMC, which considers the technology employed as appropriate. The OEM tends to agree with KMC on this issue because sewage ultimately needs to undergo treatment.

10. Part B, the solid waste management component, was to improve Karachi's solid waste disposal system by providing collection bins, vehicles, and equipment; upgrading workshop facilities; and developing disposal sites. This component also included the strengthening of the institutional capacity of KMC's newly established Department of Solid Waste Management (DSWM) by providing training, revaluing assets, providing support during project implementation, and studying the feasibility of privatizing the solid waste collection service.

These measures were expected to increase solid waste collection from 30 percent of the wastes generated in the city to 40 percent. The design was based on a feasibility study prepared by an international consultant, and overall, the design seems to have been reasonable. Because much of the component involved the procurement of goods and services, there was sufficient flexibility to accommodate any design modifications. Only minor changes in the design of this component occurred during implementation.

11. Part C, the sewerage and sewage treatment plant upgrading component, was to triple the volume of sewage given primary treatment, while continuing to provide secondary treatment to the present flow, thereby tripling the removal of suspended solids and doubling the removal of biological oxygen demand from the city's sewage flow. Equipment was also to be provided to produce electricity from digester gas. Part C also included provision for training and a revaluation of assets. The design was based on feasibility studies prepared by international consultants. The design focused on renovating and rehabilitating the existing plant with which KWSB staff was familiar, rather than introducing new technologies. Except for the electricity generating equipment, which was not installed because of the shortage of funds under this component, only minor changes were made to the original component design, such as marginally lowering the design capacities of the sewage treatment plants. Nevertheless, the design had two shortcomings. First, the feasibility study consultants substantially underestimated the component cost, resulting in a reallocation of funds from Part A to Part C. Second, the design did not consider the volume of sewage inflow that could be immediately treated by the sewage treatment plants and thus overdesigned the plant capacity.

12. Part D involved conducting the Metropolitan Resource Generation Study to assess the financial management practices, needs, and resources of KMC, KWSB, and KDA, and to help implement the study's recommendations. This project component was crucial because of the weak financial position of the local government agencies. The sustainability of the Project's investments was also dependent on the financial strength of the local government agencies. Therefore, the inclusion of the study in the Project was appropriate. However, to ensure that the study's recommendations were relevant and acceptable to those concerned, implementation of Part D should have been a joint effort by the consultants, the Sindh government, and representatives of the local bodies.

B. Contracting, Construction, and Commissioning

13. Procurement was carried out according to ADB's *Guidelines for Procurement*. The Executing Agencies had some initial problems in following these Guidelines because of their lack of familiarity with them, but these difficulties were overcome. Procurement of goods followed either international competitive bidding or local competitive bidding procedures. The contractors and suppliers, except the contractor under Part C, generally performed well. The performance of the contractor for Part C was less than satisfactory because of the contractor's slow implementation of the component. This contractor, a company from the People's Republic of China, also had communication problems with staff in local government agencies because few of the contractor's employees were English-speaking.

14. Delays were experienced in consultant recruitment because of the Executing Agencies' lack of familiarity with ADB procedures and the unresolved issue of the taxation of international consultants. The taxation issue for the Project was resolved in November 1989, although it is still an outstanding issue at this time for other ADB projects in Pakistan. Nevertheless, the

consultants, both domestic and international, generally performed well, produced good quality work, and maintained a good rapport with the Executing Agencies and ADB.

C. Organization and Management

15. Parts A and B were implemented by KMC, Part C by KWSB, and Part D by the Department of Finance of the Sindh government. Responsibility for the day-to-day project coordination was with the Project Monitoring Unit (PMU) of the Planning and Development Department of the Sindh government, which was also responsible for the other components of the KSDP financed by the World Bank. Overall progress in the implementation of the KSDP was reviewed by the Coordination Board. The PMU comprised 12 persons with engineering and planning backgrounds. It was appropriately staffed and equipped, and had the necessary skills to carry out its duties.

16. Nevertheless, the PMU's performance was passive; it mainly collected progress reports from the Executing Agencies, circulated them to ADB, and coordinated ADB review missions. The PMU engaged in few coordination activities with the Executing Agencies. Meetings were usually arranged with individual Executing Agencies, rather than combined meetings, which would have enhanced coordination. The PMU did not implement a benefit monitoring and evaluation system as required by the Loan Agreement.¹

17. From December 1988 to December 1995, ADB sent 20 missions to review progress and help resolve project implementation problems. These missions followed up on the physical progress of civil works and procurement of equipment, as well as training of staff of the various agencies. The missions had a good rapport with the Sindh government and the Executing Agencies, although the Sindh government felt that the review missions could have been better coordinated. Communications could also have been better. The main shortcoming of the review missions was the failure to ensure that a benefit monitoring and evaluation system was established early in the project implementation cycle as required by the loan. The review missions also failed to follow up on the electricity arrears issue, which eventually led to ADB suspending contract awards under the loan until a solution was found. The performance of the revolving fund under the katchi abadi upgrading component was not monitored. In 1991, the KMC council approved Resolution No. 1318, specifying the rates to be charged for the leases in Baldia and Orangi (Appendix 2). These rates were clearly low, even lower than the rates charged by KMC in other katchi abadis. It should have been obvious to the review missions that the rates charged under Resolution No. 1318 would have a detrimental effect on the revolving fund. Overall, ADB's supervision of the Project was not adequate.

¹ Loan Agreement, Schedule 6, para. 25.

D. Actual Cost and Financing

18. At appraisal, the Project was estimated to cost \$69.3 million equivalent, comprising a foreign exchange cost of \$32.8 million and a local currency cost of \$36.5 million equivalent. ADB provided a loan of \$55.2 million (SDR45.622 million) representing 80 percent of the total cost, while the Government of Pakistan provided \$14.1 million to finance the remaining 20 percent of the total cost. The actual project cost at completion was \$69.5 million equivalent, with a foreign exchange cost of \$42.6 million and a local currency cost of \$26.9 million equivalent. This was marginally higher by 0.2 percent than the cost estimated at appraisal. In rupee terms, however, the project cost increased from PRs971.4 million to PRs1,836.7 million, with the Government's contribution increasing from PRs238 million as envisaged at appraisal to PRs297 million, a 24.8 percent increase. Nevertheless, the provision of counterpart funds by the Government of Pakistan was timely and did not create any delays in project implementation. However, as a result of the devaluation of the rupee against the dollar, the Government's contribution in dollar terms amounted to only 16.2 percent of the total project cost. At project completion, the dollar value of withdrawals amounted to \$59.7 million, reflecting the fall of the dollar against the SDR. A total of \$6.5 million (SDR4.5 million) was canceled.

