



Performance Evaluation Report

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Indonesia: Metropolitan Bogor, Tangerang, and Bekasi Urban Development (Sector) Project

Independent Evaluation Department

Asian Development Bank

CURRENCY EQUIVALENTS

Currency Unit – rupiah (Rp)

	At Appraisal (31 October 1996)	At Project Completion (30 September 2003)	At Independent Evaluation (11 March 2009)
Rp1.00	= \$0.00043	\$0.00011	\$0.000083
\$1.00	= Rp2,327	Rp9,000	Rp11,912

ABBREVIATIONS

ADB	–	Asian Development Bank
AFC	–	Asian financial crisis
BAPEDAL	–	Badan Pengendalian Dampak Lingkungan (local government environmental agency)
BAPPENAS	–	Badan Perencanaan Pembangunan Nasional (national development planning agency)
BME	–	benefit monitoring and evaluation
BOT	–	build-operate-transfer
BOTABEK	–	Bogor, Tangerang, and Bekasi
BTOR	–	back-to-office report
CDM	–	clean development mechanism
DED	–	detailed engineering design
DGHS	–	Directorate General of Human Settlements
DGURD	–	Directorate General of Urban and Rural Development
EA	–	executing agency
EIRR	–	economic internal rate of return
FDS	–	final disposal site
FIRR	–	financial internal rate of return
IED	–	Independent Evaluation Department
IEM	–	Independent Evaluation Mission
IPLT	–	sludge processing plant
IUIDP	–	integrated urban infrastructure development project
KIP	–	kampung improvement program
LG	–	local government
LIDAP	–	local institutional development action plan
MDG	–	Millennium Development Goal
MIIP	–	market infrastructure improvement program
MOHA	–	Ministry of Home Affairs
MOHARA	–	Ministry of Home and Regional Affairs
MPW	–	Ministry of Public Works
MSRD	–	Ministry of Settlements and Regional Development
NRW	–	nonrevenue water
OED	–	Operations Evaluation Department
O&M	–	operation and maintenance
ODA	–	official development assistance
PCR	–	project completion report
PDAM	–	Perusahaan Daerah Air Minum (local government water supply enterprise)
PPER	–	project performance evaluation report

PPTA	–	project preparatory technical assistance
PSP	–	private sector participation
RIAP	–	revenue improvement action plan
SLA	–	subsidiary loan agreement
SPAR	–	subproject appraisal report
STP	–	sewerage treatment plants
SWM	–	solid waste management
TPA	–	Tempat Pembuangan Akhir (final solid waste disposal site)

WEIGHTS AND MEASURES

km	–	kilometer
l	–	liter
lpcd	–	liters per capita per day
m ³ /day	–	cubic meters per day
m	–	meter

NOTE

In this report, “\$” refers to US dollars.

KEYWORDS

indonesian urban development evaluation, indonesia water supply project evaluation, indonesia local authority water supply and sanitation, indonesia public health, kampung improvement program, adb, evaluation, asian development bank, public hygiene

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The guidelines formally adopted by the Independent Evaluation Department (IED) on avoiding conflict of interest in its independent evaluations were observed in the preparation of this report. Robert Merrill and Iwan Widodo were the consultants. To the knowledge of the management of IED, there were no conflicts of interest of the persons preparing, reviewing, or approving this report.

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BASIC DATA
Loan 1511-INO: Metropolitan Bogor, Tangerang, and Bekasi
Urban Development (Sector) Project

Project Preparation and Institution Building

TA No. **TA Name**

— None

	As per ADB	
	Loan Documents	Actual
Key Project Data (\$ million)		
Total Project Cost	228.00	74.57
Foreign Exchange Cost	65.00	22.98
Local Currency Cost	163.00	51.59
ADB Loan Amount/Utilization	80.00	39.69
ADB Loan Amount/Cancellation	0.00	40.31

	Expected	Actual
Key Dates		
Fact-Finding		7–31 May 1996
Appraisal		19 Aug–20 Sep 1996
Loan Negotiations		18–20 Nov 1996
Board Approval		19 Dec 1996
Loan Agreement		10 Jan 1997
Loan Effectiveness	10 Apr 1997	13 Mar 1997
First Disbursement		13 May 1997
Project Completion	30 Sep 2002	30 Sep 2003
Loan Closing	30 Sep 2002	4 Mar 2004
Months (effectiveness to completion)	66	79

Internal Rates of Return (%)	At Appraisal	PCR	PPER
Financial Internal Rate of Return			
Water Supply	3.1–7.4	7.9–16.8	11.4–23.1
Sanitation	nc	1.3–17.2	nc
Solid Waste	nc	-0.6–7.8	nc
Economic Internal Rate of Return			
Water Supply	nc	16.5–37.3	20.7–44.5
Road Betterment	45.7	2.2–56.2	4.6–30.6
Road Widening	18.0–32.9	24.6–52.7	17.4–32.8
New Roads	31.2–38.3	nc	nc
Drains	30.4–44.3	1.7–2.6	nc
<i>Kampung</i> Improvement	25.9	nc	nc

Borrower Republic of Indonesia
Executing Agency Directorate General of Urban and Rural Development in the Ministry of Settlements and Regional Development

Mission Data

Type of Mission	No. of Missions	No. of Person-Days
Fact-Finding	1	250
Appraisal	1	256
Project Administration	7	99
Inception	1	12
Review	4	44
Midterm Review	1	29
Special Loan Administration	1	14
Project Completion	1	21
Independent Evaluation	1	55

nc = not calculated, PCR = project completion report, PPER = project performance evaluation report.

EXECUTIVE SUMMARY

The Independent Evaluation Department (IED) included evaluation of the Metropolitan Bogor, Tangerang, and Bekasi (BOTABEK) Sector Project in its annual work program for 2009 in order to gather information for its review of the urban sector in Indonesia. This evaluation is based on a review of project documents and other studies, and on the findings of the Independent Evaluation Mission (IEM), which visited Indonesia from 4 to 21 March 2009. The IEM consulted relevant national agencies including the National Statistics Office and four local authorities and their PDAMs.

Jakarta's Metropolitan region, known as JABOTABEK, comprises Jakarta itself plus BOTABEK. The population of Jakarta, the capital of Indonesia and the largest metropolis (660 square kilometers) in Southeast Asia, has grown rapidly during the last 20 years. In 1994, Jakarta city had a population of 11.5 million. The annual population growth rate was 4.3% between 1990 and 1995. The pressure of this growing population and the accompanying environmental deterioration in the city led to suburbanization or the movement from the central city to the peripheral areas including BOTABEK.

The project had two major parts: institutional development and physical investments in subprojects. It had these objectives:

- (i) **Enhance the capacity of sector institutions.** This refers particularly to the *perusahaan daerah air minum* (PDAMs) or local government water supply enterprises to enable them to (a) provide, operate, maintain, and finance urban infrastructure services; (b) join the private sector in providing such services; and (c) manage the urban environment.
- (ii) **Accelerate the provision of essential urban infrastructure in the project area.** The project scope included rehabilitating and expanding infrastructure services such as water supply; roads and bridges; drainage, solid waste, and sanitation; *kampung* (informal settlement in the urban peripheries) and market infrastructure improvement; and bus terminals. The expected impacts were (a) improved living and health conditions; (b) improved institutional, provincial and municipal capacities; and (c) assistance to the government's urban policies through an integrated urban infrastructure development project (IUIDP).