19. Although the overall project cost was relatively close to the appraisal estimate, there was a substantial reallocation of funds within the Project, particularly between parts A and C. At appraisal, Part A comprised 42.9 percent of the project base cost, but at project completion, it accounted for only 11.5 percent of the project cost. At the same time, Part C accounted for 41 percent of the project base cost at appraisal, but at completion 70.4 percent of the total project cost. The large reallocation of funds from Part A to Part C was the result of an upward reassessment of the costs to rehabilitate the Karachi sewerage system during implementation. The cost rose from \$16.9 million to \$47.8 million because of the higher costs associated with the sewage treatment plants and pumping stations not anticipated at appraisal. Inlet works, clarifiers, filters, recirculation pumps, pump motors, and digesters all had to be replaced or upgraded instead of merely refurbished. Sewer lines that were to be rehabilitated were also found to be in an advanced state of deterioration, and much of the pipe had to be replaced. This was only discovered once the lines were opened for repair.

E. Implementation Schedule

20. The Project was expected to be implemented over five years, beginning in the fourth quarter of 1986 and ending in the fourth quarter of 1992 (Appendix 3). For a project of this size and complexity, the implementation schedule seems to be reasonable. However, project delays began immediately, as loan effectiveness took four months longer than expected because of delays in finalizing the subsidiary loan agreements. There were also long delays in KMC appointing directors for parts A and B. However, the longest single delay was 19 months caused by the suspension of contract awards under the loan by ADB because of KMC's and KWSB's nonpayment of arrears for electricity purchases from KESC. The suspension was lifted only when the Government of Pakistan intervened and provided funds through budgetary reallocations to reduce the electricity arrears of the local bodies. However, this solution was short-lived as KMC's and KWSB's electricity payment arrears began to build up again immediately after the payment of the current arrears was made. The major cause of this problem was the weak financial position of KMC and KWSB.

F. Compliance with Loan Covenants

21. In addition to standard covenants related to reporting requirements and the use of loan proceeds, the Loan Agreement contained a number of project-specific covenants related to (i) implementation, and (ii) operation and maintenance of project facilities. The covenants related to project implementation, such as establishment of a project monitoring unit, appointment of monitoring staff, preparation of action plans and studies, land acquisition, and out-of-country training, were all complied with. However, some covenants related to the operation and maintenance of project facilities, such as the introduction of cost recovery measures, were not. The main reason for this was the poor security situation in Karachi, which peaked in the two-year period 1992-1993, deteriorated to a point that rioting with substantial loss of life was a common occurrence in the city. As a result, the local authorities were reluctant to introduce stronger measures that would be perceived as provocative by some of the public.

22. The main covenants not complied with are the full cost recovery of the Baldia and Orangi upgrading through the sale of 99-year leases, and cost recovery of sewage and solid waste disposal services (Appendix 4). The costs of upgrading Baldia and Orangi were less than fully recovered because of the low lease prices. It is not clear why the KMC Council authorized such low prices, but the perceived low willingness to pay for leases by the residents may have been a reason. Cost recovery for sewerage and solid waste disposal services to cover operating expenses, debt service, and a proportion of the capital expenditure was not implemented because of the security situation (para. 21). A benefit monitoring and evaluation system was also not implemented as required.² The covenant on KESC arrears was not complied with as the issue recurred after it was seemingly settled in 1991. Electricity arrears of KMC and KWSB are still high today, although KESC's overall accounts receivable position has deteriorated, and KMC and KWSB are not too much out of line with the average arrears of other consumers (Appendix 5).

23. Some covenants, particularly those related to implementing the Metropolitan Resource Generation Study's recommendations and the consultant's recommendations for solid waste disposal, were ineffective. In these cases, the covenant required that the recommendation be mutually agreed to by the Executing Agency and ADB as a precondition for implementation. Thus, in theory, if one party did not agree to the recommendation, there was no obligation to implement the recommendation. Similarly, the covenant related to KESC arrears was also ineffective, as it did not mandate a resolution of the issue. The covenant required that the amount of arrears and a time frame for settling the amounts be agreed to, that the arrears be reflected in the respective accounts, and that a tariff for future electricity purchases be agreed upon. The covenant did not require any actual payment of the arrears. The failure to comply with the covenant to resolve the arrears issue led to the suspension of the loan for 19 months.

² KWSB eventually established a benefit monitoring and evaluation unit in 1998 under Loans 1001-PAK(SF)/1002-PAK: *Karachi Sewerage Project*, for \$51 million and \$34 million, respectively, approved on 14 December 1989. The unit is not functioning properly as staff do not have the required skills.

III. PROJECT RESULTS

A. Operational Performance

24. Under Part A, 248,746 meters (m) of water supply lines were supplied and installed compared with 212,400 m originally envisaged, and some 81,000 m trunk drains were completed compared with 31,000 m planned. However, the construction of 331,905 square meters (m²) of residential roads, feeder roads, and walkways of various kinds fell short of the 1,442,000 m² planned because of the reallocation of funds from Part A to Part C (para. 19). Nevertheless, most of these facilities were provided despite the large reallocation because of the depreciation of the rupee with respect to the SDR. In Baldia and Orangi, the water distribution pipes are underutilized as the water supply is inadequate due to a severe drought in the Karachi area over the past several years. KWSB has been providing water to these areas once a week for one and a half hours, enough to store 2,800 liters in each connected household. Water supply is being supplemented by trucks from KWSB and private entrepreneurs. The sewer systems in both Baldia and Orangi are now about six years old, but it is not possible to determine their condition because they are underground. Only the Orangi system is being utilized (para. 9). Baldia and Orangi have no street lighting; in places where street lighting was installed, streetlights do not have light bulbs. The roads and walkways were upgraded without a coordinated plan, and the selection for upgrading was based on no rational criteria. They are also in poor condition as they have not been maintained.