On 19 December 1996, the Asian Development Bank (ADB) approved a second phase to an existing project as many new development areas had emerged since the formulation of the earlier first-phase BOTABEK Urban Development Project. The previous BOTABEK project was appraised in June 1990, approved in January 1991, and completed in December 1996. Thus, just when the previous BOTABEK project was about to close, the follow-on Metro BOTABEK project was approved. Both projects were classified as multisector.

In the project performance audit report (PPAR) prepared by the then Operations Evaluation Department (OED) in 2000 for the first BOTABEK project assessed it successful. However, its lessons and follow-on suggestions were not incorporated during the implementation of the second phase project (the Metro BOTABEK). For example, the nonrevenue water (NRW) levels were not reduced in all project cities. Transferring the responsibility from the project monitoring unit to the local government for ownership of operation and maintenance was not carried out adequately. The project completion report (PCR) of the first BOTABEK project had identified the need for strengthening local governments in overall planning and management, and had reported that the issue was being addressed in the follow-on project. The first BOTABEK PCR listed the following items as future issues that needed action: (i) better design of urban development projects, (ii) need for local institution building, (iii) encouragement of private sector participation, (iv) active community

involvement, and (v) tariff increase for cost recovery. The first BOTABEK PCR also added that the fundamental problem of polluted shallow groundwater should be solved in an integrated manner, but this issue was not fully reflected in the Metro BOTABEK.

As a follow-on project, the Metro BOTABEK Urban Development (Sector) Project was designed following the IUIDP approach. Learning from the first BOTABEK project, it stressed regional development in the BOTABEK area, and expansion of private sector participation (PSP) as a key element. The second project was prepared using loan savings from the first BOTABEK project and so it had no specific project preparatory technical assistance. The Metro BOTABEK Project was formulated as a sector loan, because the proposed investments were numerous, scattered throughout the project area, and small in value (ranging from \$50,000 to \$5 million equivalent). It was the eighth IUIDP project in Indonesia since 1989.

The project scope and emphasis areas changed substantially during implementation. At appraisal, the project was estimated to cost \$228 million (or double the actual cost of the first BOTABEK project). The actual cost at completion was only \$74.6 million (32.7% of appraisal estimates). ADB financed \$39.7 million (53.2% of the total cost). The ADB loan was reduced by a cumulative amount of \$40.3 million on several occasions (1998, 1999, 2000, 2003, and 2004) as part of portfolio restructuring due to the Asian financial crisis and the reduced absorption capacity of the government. The Borrower's counterpart contribution totaled \$34.9 million (46.8% of the total cost) or 23.6% of the appraisal estimate of \$148 million. Amid the downsizing process, ADB supported the project by allowing its share of the cost to increase (53% compared to 35% at appraisal) to make up for government budget difficulties.

The relative shares for subproject investments and institutional development changed from 87.4% and 6.3% at appraisal to 70.8% and 9.8% respectively at completion showing a shift in the project focus towards institutional development (there was 11.3% increase in equipment category also). The relative shares of water supply and sanitation, urban roads and bus terminal also changed from 48.7%, 38.9% and 2.2%, respectively to 31.0%, 49.8%, and 7.2% at completion. These changes in costs and scope of the project towards a higher emphasis on urban roads weakened its outreach, especially in the public hygiene, thus limiting its ability to solve the various urban infrastructure development problems faced by the BOTABEK area.

The project is rated *partly relevant* because of the substantial reduction in project scope. The project had less relevance for the population of BOTABEK at the time of evaluation than at project conception. This is especially because, according to the report and recommendation of the President (RRP) and PCR, the estimated beneficiary population decreased from 6.1 million to 4.4 million in 2005, mainly as a result of reduction in scope in the water supply, sanitation and solid waste subcomponents. The project contributed to the overall efforts of the government aimed at getting BOTABEK local authorities to expand service coverage to more of their large population albeit below expectations. The relevance was very much confined to the actual neighborhoods that received the direct benefits, and not to the entire area of the target cities. In short, ADB's investment in the target Metro BOTABEK area did not achieve a level of critical mass. The reduction in scope was aggravated by the fact that, local parliaments did not want to approve subsidiary loan agreements, due to apprehension about the debt burden at the time. The project design elements to implement the PSP component was inadequate. These issues were not addressed clearly in the PCR, but it is evident that the original intent became untenable even before the midterm review stage.

The project is rated *less effective*, not only because the scope was reduced but because institutional strengthening objectives, which remained as part of the smaller scope, were not attained. The process by which the governor and the local parliament approve local projects and

tariff was a critical obstacle to the much-sought PSP. As a percentage of project financing, PSP declined from the intended 25% to only 2% in the final costing. Poor analysis of the market and of effective demand was also a major cause. The *kampung* improvement program (KIP) component was not significant in terms of component size apportioned at the start. Its real poverty reduction impact on the whole city was not significant.

The project is rated *efficient*. The PDAM economic internal rates of return (EIRR) for water supply components, which are based largely on overall production increases and water treatment plant tariffs from the socioeconomic survey, are all substantially higher than 12% (being 20.5% to 44.5%). Recalculated EIRR for the urban road (largest component) also showed an acceptable range from 4.6% to 32.8%. Water supply and urban roads were two largest subcomponents: the two combined accounted 69.5% of the total civil works investment. In terms of the implementation delay, the project completion was extended by 12 months, which was acceptable, especially due to the 1997 Asian financial crisis.

The project is rated *less likely to be sustainable*. The PCR viewed the sustainability of the project components by considering whether the institutional budget or the community provided for operation and maintenance. The local government and PDAM budgets did not provide such provisions. Except in the Bekasi district PDAM, all FIRRs are substantially higher than the WACCs of 7.0% for the PCR and 4.5% for the PPER. This result is largely due to the stronger revenues and resulting net profits than was the case in the respective PDAMs shortly after the project ended 5 years ago. The financial internal rate of return analysis showed that subsidies and grants to local governments had been growing (in the range of 9–19%) per year until 2006. They made up around 33% in Tangerang District, 31% in Bekasi District, and 57% in Bogor District of local government income. This is despite Government Decrees No. 22 and No. 25 of 1999, which provide for the devolution of government responsibility to the districts along with the necessary financial means. On the other hand, local government's ability to raise finances varied. Financing in Tangerang District grew substantially from 2003 to 2006, while growth in other local government territories was either weak or negative. Except for replicating the KIP, there was little organized community participation in the project components. Without profit incentives, private sector investment did not materialize to the level that was envisaged.

The project is rated overall *partly successful*, based on the ratings from the four criteria above.

The project's experience reveals a number of lessons for implementing urban development and water supply projects:

- (i) **Difficulties due to many layers of government approvals under decentralization.** The project dealt with the new decentralized form of government, which allows financing of urban infrastructure projects with official development assistance. However, to avail of the ADB loan, almost all details in subproject selection, approval, and funding flow needed many layers of processing in the local government, then the province, and also many ministries of the central government. There could have been a more streamlined approval process with specific criteria, indicators, and checkpoints.
- (ii) **Impact tracking and benefit monitoring.** There is a need to maintain various project impact data, including health and socioeconomic data, to continuously monitor improvements in the public health and livelihood that social infrastructure projects will yield. Even with the physical infrastructure like urban road investment, the government and ADB need to agree on how to measure benefits and economic value.

- (iii) **Lack of PDAM drive to reduce nonrevenue water (NRW).** The IEM observed that initiatives to reduce NRW did not result in the target figure of 20% in Tangerang, which had the largest coverage among the eight targeted local areas. Reducing NRW will need continuous efforts by both the management and technical division to achieve better results with both short- and long-term targets. There should be a reduction not only in technical losses from leakage, but also in financial losses from inaccurate meters and inappropriate billings.
- (iv) **Lack of demand analysis.** In cases of loans for water supply, neighborhood upgrading (KIP), drainage and flood alleviation, sanitation (showers, laundries, toilets), and/or home improvement, in-depth analysis of demand and affordability is necessary. The findings should be part of an initial baseline survey in the project preparatory technical assistance.
- (v) **Private sector participation.** PSP should be treated carefully, not as a major component, particularly in smaller urban development projects. PSP should be based on the profit incentive and needs to include assurances of a reasonable rate of return within a reasonable time period. This entails full knowledge of issues. Legal and transaction advisories are also very much needed.
- (vi) **Assure regulatory capacity of sector institutions.** Improved regulatory capacity of the sector institutions (including the need to separate regulation from the political process) should provide a level playing field for the private sector to provide services in urban areas. Future projects must ensure access to quality water supply to the poor households including reduced cost of water and saved collection time.

Follow-Up Actions

- (i) **Sustainability.** The Ministry of Finance, Ministry of Public Works, and Ministry of Home Affairs need to jointly encourage the project's targeted PDAMs to consolidate and prepare business plans, that would promote self-reliant financial management to ensure sustainability. Business plans should clearly prioritize future plans for expansion and/or development in their local areas, together with projected necessary tariff levels. The plans should help the PDAMs deal with the central government and potential private investors for further assistance, collaboration, and investment. Similar to well-performing PDAMS that received incentive package grants from the central government to come up with business plans, other struggling PDAMs should also receive such grants.
- (ii) **Post-project monitoring.** As Jakarta region and the main metropolitan areas in Indonesia are continually facing urban boundary expansion and rapid influx of migrants from rural areas, the government agencies need to maintain and keep track of various urban infrastructure and service impact data, including health and socio-economic indicators. Particularly, post-project completion monitoring on key performance indicators of the PDAMs (e.g. NRW, tariff and debt-service ratio) should be continued.
- (iii) **Reduce NRW.** To reduce NRW, in addition to reducing leakages, there should be follow-ups on nonpaying connections. The government must identify local champions in this effort, and disseminate and promote the best practices and possible steps in the Indonesian context. Incentives to meter readers and technical personnel for correcting leakage are also needed.

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I. INTRODUCTION

A. Evaluation Purpose and Process

1. The Independent Evaluation Department (IED) of the Asian Development Bank (ADB) included the Metropolitan Bogor, Tangerang, and Bekasi Urban Development (Sector) Project of Indonesia¹ in its annual work program for 2009. The main reason for selecting the project for evaluation was to provide information for a much broader sector assessment.² The evaluation is based on project documents, a range of country studies, and the findings from information gathered from the Independent Evaluation Mission (IEM), which visited Indonesia from 4 to 21 March 2009. The IEM consulted the national and local authorities, including four *perusahaan daerah air minums* (PDAM) or local government water supply enterprises, and the National Statistics Office.

B. Expected Results

2. The project was composed of two major parts: institutional development and physical investments in subprojects (the design and monitoring framework is included in Appendix 1). The objectives were to (i) enhance the capacity of sector institutions, particularly the PDAMs, to (a) provide, operate, maintain, and finance urban infrastructure services; (b) work with the private sector in providing such services; (c) manage the urban environment; and (ii) accelerate the provision of essential urban infrastructure in the project area. The project was to include institutional development of central, provincial, and local governments and their enterprises, and rehabilitation and expansion of infrastructure services such as water supply; roads; drainage, solid waste, and sanitation systems; *kampung* (village) and market infrastructure improvement; and bus terminals. The expected impacts were (i) improved living and health conditions, (ii) improved institutional capacity and provincial and municipal capacity, and (iii) assistance to the government's urban policies through an integrated urban infrastructure development project.

II. DESIGN AND IMPLEMENTATION

A. Formulation

3. On 19 December 1996, the Asian Development Bank (ADB) approved a second project aimed at supporting the rapid development taking place in Bogor, Tangerang, and Bekasi (BOTABEK) and many new development areas that emerged since the formulation of an earlier first-phase BOTABEK Urban Development Project (para. 4).³ The previous BOTABEK project was appraised in June 1990, approved in January 1991, and completed in December 1996. Thus, just when the previous BOTABEK project was about to close, the follow-on Metro BOTABEK Project was approved. Both projects were classified as "multisector" category under the ADB sector classification.

¹ ADB. 1996. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan to Indonesia for the Metropolitan Bogor, Tangerang and Bekasi Urban Development (Sector) Project*. Manila (Loan 1511-INO for \$80 million, approved on 19 December).

² ADB. 2009. *Draft Special Evaluation Study: Has the Multisector Approach been Effective for Urban Sector Assistance in Indonesia?* Manila.

³ ADB. 1990. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan and Technical Assistance Grant to Indonesia for the BOTABEK Urban Development Project*. Manila (Loan 1077-INO for \$80 million, approved on 31 January 1991).

4. In the project performance audit report (PPAR)⁴ prepared by the then Operations Evaluation Department (OED) in 2000, the first BOTABEK project attained an overall rating of *successful*. However, some weaknesses remained. The nonrevenue water (NRW) levels were not reduced in all project cities. Transferring of responsibility from the project monitoring unit to the local government for ownership of operation and maintenance (O&M) was not enough. Prior to OED's PPAR, the project completion report (PCR) of the first BOTABEK project had identified the need for strengthening local governments in overall planning and management, and had reported that the issue was being addressed in the follow-on project. The first BOTABEK PCR listed the following items as future issues that needed action: (i) better design of urban development projects, (ii) need for local institution building, (iii) encouragement of private sector participation (PSP), (iv) active community involvement, and (v) tariff increase for cost recovery. The PPAR added that even though the first BOTABEK project including water treatment to solve the fundamental problem of polluted shallow groundwater in an integrated manner, it did not fully resolve the situation.⁵ In addition, local governments considered the first BOTABEK project as only an "investment" for improving infrastructure instead of being a vehicle for supporting the long-term delivery of services. Lastly, the PPAR mission had noticed that in some targeted cities, sufficient counterpart funds could not be provided on time, which delayed project implementation.⁶

5. The Metro BOTABEK Project was also designed following the approach of the integrated urban infrastructure development program (IUIDP). Bearing in mind the experience of the first BOTABEK project, it increased emphasis on development in the BOTABEK region and expansion of private sector participation (PSP).⁷ Project preparation was carried out using the loan savings from the then ongoing first BOTABEK project. Thus, there was no specific project preparatory technical assistance for the new project at the time. The follow-up project was formulated as a sector loan because the proposed investments were numerous, scattered throughout the project area, and small in value (ranging from \$50,000 to \$5 million equivalent). It was the eighth IUIDP project in Indonesia since 1989.

B. Rationale

6. The population of Jakarta, the capital of Indonesia and the largest metropolis in Southeast Asia, grew rapidly during the last 20 years. The pressure of this growing population and the accompanying environmental deterioration in Jakarta city led to suburbanization or the movement from the central city to the peripheral areas including Bogor, Tangerang, and Bekasi, commonly known as BOTABEK. The project's report and recommendation of the President (RRP), mentioned that, "the project is based on medium-term urban infrastructure investment programs and feasibility studies prepared by local governments and PDAMs, updated and refined by consultants financed under the previous BOTABEK project." In addition, to justify the devolution of some planning of urban infrastructure to the local level, the RRP explained (RRP, pp. 5-6), "until the mid-1980s, most urban infrastructure improvements, including even relatively small works, were constructed by national government agencies and handed over to local governments for O&M. This top-down

⁴ ADB. 2000. *Project Performance Audit Report on the Three Integrated Urban Infrastructure Development Projects*. Manila.