25. Approximately 52,000 leasable plots were developed compared with the 50,000 expected at appraisal; 20,631 were sold as leases as of June 1999. These sales raised PRs127.2 million, compared with PRs301.0 million expected at appraisal. This amount was deposited into two accounts with the National Bank of Pakistan and used to upgrade additional katchi abadis as required by the loan. The sale of leases peaked in FY1996/1997 at 6,492 for PRs36.9 million (Appendix 6). Even though the leases were affordably priced, demand has been weak because of the peace and security problems in these areas. There is also anecdotal evidence of rent-seeking activities that raised the ultimate price of the leases to the residents. An NGO was engaged to help with the lease program, and community education and organization.

26. Under Part B, 92 covered vans and container vehicles, and 13 vehicles for landfill operations were procured, compared with 92 and 18 vehicles, respectively, as envisaged at appraisal. The covered vans and container vehicles were subsequently allocated to the district municipal corporations, which were created in 1997 after a reorganization of KMC.³ Also, 75 reinforced commercial platforms for waste disposal and 305 fabricated steel containers were purchased, as against the planned procurement of 7,800 bins of various sizes and 525 four-wheeled trolleys. Two sanitary landfill sites with a total area of more than 400 hectares and a useful life of 15 years were developed. This is in excess of the capacity of 215 hectares and shorter life spans originally planned. These changes to procurement as specified at appraisal were based on recommendations of the solid waste management adviser. The main vehicular workshop was constructed, but only one of the two planned zonal workshops was completed.

³ DSWM maintains overall responsibility for the landfill sites, while the district municipal corporations are responsible for the collection and disposal of the solid waste.

Also, only three of the four planned workshop upgrades were undertaken. The construction of the other zonal workshop and the workshop upgrading was completed by KMC out of its own funds. Tools and equipment were procured as envisaged, the asset revaluation was completed as required, and a study of the privatization of the solid waste management system was undertaken. The recommendations of the privatization study were implemented in only one district municipal corporation where solid waste collection was privatized in one and a half of the five zones. However, the establishment of solid waste transfer stations was not implemented because of a shortage of funds. The financial and accounting reporting systems could also not be implemented because of the KMC reorganization. The community education program for the disposal of solid waste was developed and publicized. At completion, solid waste collection and disposal increased from about 1,000 tons per day in 1985 to 3,600 tons per day in 1996, or about 60 percent of the solid waste generated in the city. The balance of the solid waste goes uncollected. In 1999, DSWM estimates that about 60 percent of the solid waste is still collected. This component has surpassed its original target of increasing the collection to 40 percent.

27. The two sewage treatment plants under Part C were rehabilitated and upgraded, but to a capacity of 231,000 cubic meters (m^3) per day and 210,000 m^3 per day, compared with 281,000 m^3 per day and 295,000 m^3 per day, respectively, as envisaged at appraisal. About 13,000 m of collapsed sewers were replaced, 5 pumping stations were rehabilitated, 575 m of trunk sewers were relaid, and about 1,500 sewer overflow points were repaired. This compares with appraisal estimates of replacement of 14,850 m of collapsed sewers, rehabilitation of 5 pumping stations, relaying of 600 m of trunk sewers, and repair of sewers at 1,558 overflow points. Also, 16 sets of sewer maintenance equipment and spares for pumping equipment were provided as planned. Although the capacity of the sewage treatment plants was upgraded, the plants are still operating at only half their potential (para. 11). Sewage inflows are now not appreciably higher than those before the upgrading. The main cause of this is the absence of maps that show the location of sewer lines in the city required to implement civil works to divert sewage flows to the treatment plants. The cost to locate the sewer lines and to undertake the required civil works is not within the financial means of KWSB at this time. Therefore, the objective to triple the volume of sewage receiving primary treatment, while providing secondary treatment to the present flow has not been met, and will not be met unless extensive civil works on the sewer system are undertaken. The revaluation of assets was undertaken as required.

28. The review of the Metropolitan Resource Generation Study (Part D) was undertaken by the Sindh government, KMC, KWSB, and KDA. Although the study was comprehensive and of good quality, it took too much time to complete and many of its recommendations were overtaken by events. Thus, these recommendations were no longer relevant. The Sindh government also did not agree with some of the study's recommendations, such as the transfer of the collection, valuation, and rate setting of property taxes to KMC; the transfer of 50 percent of the motor vehicle tax to KMC; and KMC's floating of bonds in the domestic capital market (Appendix 7). In the first two cases, it would seriously erode the Government's revenue base, and in the second, investors would not be interested in KMC securities because of the risk. In hindsight, the Sindh government did not feel that the study was of much value. Greater involvement of the government in the study would have produced more relevant recommendations.

B. Institutional Development

29. The major effort in institutional development was the Metropolitan Resource Generation Study under Part D, which was designed to help strengthen the financial positions of the three principal agencies responsible for city services and development, namely, KMC, KWSB, and KDA. International consultants provided by the Project implemented the study. The study recommendations were reviewed by the Sindh government, KWSB, KMC, KDA, and ADB; some measures were implemented. The measures implemented dealt with tariffs for water and sewerage; billing; increasing collection efficiency; improved accounting, auditing, and budgeting; increased computerization; downsizing of staff; contracting out maintenance work; and more emphasis on public relations. However, these measures did not lead to significant improvements in the financial position of KMC, KWSB, or KDA, or to achieving compliance with the financial covenants in the Loan Agreement.

30. Out-of-country training was the other provision in the Project for institutional development. Parts A, B, and C each had a component for out-of-country training for a total of 30 person-months to train 23 staff from the Executing Agencies. However, the provision for training for parts A and C was not based on any institutional needs analysis. Some training participants under Part A felt that the training provided was too theoretical, and did not focus on practical matters. Trainees under Part C felt that the amount of training was not sufficient. On the other hand, the scope of training for Part B was determined by an international consultant hired to help implement this component. The training was the result of an assessment of DSWM's needs, was useful, and was well received by the participants.