⁵ The PPAR for the first BOTABEK Project did not rate the quality of the PCR itself.

⁶ See Appendix 2: Basic Data for the project.

⁷ IUIDPs typically comprise many sectors such as water supply, sanitation, roads and housing, while standalone projects upgrade municipal services in one or two sectors. The post-evaluation of the first three IUIDPs show three advantages of IUIDPs vis-a-vis standalone projects. These are (i) flexibility in responding to changing needs, (ii) ability to incorporate social and environmental concerns, and (iii) opportunities for improving urban management. The study also established that IUIDPs are appropriate for project cities in the population range of 100,000–500,000. The efficiency of service delivery could be further improved by demand-side management, especially for environment-related components.

approach, necessitated by the limited capacity of local governments to plan, and implement urban infrastructure projects, resulted in insufficient responsiveness to local needs and inadequate cost recovery to achieve sector sustainability. In 1985, the government, recognizing the need to improve the effectiveness and efficiency of the urban infrastructure delivery system, adopted the IUIDP approach to the improvement and expansion of urban infrastructure, including water supplies, roads, drainage, solid waste management, and environmental sanitation, as well as kampung and market infrastructure improvement. Three characteristics of the IUIDP are (i) medium-term investment plans and feasibility studies, (ii) local institutional development action plan (LIDAP) and revenue improvement action plans (RIAP), and (iii) mechanisms for coordinating infrastructure development programs."

7. Suburbanization saw a decline in the population growth of Jakarta concomitant with a drastic increase in population for BOTABEK. For the period 1990–2000 the population of Jakarta increased by only 0.15% following a decline in 1995–2000. In contrast the population of Bogor city expanded by 10.6%, while the population of Tangerang and Bekasi grew by about 4% (Table 1). Many people who moved from Jakarta to the BOTABEK area still need to commute to Jakarta every day for work. The daytime population of Jakarta is about double its nighttime population.

Table 1: Population of JABOTABEK

Location	Population		Average Annual Growth Rate (%)
	1990	2000	
Jakarta	8,259,266	8,384,853	0.15
Bogor City	271,711	743,478	10.59
Bogor District	3,936,897	4,635,801	1.65
Tangerang	2,765,189	4,087,181	3.98
Bekasi	2,104,459	3,282,238	4.54

JABOTABEK = Jakarta, Bogor, Tangerang, and Bekasi.

Source: Available: <http://www.mukimits.com/megurb.htm>.

C. Cost, Financing, and Executing Arrangements

8. At appraisal, the project was estimated to cost \$228 million comprising \$65 million in foreign exchange and \$163 million in local currency equivalent (Appendix 2, Table A2.1). ADB share was a loan of \$80 million from its ordinary capital resources to cover about 35% of total costs, including foreign exchange costs of \$47 million and local currency costs of \$33 million equivalent. Exchange rate fluctuations during the 1997 Asian Financial Crisis (AFC) and lack of local government funds resulted in the cancellation of parts of the project.

9. At project completion, the actual project cost was only \$74.6 million (32.7% of appraisal estimates), with a foreign exchange cost of \$23.0 million and a local currency cost of \$51.6 million equivalent. ADB financed \$39.7 million (53.2% of the total cost), of which about \$23 million was for foreign exchange costs and \$16.7 million equivalent for local currency costs. The ADB loan was reduced by a cumulative amount of \$40.3 million on several occasions (1995–1999, 2000, 2003–2004) as part of portfolio restructuring in 1998 and thereafter.⁸ The Borrower's counterpart contribution totaled \$34.9 million (46.8% of the total cost) or 23.6% of the appraisal estimate of

⁸ While this significant deviation from the original estimates was primarily due to external factors (e.g., Asian financial crisis and decentralization), the PCR report (pages 2-10) prepared by the consultant still noted that some of the original project targets may have been optimistic. For example, drainage infrastructure was reduced during subproject appraisal review due to optimistic economic feasibility assessments earlier. The IEM found project assumptions for the private sector participation (PSP) component to be optimistic (para. 18).

\$148 million. Amid the downsizing process, ADB supported the project by allowing its cost share to increase and make up for the government budget difficulties.⁹

10. Project investments in institutional development totaled \$7.3 million or 51% of the appraisal target. Subproject investments amounted to \$52.8 million or 28.6% of appraisal estimates.¹⁰ At appraisal, the water supply and sanitation and urban roads and bus terminal components were to equally account for 41.1% of subproject-related costs. At project completion, the urban roads and bus terminal components accounted for 57% of the actual subproject costs compared with 22.2% for water supply and sanitation. The drainage and solid waste management components accounted for 18.9% of actual project costs compared with the appraisal estimates of 14.7%.

11. The project had one executing agency (EA) in the central government, then Directorate General of Human Settlements (DGHS) of the Ministry of Public Works (MPW).¹¹ BOTABEK local authorities and PDAMs were the implementing agencies (IAs). DGHS oversaw project management and coordinated the input of other central government agencies. The Director General for Roads, MPW,¹² was responsible for urban roads and bridges. The Director General for Water Resources Development, MPW, was in charge of urban flood control and bulk water supply. The Director General of Public Administration and Regional Autonomy of then Ministry of Home Affairs (MOHA) was responsible for assisting districts with institutional development, which covered urban management, local revenue improvement, and urban finance. These agencies were represented in the urban development coordination team chaired by the national development planning agency (BAPPENAS), which is responsible for general urban and regional policies and strategies. The PCR concluded that reorganizing DGHS during implementation did not have a negative effect on project implementation.

D. Procurement, Construction, and Scheduling

12. Procurement under the project was in accordance with ADB's *Guidelines on the Use of Consultants* and *Guidelines for Procurement Under ADB Loans (1991)*. On some occasions, ADB objection to inadequacy of technical details, or the complex work requirements and lack of clear internal government procedures resulted in implementation delays.

13. Despite a major reduction in scope, project implementation was still delayed by 12 months. The project scheduled to close in September 2002, but it was extended to complete construction. The project was considered substantially complete in September 2003. Some construction work, which were delayed by late approval notices from ADB [main reasons were issues such as, environmental safeguards, overpayment and audit issue, minor scope, and additions in the civil works different from the original subproject appraisal reports (SPARs)] and due to contractors' weak performance, had to be funded through other sources, particularly in the closing stage.

⁹ In January 1999, the ADB-financed share of project costs increased to 63.3% compared with 35.1% at appraisal. This cost share was reduced to 56.2% under a revised financing plan in July 2002. At completion, the final cost share settled at 53:47 for ADB. For the subproject investments, the realized cost sharing was 66:34 for Government in line with the appraisal target of 68:32. ADB fully funded the institutional development component of the project as against an initial targeted share of 40.6%.

¹⁰ The actual cost of the bus terminal component was 96% of the appraisal estimate. Actual investments in solid waste management (39.8%), urban roads (36.6%), drainage (34.4%), and sanitation (31.5%) were about one third of the appraisal targets. Project expenditures on the water supply (14.5%) and kampung/market infrastructure improvement (17.5%) were less than 20% of the appraisal estimates.

¹¹ Implementing arrangements for the sector loan generally followed those for the earlier BOTABEK Urban Development Project executing and implementing agencies.

¹² MPW is one of the largest ministries in Indonesia, and it has many Director Generals' offices, which is similar to "departments". All the Directorate General offices listed in this paragraph belong to MPW, responsible for their corresponding subsectors [e.g., housing and slums improvement, urban infrastructure (water, sanitation, etc.)].

E. Design Changes

14. Design changes were due to the major reduction in the scope of components during project implementation. The AFC¹³ and, to a certain extent, institutional reorganization in the country led to changes in the location, volume, and type of investments required. At appraisal, the project design carefully balanced the needs of both urban roads and social sectors (water supply, etc.) of urban development in the BOTABEK area. Following the changes in scope and loan cancellation, the project at completion had largely supported urban transport, which accounted for nearly 60% of subproject expenditures. Except for the kampung improvement program (KIP) and market infrastructure improvement program (MIIP) components, all other subcomponents' revised SPARs were lower than the original appraised figure. The SPAR for the bus terminal component did not decrease substantially (at 96% of the original), but the water supply sector had the largest cut of 14.5% (Appendix 2, Table A2.1). Urban roads (36.6%), drainage (34.3%), solid waste management (39.8%) and sanitation (31.5%), all had substantial reductions from the appraised estimates.

F. Outputs

15. Since project approval in 1996, the urban sector has seen major changes in its overall organization and implementation of projects. Not only have there been two basic laws (nos. 22 and 25/1999) on decentralization, which have reduced the influence of the central government and increased the responsibility of local governments in providing urban infrastructure; there has also been a reorganization within the EA (MPW) itself. The directorate responsible for implementation, DGHS was changed to the Directorate General of Urban and Rural Development (DGURD), which also has been reorganized. While design and formulation might have been relevant at the time of approval, after the AFC in 1997 and the subsequent revisions and loan cancellation along with increased regional autonomy, the project seems to have been a disparate scattering of small subprojects in nine subsectors, and became supply-driven compared to the original demand-driven approach. The IEM did not find evidence of significant involvement of the recipient community during the formation, design, and implementation stages, an issue that was pointed out at the closure of the first BOTABEK project (para. 4). Given that there was so much coordination to be done within the municipality across all relevant departments and agencies, there was not much room and time to involve local beneficiaries during the project design and early stages of implementation. Even during the field visits, the IEM hardly saw records of active community leadership or sustained community efforts for O&M purposes.

16. Despite the dramatic changes (para. 14), the project has shown surprising flexibility in carrying out most of the physical subprojects, particularly in terms of length of urban roads (Appendix 2). Although the total subproject completion was only about 29% of the appraisal target of \$184.3 million, it was 71% of the revised targets. The overall project was reduced by 67%. Compared with the rapid growth of the Metro BOTABEK area and investment by local governments and other aid agencies, ADB's project output was rather small in the face of rapid sector development. In some cases, it was difficult to trace the actual project output. The bus terminal and solid waste management (SWM) were exceptions.

¹³ During the peak of the crisis, urban households reduced spending on food by 28%, and national poverty incidence increased from February 1996 to February 1999, with urban areas posing much higher figures. The government's absorptive capacity for loans was reduced, compounded by local governments' refusal to assume on-lending loans.

1. Part A: Institutional Development

17. At completion, institutional development in the project involved specialist services (i) to advise DGURD on implementation, (ii) to advise DGURD on privatization, (iii) for KIP, (iv) for reducing nonrevenue water (NRW), (v) to assist PDAMs with financial management assistance to PDAM, and (vi) to prepare the benefit monitoring evaluation and project completion reports. TA-financed training activities for institutional development included training for government staff in O&M for sanitation and SWM, etc.¹⁴ To the extent possible, the IEM conducted focus-group discussion and interviews with former staff, and consultants involved during the SPARs preparation. The IEM saw that most of the technical specification and financial analysis for the SPAR were conducted and coordinated by the project implementation support (PIS) and SPAR preparation consultants. The IEM confirmed that some staff operating the water treatment plants, and maintaining some of the drainage, urban roads (including traffic management), and SWM facilities (this depended on the municipality though) had adequate knowledge of the technical requirements.

18. For the five other elements in this component, i.e. (i) PSP or public-private partnership (PPP) development support, (ii) community participation, (iii) O&M budget and planning, (iv) reduction of NRW, and (v) financial management (replacing the originally envisaged LIDAPS and RIAPs), the IEM confirmed that the project did not yield strong outputs and impacts. Especially on the PSP/PPP, the project had rather small-scale private sector outsourcing, with a substantially low number of cases than what was originally envisaged. Even without the AFC, the results would not have been much different, as the project assumptions were overly optimistic, and the support did not provide the needed expertise in the legal and financial dimensions.

2. Part B: Subprojects

a. Water Supply

19. Table 2 compares works envisaged under the latest SPAR with what was actually achieved in the project (details by project town and district are in Appendix 2).

20. Although the major works, i.e., water treatment plants (WTPs), reservoirs, and transmission and distribution lines, either met or surpassed the data in the revised and supplemental SPARs, only 14.5% of the total works in the water supply sector were actually financed compared with those envisaged at project appraisal.

21. Planned targets were not reached mainly on the demand side, especially the house connections in Bogor district and Depok, as well as nondomestic connections (Table 2). The PCR highlights lack of in-depth demand analysis, low affordability because of the economic crisis, and the different water resource conditions of the districts involved as probable causes for the shortfalls. Since Bogor district and Depok city have substantial groundwater resources, many potential consumers rely on shallow wells, or boreholes, rather than pay PDAM connection fees and monthly tariffs. Another major reason is that the planned PSP in water distribution and reticulation schemes, especially in Bogor and Depok city, was not realized.

¹⁴ It was not easy to trace the real impact of the project for this component because almost 5 years have passed since the project closed, many staff who were involved in the project had been transferred to other departments in the same municipality, or some have moved to other government agencies. However, to the extent possible, the IEM conducted focus group discussion and interviews with former staff and consultants involved in preparing SPARs.

Table 2: Planned vs Achieved Water Investment

Works	Unit	SPAR Revised	SPAR Supplement	Actual	Achieved vs SPAR (%)
WTP	l/s	630.0	50.0	680.0	100.0
Reservoir	m ³	8,700.0	750.0	9,450.0	100.0
Transmission Pipe	km	21.3	0.0	21.4	100.5
Distribution Pipe	km	237.9	0.0	247.9	104.2
Reticulation	km	1,074.8	0.0	484.8	45.1
House Connections	Unit	64,521.0	5,500.0	41,786.0	59.7
Nondomestic Connections	Unit	1,585.0	0.0	368.0	23.2

l/s = liter per second, SPAR = subproject appraisal report, WTP = water treatment plant.

Source: Independent evaluation mission findings.