C. Financial Performance

31. KMC and KWSB were the Executing Agencies for the Project. In 1996, KWSB was separated from KMC and became an independent entity. The Sindh government has oversight responsibility for both agencies. Although KMC generates some revenues from its operations, such as half of the conservancy charge collected through the KWSB consumer water bill, KMC cannot be classified as a commercial entity. KMC's budget is primarily funded by transfers from the federal Government and the Sindh government. DSWM, a department of KMC, and the district municipal corporations are similarly funded. In FY1999, only about 15 percent of their total operating and capital spending was covered by the conservancy charge. The balance was funded by transfers from KMC's budgetary resources.

32. KWSB's financial performance has been weak over the past 10 years (Appendix 8). Revenues have been insufficient to cover costs, and subsidies from KMC have been provided on an annual basis to meet operational deficits.⁴ The covenanted conservancy charge to generate funds to cover sewerage operating expenses, debt service requirements, and a proportion of annual capital expenditures was established on 1 January 1991. The rate was subsequently adjusted upward along with the water charge in 1992, 1994, 1995, and 1998. However, conservancy charges still cover a meager proportion of sewerage operating and developmental expenditures, and have never exceeded 30 percent. In FY1999, conservancy

⁴ The KWSB Act of 1996 requires KMC to provide a subsidy to KWSB for an amount up to 10 percent of KMC's total revenues or any amount fixed by the Sindh government.

charges covered only 26 percent of these costs. Moreover, there are no plans to raise the water and conservancy charge rates at this time because of the drought in the Karachi area and the water shortages. KWSB's weak financial position is not an immediate concern as long as subsidization continues; however, over the longer term the operational and financial viability of KWSB will likely be compromised. To bring KWSB back to financial health, the provision of water and sanitation services needs to be improved, water and conservancy charges need to be rationalized, and more investment in water supply and sanitation needs to be undertaken.

D. Economic and Financial Reevaluation

33. No benefit monitoring and evaluation system was put in place as required by the Loan Agreement. Thus, no data was collected on the impact of the investments made under parts A, B, and C. Moreover, data collected by the OEM shows that nominal property prices (and therefore real property prices) in the project area for Part A have been falling since 1992 because of peace and security problems (Appendix 9). This corresponds to the period during which investment in katchi abadi upgrading in Baldia and Orangi was undertaken. Therefore, it may be concluded that there was little or no willingness to pay for the investment in upgrading and that the investment resulted in few economic benefits.⁵ The EIRR may be assumed to be negative.

34. The approach taken in this PPAR to value economic benefits based on property prices differs from that taken in the appraisal report and the PCR. This is possible because actual property prices, before and after the Project, are now available. The methodology used in the PCR to value economic benefits from Part A follows that in the appraisal report, and is not appropriate because economic benefits are conditional values based on an econometric model whose validity was not firmly established (para. 5). Actual data was available at the time of PCR preparation, and should have been used. As in this PPAR, the EIRR would also have been negative if this method had been adopted.

35. The FIRR was calculated on the basis of actual sales of the property leases to date, an assumption of no further sales, and the cost of the investment (Appendix 10). The estimated FIRR is -16.5 percent in real terms. This negative value essentially reflects low demand and the low price of the leases sold. It also indicates an eventual depletion of the capital in the revolving fund and the subsequent termination of the katchi abadi upgrading program financed by this revolving fund.

36. EIRRs for parts B and C were not calculated, as the economic benefits from these components could not be determined. However, given the large investment in Part C, the underutilization of the capacity of the sewage treatment plants, and the lack of investment to divert greater sewage flows to the treatment plants (para. 27), it would be safe to assume that the EIRR is negative. For the FIRR calculation, cost recovery for the solid waste disposal and sewage systems is inadequate to provide any meaningful measure of financial performance. However, it would be safe to assume that the FIRRs are also negative.

⁵ Economic benefits of the upgrading are assumed to be reflected in the increased market values of property in the katchi abadi after the investment is made.

E. Socioeconomic and Sociocultural Results

37. The socioeconomic impact of the Project was minimal. The positive benefits of the provision of a water supply system to Baldia and Orangi were negated by a lack of water in the pipes. The provision of a sewage system in Orangi has benefited the community, but the investments in sewerage in Baldia have not had much of an impact because of nonutilization. Similarly, the upgrading of the sewage treatment plants has had minimal impact because of underutilization. Only the solid waste management component could be said to have had a positive impact because of the reduction of the amount of solid waste in the community and the consequent positive health benefits. However, uncollected solid waste is still a serious and growing problem.

38. The Project has had a high profile in the local press, and its shortcomings were well publicized. This has resulted in an increased public awareness of the possible drawbacks of large, externally financed urban development projects. This awareness was instrumental in the cancellation of ADB's proposed Korangi Wastewater Project in 1999.

F. Gender and Development

39. In Pakistan, as in many developing countries, women bear the brunt of responsibilities for water gathering and other household-related tasks. This task is more difficult in Karachi because the region is in a semiarid zone. Therefore, the provision of a water supply and sewage system would have, in normal circumstances, been an enormous benefit to women in the areas where these investments were made. Unfortunately, the droughts over the past several years resulted in water shortages and the water supply systems being underutilized. So water still needs to be provided by traditional methods. Therefore, the impact of the Project on women has been minimal. Parts B and C have no gender-specific impacts.

G. Environmental Impacts and Control

40. The Project had some positive impacts on the environment, but to a lesser extent than originally envisaged at appraisal. The installation of sewer systems in the katchi abadi upgrading component allowed the sewage from Baldia to be treated at the Mauripur sewage treatment plant, but sewage from Orangi still flows into estuaries, then into the Lyari River and out to sea untreated. The Lyari River has a major environmental problem because of the sewage and solid waste being disposed there. Although the upgrading of the other two sewage treatment plants increased their capacity, this capacity is not being utilized. Therefore, there is little net environmental effect from this upgrading. Only the solid waste management component can be said to have had a significant environmental effect because the investments under this component met and exceeded goal of collecting and disposing of 40 percent of the city's solid waste. Overall, the Project's environmental impact has been modest.