22. On the other hand, the proportion of water infrastructure financed by the project is only a small percentage of the total production capacity of the respective PDAMs, both at the time of project processing and during the IEM. PDAMs are now producing tens of million of cubic meters of water per year, far more than the capacity supplied by the project.¹⁵ In 2008 production capacity in Bekasi city was 2,080 liters per second (l/s) of which only 100 l/s was provided by the project. Thus, the project impact at the district level is not significant, and any district-level data will not show the direct project contribution because all target municipalities have large populations.

b. Solid Waste Management

23. The solid waste component comprised some 12.4% of the total cost, the third highest after roads (40.2%) and water (32.1%).¹⁶ Provision of final dump sites in the solid waste component had one of the highest achievement percentages in the project at 90%, versus data in the latest SPAR and around 40% of financing against the original appraised estimate. The IEM visited six of the seven final disposal sites (FDSs) financed by the project. All varied substantially in their organization and performance. Most outstanding was the FDS for Bekasi city at Sumur Batu, which comprised 10 hectares (ha) next to a 100 ha site for the city of Jakarta. Large front-loaders, dozers, other equipment and organized groups of scavengers were used to organize this site well. Most impressive was the existence of a clean development mechanism (CDM), which was siphoning off the methane gas for power generation with 10% of the profit going to the city and 7% to the local community. However, this CDM component is entirely external to the project. The CDM scheme started after the project, and was brokered by the World Bank and financed by Dutch funding with Australian firm investment. At the other end of the spectrum was the FDS for Bekasi district at Burangkeng, which comprised some 7.6 ha and relied mainly on open dumping. There was no evidence that the equipment was financed by the project and the leachate was flowing into the road drains. Scavengers were unorganized and lived in shacks nearby. The two other FDSs totally financed by the project were in Tangerang city (Jatiwaringin) and Tangerang district (Pasir Muncang). The former is not being used since the main FDS at Rawa Kucing is not yet full. Thus, the three 40 m x 30 m x 3 m pits are filled with water.¹⁷ Open dumping (with negative environment

¹⁵ For example, in Bekasi, the project financed a total production capacity of 50 l/s, less than 10% of the existing 1997 capacity of 514 l/s against the present production capacity of 680 l/s.

¹⁶ See PCR for Loan INO-1511, Appendix 4, Table A4.

¹⁷ On the other hand, the FDS for Tangerang district (Pasir Muncang) is a full dump site and covered by soil. During its operation, there were some protests from residents in the area due to its odor. The project also financed the enlargement of three other FDSs for (i) Tangerang city (Rawa Kucing) – access road; (ii) Depok (Cipayung) – equipment, drainage, and leachate ponds; and (iii) Bogor (Pondok Rajeg) – only 1 of 3 ha plus equipment. Of the three, Rawa Kucing was the best organized with an entrance (one-way) weigh station, periodic covering, and one-way exits. Cipayung also evidenced good organization of truck traffic and substantial equipment, although the leachate was flowing into the drainage and not reaching the ponds financed by the project.

impacts) was occurring at Burangkeng. In all cases, many of the containers financed by the project had rusted and were no longer in use. The total number of people served was some 70% of the appraisal estimate and open dumping (Burangkeng) has a highly negative environmental impact.

c. Sanitation

24. Sanitation was a very small percentage (2%) of the total project cost. The project financed only two sewage treatment plants (STPs) at Karawaci for Tangerang city and Sumur Batu for Bekasi city. The IEM visited the STP at Sumur Batu, which is at the same site as the FDS. The treatment works were either mechanical or oxidation ponds, well-maintained and working well.¹⁸ The project also financed the improvement of two STPs at Sepatan in Tangerang district and Kalimunya in Depok. Although it was built in 1994, the STP at Sepatan is working well. ADB funding in 2002 repaired the old base of the sludge ponds that were leaking and upgraded the water channel from the last sludge pond to the maturation pond. ADB also provided three of a planned seven vacuum trucks. The Kalimunya site is also based on three oxidation ponds, which emptied into a maturation or filtration pond. In Kalimunya, the project investment was used to repair the Imhoff tank, a square concrete reservoir, which had settled and cracked, causing leakage.

d. Drainage

25. At 7.6% of total cost, drainage was not only one of the smallest project investment sectors, but also the least concentrated (footnote 16). At 117.5 km, the degree of achievement vs the latest SPAR was over 100%. The drainage channels were in (i) Tangerang city – 40.3 km; (ii) Tangerang district – 5.3 km; (iii) Bekasi city – 23.1 km; (iv) Bekasi district – 23.5 km; (v) Bogor district – 19.5 km; and (vi) Depok – 5.7 km. The PCR stated that the root cause of flooding in the low-lying BOTABEK area would have been alleviated with a much larger investment. The IEM visited several drainage sites in Bekasi city and found a great deal of variation in their works. Rawa Tembuga was a major connection between the main river and the Kali Bekasi and was extremely well-built with concrete banks and 20-foot-high sluice gates. However, inspection of a smaller drain, Kali Cakung (2.5 km), revealed poor dredging and lack of maintenance for the retaining walls. In addition, community participation was completely absent in O&M of the drains, which tended to be clogged with discarded waste. After a drastic reduction from a target population of some 146,000 at appraisal to 7,800 in the latest SPAR, the component has had an insignificant impact on flood prevention in the area.

e. Urban Roads

26. The project completed 265.2 km of urban roads against the target 349 km at the time of loan approval (i.e., 24 km of new roads, 215 km of widened roads, and 110 km of improved roads). Project achievements largely met the revised cumulative target of 265.5 km as agreed to in the SPAR revision and supplementary plan.¹⁹ Together with 196.8 km of road works completed in the first BOTABEK project, the project brought the total ADB-assisted roads to about 462 km (Appendix 2, Table A2.3).

27. The project enhanced road capacity, reduced traffic congestion, increased vehicle speed, led to savings on travel time. The urban roads contributed to increase people's mobility and

¹⁸ However, the IEM noticed that oxidation was not activated when the mission visited. Upon request, the site staff turned on the oxidation wheels.

¹⁹ These consisted of new road construction, road improvement or enhancement of alignment, and road widening including additional strips. During project implementation, allocation of program funding was revised due to the economic and financial crisis in 1998, changes in city condition and needs, functional changes, and the move toward regional autonomy.

improved land prices in areas surrounding the developed roads. The IEM visited several project roads and found them to be well-used. With the exploding traffic in Metro BOTABEK, with the large increase in motorcycles in recent decades, all the roads in the area are heavily used. Roads improved by the project performed well, but some needed maintenance to ensure sustainability.²⁰ In Depok city, one road section showed some signs of degradation of surface conditions. Jalan Margonda Raya, which passes through the city center, is in good condition but will need widening to accommodate increased vehicle traffic, as it is constantly heavily congested with very slow-moving traffic during the daytime.²¹ Bogor officials emphasized the need for further assistance from external partners including ADB.²² They say the assistance/subsidy from the central Government is insufficient to cope with the booming traffic, as the city is short of budget funds for acquiring land and expanding. Compared with established or well-off cities (*kotas*) or districts (*kabupatens*), conditions in the subproject reflect the difficulty faced by Depok city authorities in balancing road development and maintenance with a constrained budget.

f. Kampung Improvement Program

28. At only 1.3% of total project cost, the KIP has probably had the most efficient use of funds by funding the improvement of 40 kampungs covering 453 ha vs 263 ha in the latest SPAR (footnote 16). However, since the government required KIP to be funded largely out of local government resources, ADB's contribution was \$300,000 (for combined KIP and MIIP) against the \$200,000 envisaged at appraisal (Appendix 2, Table A2.1). In contrast, Government funding was greatly reduced, from \$5.3 million at appraisal, to \$0.7 million. Only 13% of the appraised amount was disbursed from the government, which shows the government's reduced commitment to the poverty element during the crisis period in the BOTABEK region. In contrast to the PCR (which found many KIP subprojects substandard and not maintained), the IEM observed Sawa Kampung KIP (Depok) was well-maintained with clean footpaths, drains, as well as public toilets. Thus, while subproject standards would seem to vary substantially, they had a significant impact per person. This is especially so if the households obtain basic tenure to their plots. Once this occurs, international experience shows that substantial household investment in housing and neighborhood improvement will occur. Naturally, a KIP-like project would need a community-driven approach with labor-intensive investment and time-consuming steps. Given the extensive need for such consultation, it is debatable whether agencies like ADB should be directly implementing such projects. Generally, in all visited target municipalities, the IEM continued to experience challenges in visiting the KIP sites. The local government officials who were working on other project components were not familiar about KIP project locations and were seemingly indifferent to the KIP programs.