H. Gestation and Sustainability

41. The largest project component is the sewage treatment plant upgrading, the facilities of which are underutilized. It would be in the interest of Karachi for KWSB to take steps to increase its utilization. Of primary importance is the locating and mapping of existing sewer lines that lead to the two treatment plants, followed by a detailed plan of action to increase the inflows of sewage into these plants. KWSB's weak financial position rules out the utility financing such a project investment. Because of the Government's weak fiscal position, financing will need to come from external sources (para. 46).

42. The katchi abadi upgrading investment is not sustainable. KMC does not have the resources to maintain the water, sewage, and road facilities. Moreover, it is not certain whether it is worthwhile to continue maintenance. The poor peace and security situation has driven down property prices, and many residences in these areas are vacant. Thus, it does not seem desirable to continue investing in these value-diminishing assets.

43. The solid waste management component is sustainable as long as KMC continues to subsidize solid waste collection and disposal. Use of a conservancy charge that is related to the water tariff is a poor method of cost recovery, and there is little scope of achieving full cost recovery because of the difficulties in raising the water tariff. Consideration should be given to funding solid waste disposal entirely from tax revenues (para. 47). The rate of solid waste collection is currently 60 percent, achieved under the Project with a modest investment. Thus, it should be possible to achieve a 100 percent collection rate with only a slightly larger investment. Given the importance of solid waste disposal from environmental and public health perspectives, ADB should consider financing such an investment and continue its involvement in this area.

IV. KEY ISSUES FOR THE FUTURE

44. A major concern during project processing and during the Board of Directors' discussion was the issue of affordability of the leases to be sold to the residents of Baldia and Orangi. The view was that, if the lease program was to succeed, the price of the leases should be at or near the target population's ability to pay. The experience from the katchi abadi upgrading component has shown that the ability to pay is not the critical factor, but rather willingness to pay. The choice facing the resident of a katchi abadi, indeed most slum areas in the developing world, is not whether the lease is affordable but whether it is worthwhile purchasing such a lease. A katchi abadi resident usually possesses a certain amount of security of tenure as there is not much chance of eviction. Therefore, the purchase of a lease does not provide much benefit if the resident has no intention or possibility of moving from the area. Although the lease may be priced at the ability to pay, the willingness to pay may be much lower. If such is the case, the sale of leases will not likely succeed. In the design of future katchi abadi upgrading schemes, it is important to determine the residents' willingness to pay for leases and the program's economic and financial viability on that basis. Nevertheless, ability to pay will still need to be considered. It will also be necessary to assess the scope for rent-seeking activities in these kinds of projects and institute measures to prevent them.

45. ADB's efforts to upgrade the solid waste management system in Karachi were generally successful, however, the Project managed to address only part of the issue of solid waste disposal. The proportion of solid waste that is being collected is falling as the Karachi population grows, and no new investment in solid waste disposal is being undertaken. Thus, a large and growing proportion of solid waste is left behind; it is expected to eventually become a public health hazard. As well, the incremental cost of hauling solid waste to new landfill sites is increasing as landfills are being located further from the city. New investments are needed in solid waste transfer stations within the city limits to lower the cost of solid waste transport. These transfer stations act as a first stop in the disposal process, where recyclable solid wastes are separated and the balance compacted for more efficient transfer to the landfill sites. The construction of transfer stations and the expansion of solid waste collection to achieve a 100 percent collection rate should be a priority in Karachi because of environmental and public health considerations.

46. An efficient and effective sewerage system is also critical to Karachi's future development. If used to its full potential, KWSB's sewage treatment plants would currently be able to treat only about half of the sewage produced in the city. The sewerage system capacity is clearly inadequate. Moreover, the population of Karachi and the demand for sewage services are expected to grow by about 5 percent per year over the medium term. This indicates the need for more sewage treatment capacity. However, at the same time, the capacity in place is underutilized. This is mainly the result of poor project preparation that led to an inadequate design. Investment is required to upgrade the sewer system to divert greater flows of sewage to the treatment plants. Without such investment, the facilities constructed under Part C will continue to be underutilized.

47. Lastly, the financing of municipal services is an important issue. The Project's view was that the costs of solid waste disposal and sewerage services should be recovered from the consumers of these services. This was implemented through a conservancy charge proportional to the water bill. Although this method of billing is easy to administer, revenues have not kept pace with costs because increases in the water charges have been modest. Moreover, water

consumption is likely not a good indicator of usage of solid waste and sewerage services, particularly in drought conditions. A more equitable method of cost recovery would be through property taxes, which are easy to adjust and are progressive. Such is the case in most developed countries. The existing approach to cost recovery may also not be welfare maximizing, as solid waste disposal and sewage services have public good characteristics. The environmental and public health benefits of these services are nonrival,¹ and the positive externalities accrue to many people. Therefore, budgetary financing of costs should be considered. Budgetary transfers are currently partly funding the costs of solid waste disposal and sewage services.

¹ Nonrival means that one person's consumption of the good does not reduce the amount available to others.

V. CONCLUSIONS

A. Overall Assessment

48. The Project was generally implemented well, even though some design changes were required, particularly in Part C. However, the Project did not, for the large part, meet its objectives. The economic benefits from the katchi abadi upgrading were minimal and the EIRR is likely negative. The revolving fund is unsustainable because of the low returns on the initial investment. The component's estimated FIRR is negative. The capacity of the sewage treatment plants under Part C is underutilized, and KWSB does not have the financial resources for investments to divert greater inflows of sewage into the treatment plants to maximize capacity utilization. Thus, the plants will likely be underutilized for some time. Because of insufficient cost recovery, the FIRRs for parts B and C are probably negative. Some of the Metropolitan Resource Generation Study's recommendations were implemented, but did not result in the improvement of the financial position of the main local government agencies. The Project contributed little to the development of general policies on land development and urban finance. Only the solid waste management component seems to have met and even exceeded its objective. The socioeconomic and environmental impacts of the Project were modest, there was no substantial impact on women, and long-term sustainability is a concern because of the weak financial position of the Executing Agencies. Therefore, the Project's overall assessment is unsuccessful.

B. Lessons Learned

49. An important lesson derived from the Karachi Urban Development Project is that urban upgrading is complex in nature, and that a piecemeal approach to a few selected problems is not an optimal solution. Urban upgrading should be designed from a plan that integrates all aspects of urban infrastructure, and involves the participation of the ultimate beneficiaries. The institutional capacity to implement the project must be present, and the financial framework must be in place to ensure long-term sustainability of the upgrading. The absence of any one of these elements will eliminate any chance for project success.

50. The main project weakness was its design. This was a direct result of the absence of a PPTA early in the design stage of this complex undertaking.¹ A PPTA would have identified the institutional shortcomings of KMC and KWSB, provided estimates of willingness to pay of katchi abadi residents for leases, and provided appropriate designs for the physical components of the Project. Moreover, the results of a PPTA would have been available for discussion with the beneficiaries and other project stakeholders, thus increasing project ownership during the design stage and the chances of its success.

51. The long delays in project implementation could have been avoided if major outstanding issues, such as the KESC electricity arrears issue, had been settled before project

¹ It should be noted that a key lesson from the World Bank's Karachi Special Development Project was the need for improved quality of project preparation. The feasibility studies prepared by the World Bank were inadequate.

implementation. But the KESC arrears issue is part of a larger problem facing Karachi local government bodies, namely, that of financial solvency. KMC and KWSB depend on government subsidies and have weak revenue-generating capabilities. Full cost recovery is not possible in the current environment. Moreover, this situation is likely to continue for some time. Again, these issues should have been evident during project preparation and further support the need for PPTAs for urban development-type projects. As a result, the sustainability of the Project's components is uncertain. A thorough analysis of institutional needs would have indicated which components had a reasonable chance of success.

52. ADB's project administration needs to be strengthened, particularly for monitoring financial and institutional aspects of a project. This mainly requires that loan covenants be closely monitored and enforced during implementation. Financial covenants need to be more precise in their intentions. Weak and vague covenants tend to not be complied with, resulting in little institutional reform. Moreover, financial covenants should be based on a firm economic rationale. In the case of cost recovery, there should be a clear relationship between the beneficiary of a service and the ultimate payer for the service. This is not the case for solid waste disposal and sewage services. Because of the large positive externalities generated by these services, consideration should be given to financing these services out of general revenues.

C. Follow-Up Actions

53. It was unfortunate that the katchi abadi upgrading took place when the peace and security situation deteriorated, and resulted in few economic benefits accruing to the residents. There seems to be little that can be done to improve the situation and turn this investment around. Nevertheless, better returns from the investments in parts B and C are still possible with a modest amount of additional investment. Aid donors should consider funding a project to augment the solid waste collection and disposal system to achieve a 100 percent collection rate in the city. This would entail the procurement of additional equipment, the establishment of solid waste transfer stations, and capacity building. A project to expand and rehabilitate the sewage system in the vicinity of the sewage treatment plants would increase capacity utilization of these plants. Not only would these investments be seen in a positive light by Karachi citizens, but they would also serve as a basis for further involvement in the city's urban sector. Cost recovery issues also need to be reconsidered. A study should be implemented to review the options available.

APPENDIXES

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APPRAISAL AND ACTUAL PROJECT COSTS
(\$ million)

Component	Appraisal Estimate			Actual		
	Foreign	Local	Total	Foreign	Local	Total
Part A						
Civil Works	4.60	11.72	16.32	1.83	5.09	6.92
Materials and Equipment	0.30	0.00	0.30	0.07	0.00	0.07
Consulting Services	0.72	0.35	1.07	0.37	0.41	0.78
Training	0.03	0.00	0.03	0.02	0.00	0.02
Part B						
Civil Works	0.10	0.39	0.49	0.35	1.40	1.75
Vehicles and Workshop Equipment	5.76	0.04	5.80	9.88	0.32	10.20
Consulting Services	0.18	0.16	0.34	0.12	0.15	0.27
Training	0.03	0.00	0.03	0.08	0.00	0.08
Part C						
Civil Works	2.23	3.69	5.92	6.58	9.82	16.40
Materials and Equipment	9.44	0.19	9.63	20.52	8.91	29.43
Consulting Services	1.13	0.19	1.32	1.36	0.57	1.93
Training	0.06	0.00	0.06	0.07	0.00	0.07
Part D						
Consulting Services	0.48	0.15	0.63	0.59	0.24	0.83
Interest During Construction	0.68	5.30	5.98	0.75	0.00	0.75
Contingencies	7.12	14.29	21.41	0.00	0.00	0.00
Total	32.86	36.47	69.33	42.59	26.91	69.50
Borrower financed	0.00	14.10	14.10	0.00	9.90	9.90
ADB financed	32.80	22.40	55.20	42.50	17.10	59.60
Total	32.80	36.50	69.30	42.50	27.00	69.50

ADB = Asian Development Bank.

LEASE RATES FOR BALDIA AND ORANGI
(PRs per square meter)

Type of Land Use^a	Baldia	Orangi
Residential with Commercial		
Up to - 101 square meters (sq m)	21.00	21.00
102 - 126 sq m	84.00	29.40
127 - 202 sq m	100.80	50.40
203 sq m and above	168.00	84.00
Commercial and Industrial		
Up to - 67 sq m	50.40	33.60
68 - 101 sq m	84.00	50.40
102 - 202 sqm	126.00	67.20
203 sq m and above	210.00	126.00
All sizes	212.00	252.00

sq m = square meters.

^a Approved by KMC Council Resolution No. 1318 dated 28 August 1991.