g. Market Infrastructure Improvement

29. With 0.7% of the total cost, the MIIP obtained the least investment among the project components (footnote 16). It comprised 10 markets covering 49.3 ha, which at project inception provided basic footpaths, and facilities for drainage, water supply, sanitation, and solid waste so as to upgrade traditional markets. While the component improved the cleanliness and services of the traditional markets and improved the income of local shopkeepers at the time, it has been overtaken by modern market development in surrounding areas. One MIIP area, which the IEM visited (Depok), was already three stories high with several hundred shops. In addition, the advent of modern malls in the Jakarta and JABOTABEK areas will probably outdate the utility of the component. Relatively successful locations received much investment after the project, whereas

²⁰ Road works under the Metro BOTABEK Project were implemented between 1998 and 2003.

²¹ The population in Depok city has increased by about 6.1% per annum from less than 1 million in 1999 to about 1.8 million in 2009.

²² Jalan Juwanda can provide an alternative east-west corridor between Tangerang and Bekasi through Depok.

unsuccessful marketplaces are already dilapidated and underused, especially with the advent of much more modern commercial facilities run by the private sector. The IEM cautions the appropriateness of such investments in rapidly growing areas like the Jakarta metropolis.

h. Bus Terminal

30. Of all the project subcomponents, the Tangerang city bus terminal is the most financially successful. The terminal is mainly used for long-distance bus services from North Java or even as far as Sumatra Island. Many passengers change buses here to continue to the central Jakarta area, or further eastward on Java island. Built over 2 years from 2001 to 2002, the terminal started operation in November 2003 after the project was finished. Thereafter, revenues grew rapidly from Rp98.5 million in 2004 to Rp815.2 million in 2008. Entrance tariffs have been increased only once in 2007. All revenues go to the city without taxes, and various departments of the city pay expenses largely for O&M and salaries. Total budget expenses amounted to some Rp1.0 billion for all five bus terminals in Tangerang city. But the issue of location hinders further growth financially. The financed bus terminal is the only one that provides interstate services including passengers from Sumatra Island. Because it needed a large piece of land (5.2 ha), the terminal is 10 km outside the city. Thus, passengers have to take city or mini buses and transfer to interprovincial buses. The project also financed 3 km of the dual-carriageway access road. Due to the difficulty of land acquisition for separate entrance and exit roads, the single access road entails a tight u-turn to gain access to the terminal, a maneuver that is difficult for the large interprovincial buses. Perhaps due to its location and the fact that only 12% of the trips are interprovincial, the terminal seemed to be oversized for the number of passengers being served, compared with the smaller, local terminals in the city. In addition, long-distance travel in Indonesia has a high seasonal fluctuation.²³ While the terminal comprised only 3.8% of the project costs, actual ADB and the government financing formed the highest proportion of any component (59% and 141%) compared with the appraisal estimate. The need for a long-distance bus terminal was strong, but whether the facility will attract the expected volume of passengers is uncertain; an issue which must wait at least five years from now.

i. Monitoring and Evaluation

31. The IEM was unable to get a copy of any formal report related to benefit monitoring and evaluation (BME), but found only a portion of the consultants' report prepared as background to the PCR. Neither the EA nor ADB operations kept the report in their archive.²⁴ The consultant used a home grown "Analytic Hierarchy Process" method—which was used by the EA, MPW at the time—built on a software package that quantitatively monitors the project benefit on the basis of (i) level of service, (ii) use of service, and (iii) impact of service. The first two indicators look mainly at project outputs, as they monitor the level of service that construction of the project facility achieved against the target, and the degree of facility use achieved against the planned. The third indicator is the preliminary evaluation of impacts of improvements (details of this approach are in Appendix 4). Impact, the third indicator for the water component, had the following sub-indicators: (a) average increase in income of the PDAM, (b) operational cost ratio per year, and (c) PDAM performance improvement, but it is not clear how the consultants actually calculated the

²³ As it is mainly a practice of the people from Jakarta to return to their home provinces during festivities and long holidays. At the time the IEM visited, there were hardly active inflows and outflows of large buses during the day.

²⁴ John L. Taylor, PT Infratama, and Arkonin. September 2003. Final Report – Volume IV. Lessons Learnt from M-BOTABEK Project and Recommendations for Future Urban Development in Jakarta, Bogor, Depok, Tangerang, and Bekasi (JABOTABEK). Jakarta. In the project file, the IEM found some fax correspondence of the hiring of BME consultants, but the actual report was missing. According to the report, a team of consultants carried out the BME assessment from March 2001, which means that during the early part of the implementation or during the appraisal, baseline data was not collected.

performance on the third indicator. Without the detailed baseline data and the monitored data (which is missing in the report), the IEM was not able to assess the validity and accuracy of the assessments.²⁵ BME should be taken more seriously by the government and municipalities before implementation.²⁶ When tracing the past project files, the BME system was more or less left for the consultant team to produce, and there was no evidence that ADB officers on review missions closely reviewed the development, or that IED was consulted on the process. In addition, contrary to what was recommended during the Staff Review Committee Meeting, the BME was not "owned" by the central planning agency, but merely left with the consultant.

G. Consultants

32. A desk review of all archived project documents and discussion with government officials showed that the effort of the consultant of the project implementation unit (PIU) was vital in keeping the project together. The project had eight subprojects, along with multiple agencies and approvals, scattered locations in four administrative units. The central government or the ADB project officer could not attend to all the details of technical decision making, involving subproject prioritization, preparation of a tendering package, and supervision. The PIU consultant team, which was centrally based in Bandung, but had branch offices in different local authorities, coordinated and maintained the project implementation momentum. Without these behind-the-scene coordination and consistency check by the consultants, the project could have faced much further delays. The performance of the consultants is rated *highly satisfactory*. Their responsibilities consisted of (i) preparing the SPAR; (ii) coordinating elements among the central government agencies, central project monitoring unit in Bandung, and basically six target municipalities, not only for both technical feasibility and financial analysis, but also for dealing with unforeseen complaints from local residents regarding plans for final disposal sites or sanitation ponds; and (iii) overall unstable and unpredictable challenges the country faced after the AFC. Some small substandard work by contractors for the two sewerage treatment plants was noted in the PCR, but both have been repaired (para. 24).