STATUS OF COMPLIANCE WITH LOAN COVENANTS

Loan Agreement	Loan Covenant	Status of Compliance
A. Project Implementation, Coordination, and Management		
1. Implementation of Part A: Katchi Abadis Upgrading	Part A will be executed by the Karachi Metropolitan Corporation (KMC) through DKAU, which will be staffed and equipped in a manner satisfactory to the Asian Development Bank (ADB). KMC will appoint DKAU's director, deputy director (works) and deputy director (lease) and will designate a full-time project officer to be responsible for the coordination of the day-to-day implementation of Part A by 31 October 1986.	Complied with.
	KMC will ensure that final layout plans for Part A are consistent with the agreed boundaries. KMC will submit final layout plans to ADB prior to the commitment by DKAU of any funds for civil works for Part A.	Complied with.
	In the event that in the course of, or as a result of, any construction work to be carried out under Part A, any relocation of households is required, KMC will make adequate arrangements for this.	Complied with.
	KMC will prepare an action plan for the katchi abadi lease program. The plan will show in detail the stages involved for program implementation, the forms required, the human resources to implement the program, the enforcement and inducement mechanisms, the administrative cost, and the lease rate structure. KMC will submit a copy of the action plan to ADB for its review and comment by 31 March 1987, and ensure implementation of the action plan by 31 September 1987.	Complied with.
2. Implementation of Part B: Solid Waste Management	Part B will be executed by KMC through Directorate of Solid Waste Management (DSWM), which will be staffed and equipped in a manner satisfactory to ADB. KMC will appoint DSWM's director and designate a full-time project officer to be responsible for coordination of the day-to-day implementation of Part B by 31 October 1986.	Complied with.
	After the submission of the draft final report of the consultants to be engaged under Part B, the Sindh government and KMC will consult with ADB on the consultants' recommendations concerning privatization of appropriate parts of the solid waste management (SWM) services and on the implementation of mutually acceptable recommendations.	Complied with.

Loan Agreement	Loan Covenant	Status of Compliance
3. Implementation of Part C: Sewerage and Sewage Treatment Plant Upgrading	Part C will be executed by KMC through KWSB. KWSB will, not later than 31 October 1986, (i) designate its chief engineer for water supply and sewerage as project manager for Part C and its superintending engineer for sewerage treatment and pumping stations as assistant project manager; and (ii) designate a full-time project officer to coordinate the day-to-day implementation of Part C.	Complied with.
4. Implementation of Part D: Metropolitan Resource Generation Study	Part D will be executed by the Finance Department, the Sindh government, and will be guided by the Secretary, Finance. Day-to-day management of Part D will be assigned to a competent and experienced senior official, who will be designated as project manager.	Complied with.
5. Other Matters of Project Implementation	(i) Land Acquisition The Sindh government shall ensure that all necessary land and land use rights and privileges, including building permits and development rights, will be acquired by, or transferred to, the concerned executing agencies (EAs) on a timely basis, to ensure effective implementation and completion of the Project and its related facilities. The Sindh government will ensure that ADB is kept informed about the status of land acquisition for the Project.	Complied with
	(ii) Implementation Arrangements for Out-of-Country Training Program For each of the three out-of-country training programs provided under parts A(ix) and C(vii), the concerned project EA will, not later than three months prior to the commencement of these training programs, consult with, and seek approval from ADB for: the institutions to be used for training purposes under the program, the proposed level and type of training to be provided, the timetable for the implementation of such training, the financial arrangements to be made, and the criteria for selection of staff to be chosen to participate.	Complied with.

Loan Agreement	Loan Covenant	Status of Compliance
	<p>Each concerned EA will institute or continue suitable contractual and other arrangements so that staff selected to participate in an out-of-country training program will be required to serve that agency for a reasonable period after completion of training. He concerned EA will ensure that such staff will be reassigned upon their return to tasks directly relating to the Project or to the operation and maintenance of the project facilities. All training provided under the Project will be carried out in eligible countries.</p> <p>(iii) Review of the Study to be carried out under Part D</p>	Complied with.
	<p>The Sindh government and KMC will, within six months of the completion of Metropolitan Resource Generation Study (MRGS), submit to ADB a report commenting on the recommendations of that study. The Sindh government and KMC will cause KWSB and Karachi Development Authority (KDA) to conduct a review of the report with ADB to reach agreement concerning actions to be taken to implement the acceptable recommendations of the study. Implementation actions will then be monitored by the EAs and will be included as a subject in the reports to be prepared and submitted to ADB by the PMU.</p> <p>(iv) Review of other Studies in Karachi Special Development Program (KSDP)</p>	Complied with.
6. Project Coordination and Management	<p>(i) Project Monitoring Unit</p> <p>The PMU, established as a separate unit within the Planning and Development Department of the Sindh government, will, in addition to advising the Sindh government on any problems that may arise in the course of implementation of the physical components of KUDP:</p>	

Loan Agreement	Loan Covenant	Status of Compliance
	<p>☞ Monitor the physical implementation of the project, including parts A, B, and C of the Project; the carrying out the studies included in the Project, including Part D; and the achievement of cost recovery targets and other policy objectives.</p>	Complied with.
	<p>☞ Periodically update the work schedule and ensure the timely availability of resources to the EAs.</p>	Complied with.
	<p>☞ Maintain records of withdrawal applications and disbursements of the Project.</p>	Complied with.
	<p>☞ Prepare and submit quarterly reports to ADB.</p>	Complied with.
	<p>☞ Coordinate the submission to ADB of the audited accounts.</p>	Complied with.
	<p>(ii) Liaise with ADB on major policy issues</p>	
	<p>The Borrower will ensure that ADB is kept promptly informed of any major policy issues arising in connection with the Project.</p>	Complied with.

B. Operations and Maintenance of Project Facilities

<p>The Borrower will ensure that all project facilities are adequately operated and maintained, both during project implementation and thereafter. In particular, the Borrower will ensure adequate operation and maintenance (i) by KMC, through Directorate of Katchi Abadis Upgrading (DKAU), of all streets, street lights, and drainage systems provided under Part A of the Project; (ii) by KMC, through Karachi Water and Sewerage Board (KWSB), of all water distribution and sewage collection systems provided under Part A and all project facilities provided under Part C; (iii) by KMC, through DSWM, of all project facilities provided under Part B; and (iv) by KESC, of all electricity supply facilities required in connection with parts A, B, and C.</p>	Partly complied with.
<p>The Borrower will ensure that whenever transfer of responsibility for a particular project facility is required from one agency to another in connection with the commencement and carrying out of operation and maintenance set forth in paragraph 15, Schedule 6, of the Loan Agreement, all appropriate arrangements for such transfer will be made on a timely basis.</p>	Complied with.

Loan Agreement	Loan Covenant	Status of Compliance
C. Financial Matters		
2. Part B: Solid Waste Management	<p>KMC will (i) within 12 months of the effective date of the loan, undertake a valuation of DSWM's assets, according to sound accounting principles acceptable to ADB; and (ii) prepare, maintain, and update a register of such assets, listing initial value, depreciation, and present value of each, according to consistently maintained sound accounting principles.</p> <p>The Sindh government and KMC will review the alternatives for improving cost recovery for SWM services, and will prepare and submit to ADB not later than six months after completion of the MRGS a comprehensive report on such review including a specific proposal for implementation.</p> <p>ADB, the Sindh government, and KMC will conduct a comprehensive tripartite review of the report to agree upon feasible means of cost recovery for SWM services to be provided by DSWM.</p> <p>The Sindh government and KMC will implement the agreed means of cost recovery for SWM services not later than 12 months after such an agreement.</p>	<p>Complied with</p> <p>Not complied with.</p> <p>Not complied with.</p> <p>Not complied with.</p>
3. Part C: Sewerage and Sewage Treatment Plant Upgrading	<p>KMC will ensure that KWSB will (i) within 12 months of the effective date of the loan undertake a valuation of its sewage treatment assets according to sound accounting principles acceptable to ADB; and (ii) prepare, maintain, and update a register of such assets, listing initial value, depreciation, and present value of each, according to consistency maintained sound accounting principles.</p> <p>The Sindh government and KMC will ensure that, within 24 months of the effective date of the loan: (i) final agreement is reached on the valuation of all the bulk water supply assets and liabilities transferred by KDA to KMC; and (ii) the value of all such assets and liabilities transferred from KDA, as well as the value of all other assets (and related liabilities) formerly held by other divisions in KMC and now held for the use, operation, and administration of KWSB, will be entered into KWSB's books.</p>	<p>Complied with.</p> <p>Complied with.</p>

Loan Agreement	Loan Covenant	Status of Compliance
4. Arrears Payments to KESC by the Project EAs and KDA (Collectively, the Consumers)	<p>Except as ADB may otherwise agree, the Sindh government, KMC, and KWSB will take such measures, including the implementation of an appropriate increase in the conservancy charges as are required on their part to enable KWSB to produce internal funds from its sewerage operation, gross revenues sufficient to cover operating expenses, and debt services requirements by 30 June 1990 and thereafter; and internal funds sufficient to cover a reasonable proportion of annual capital expenditures.</p> <p>The Borrower and consumers will ensure that on or before 30 June 1987 (i) the consumers will enter into an agreement with KESC definitively establishing the amount of the arrears to be paid by the consumers to KESC, and a program for settling the agreed amount of the arrears within a time frame acceptable to the ADB; (ii) arrangements satisfactory to ADB will have been made to ensure that the agreed amount of arrears will be uniformly reflected in the accounts of the consumers and of KESC, as accounts payable by the consumers and as accounts receivable by KESC; and (iii) that the Borrower will have established the definitive structure or basis of the tariff to be levied by KESC, and payable in future by the consumers, for the supply of electricity.</p>	<p>Not complied with.</p> <p>Not complied with.</p>
D. Benefit Monitoring and Evaluation (BME)		
	<p>The Sindh government and KMC will undertake BME of the project facilities to ensure that such facilities are managed efficiently and that project benefits are thereby maximized. The exact nature of the data to be collected and the methodology for analysis will be determined by the Sindh government and KMC in consultation with ADB by 31 March 1997.</p>	<p>Not complied with.</p>

LEASE RECOVERIES FROM KATCHI ABADI UPGRADING

Year	Number of Plots Leased	Amount Recovered (PRs million)
1994/1995	2,200	23.3
1995/1996	4,181	24.0
1996/1997	6,492	36.3
1997/1998	5,531	34.2
1998/1999	2,227	9.4
Total	20,631	127.2

Source: Karachi Metropolitan Corporation.

PROPERTY PRICES IN BALDIA AND ORANGI
(PRs per square meters)

Year	Baldia		Orangi	
	Nominal	Real (in 1998/99 prices)	Nominal	Real (in 1998/99 prices)
1993	1,924	3,470	281	508
1994	1,924	3,074	281	449
1995	1,403	1,966	176	248
1996	1,403	1,819	176	227
1997	1,924	2,201	420	479
1998	2,100	2,226	701	743
1999	2,100	2,100	701	701
Annual Percent Change over 1993-1999	1.5	-8.0	16.4	5.5

**COMPUTATION OF THE FINANCIAL INTERNAL RATE OF RETURN
FOR KATCHI ABADI UPGRADING**
(1998/1999, PRs millions)

Year	Incremental Costs	Incremental Revenues	Net Cash Flow
1986/1987	0.0	0.0	0.0
1987/1988	0.0	0.0	0.0
1988/1989	0.0	0.0	0.0
1989/1990	0.0	0.0	0.0
1990/1991	0.9	0.0	(0.9)
1991/1992	45.6	0.0	(45.6)
1992/1993	17.7	0.0	(17.7)
1993/1994	94.9	0.0	(94.9)
1994/1995	86.4	32.6	(53.8)
1995/1996	5.1	31.1	26.0
1996/1997	0.0	41.5	41.5
1997/1998	0.0	36.2	36.2
1998/1999	0.0	9.4	9.4
1999/2000	0.0	0.0	0.0
2000/2001	0.0	0.0	0.0
2001/2002	0.0	0.0	0.0
2002/2003	0.0	0.0	0.0
		FIRR =	-16.5%

Note : Incremental costs are capital costs incurred for katchi abadi upgrading, and incremental revenues are proceeds from the sale of leases.

Source: ADB Operation Evaluation Mission estimates.