H. Loan Covenants

33. The updated status of compliance with the loan covenants is in Appendix 5. Of the project's 54 covenants, 45 (83.3%) were complied with or being complied with, 8 (14.8%) partly complied with, and 1 (1.9%) not complied with. The covenants that were partially complied with relate to (i) preparation of subsidiary loan agreements (SLAs), (ii) adequacy of counterpart funds, (iii) cost recovery and O&M, (iv) operational issues with completed project facilities, and (v) social and environmental aspects. Regarding operational issues, the transmission and distribution network for Ciledug reservoir (Tangerang city) has not been developed due to right-of way issues, while the Balaraja reservoir (Tangerang district) is reportedly still not equipped with a generator set. Regarding the safeguards aspects, the IEM noted that local people's objection to a sanitation program (IPLT Bantar Gebang, Bekasi city) at project completion faded after the start of operations. The lone covenant that was not complied with relates to nonimplementation of the

²⁵ For example, for impact in the water supply component, the report concluded that "for all Kota/Kabupaten, water supply sector scored 67.3% out of possible total score or 100% regarding impact of service." While the first indicator would somehow show the level of output achievement, the IEM cannot show confidence in the impact assessment.

²⁶ For example, when the IEM tried to reconstruct the EIRR analysis for urban roads, there were some cases where vehicle operating costs and traffic forecast were assumed without adequate traffic surveys, and rather casually adjusted to attain an intended level of numbers without actual supporting data. Without detailed records, it would be very difficult for aid agencies to evaluate projects after they are completed

RIAP and LIDAP technical assistance.²⁷ These were changed to financial management assistance and NRW program under the Planning Department of West Java province.

I. Policy Framework

34. **Policy Changes in Private Sector Participation.** As early as August 1998 during the Special Project Administration Mission, a negative incentive for PSP was noted after the 1997 AFC. The back-to-the-office report (August 1998) mentioned the government's very difficult financial situation: a 60% drop in the central government budget, 65% drop in the provincial government budget, and 50% drop in the local budget. PDAMs also faced a 30% drop compared with that in 1996. On the policy front, the presidential decree No. 7, "Cooperation between the Government and Private Enterprises for Development and/or Management of Infrastructure" was issued in January 1998. It aimed to introduce a more stringent evaluation and approval mechanism to ensure transparency. According to the project files, the decree had some deterrent impact on private investment. Under the new procedures, all new contracts would have to be tendered publicly. Some firms, which were interested in the project, were caught by the change in procedure and needed more time for reevaluation. This erosion of momentum was compounded by the financial crisis itself.

35. **Results of Private Sector Participation.** The PCR had only one paragraph on PSP. It stated that "the participation of the private sector was not emphasized enough in the project design or during training, so the project's PSP did not perform well. The project did not support local governments adequately through feasibility studies, commercial and risk evaluation procedures, and standard contracts. The PDAMs have done little to exploit PS opportunities, and there seems to have been uncertainty about the authority of tariff-setting under PSP—a debate that is aggravated in an environment where increased service tariffs can become political issues. Reform of the national water sector regulatory system as a precondition for successful PSP was beyond the scope of the project." Originally, the water supply component was appraised at \$72 million, of which the ADB portion was \$14.6 million. The original amount was eventually reduced to \$10.4 million, of which ADB financing was \$2.5 million. The decrease was attributed to the unsuccessful outcome of planned PSP investments in the sector. At appraisal, PSP was planned for 11 subprojects, mainly on water supply. At the closing stage, there were only two small cases in water supply; however, both had small PSP: outsourcing and contracting-out schemes. One in sanitation was planned and negotiated, but was not implemented in the end. In Depok city, the project's PSP consultant identified 14,000 households as target, and tendered a project scheme with a proposal to build-operate-and-transfer (BOT) in September 2002. In the end, the contract was awarded to a private contractor, but the target households were reduced to only 1,500. The IEM sees this as only a short-term PSP intervention, which runs for 3 years, i.e., a private construction company invests its own money and constructs the network and connects households within roughly 1 year, while the municipality repays the whole debt with agreed-upon interest during 3 years. Considering

²⁷ At the time of the midterm review (December 2000), the government had already decided that both LIDAP and RIAP would not be implemented. The midterm review's back-to-the-office report stated: "Instead of LIDAP, institutional support will be limited in scope to focus on critical aspects of operation, management and maintenance of district's infrastructure." Instead of a holistic revenue improvement mechanism, the project shifted to a program to reduce nonrevenue water. Instead of a holistic revenue improvement mechanism, the Project changed to NRW reduction program. It was change of policy for the central government; and the scope was reduced. IED views that the changed component do not qualify for full-compliance.

the nature of the outsourcing and financial capacity of local firms in the industry, a PSP scheme cannot work beyond probably 1,000–1,500 households in 3 years.²⁸

36. **Experience from PSP Cases.** A large-scale PSP was expected to be implemented in Tangerang district (Ciputat, Pamiulang, Pondok Aren area). It would cover 900,000 households in a 25-year BOT concession scheme, which interested major European water companies. During the project preparatory TA (PPTA) stage, ADB missions met and discussed with the European water supply firms, which convinced ADB there was a good basis for the PSP transactions to happen. The BOT scheme was tendered in March 2001, and a single winner was identified. But in October 2002, the winning company withdrew, largely due to disagreement on the tariff because the government would only agree to a maximum Rp700 per cubic meter (m³). The private sector claimed that Rp1,000 per m³ was needed for feasible business operations. The after effects of the AFC and unclear guidelines on risk-sharing made the project untenable.²⁹ The lessons from the huge challenges faced by the project are: (i) there needs to be a much more robust survey of demand during project conceptualization and processing; (ii) certain economies of scale are needed for PSP, but due to decentralization taking place at the time, many PDAMs had been broken up into small territories where large investors could not expect to have a large revenue base; (iii) tariff increase is politically sensitive, and the government was not ready to initiate a serious long-term strategy and implementation on this front; (iv) there was lack of capacity and knowledge of the legal provisions and risk-sharing to be stipulated and agreed to by parties at the local level; and (v) the project had limited resources for building capacity when the scope of PSP was much larger and overoptimistic.

III. PERFORMANCE ASSESSMENT

A. Overall Assessment

37. The project is rated *partly successful* (Table 3), based on the standard evaluation criteria shown in Appendix 6.³⁰ Compared with the PCR rating, the PPER rating had one-level lower rating for relevance and effectiveness for reasons explained in the following paragraphs.

²⁸ In Bogor, originally, a major-scale "full 25-year BOT concession" was proposed in September 2001 to provide water supply services in two residential areas (Cibinong and Gunung Putri). With the project, the PDAM planned to construct a river intake, WTP, and transmission network. Private parties would then develop a distribution (reticulation) system to 16,000 households. The tender was done, and the winning firm was expected to operate and maintain the entire package. However, there were no responsive bidders. The proposal was retendered in May 2002 under a modified 10-year build-and-transfer, but only one bidder submitted a "non-competitive" proposal, which led to a third tender as a 3-year "material and installation" outsourcing. The latter was awarded, but connected only 1,000 households at most.

²⁹ In the original project document, it was envisaged that on the basis of an earlier TA, some PPP opportunities in Bandung, Semarang, and Medan were identified, this Project would help prepare the feasibility studies and bidding procedure documents. It said, "the project area had sufficient revenue potential to interest private sector investors and concessionaires."

³⁰ Self-evaluation in the PCR (by the Southeast Asia Department) was as follows: *relevant*, *efficacious* (equivalent to effective), *efficient*, and *less likely to be sustainable*. The overall rating was *successful*.

Table 3: Assessment of Metro BOTABEK Overall Performance

Criterion	Weight (%)	Assessment	Rating Value	Weighted Rating
Relevance	20	Partly Relevant	1	0.2
Effectiveness	30	Less Effective	1	0.3
Efficiency	30	Efficient	2	0.6
Sustainability	20	Less Likely	1	0.2
Overall Rating		Partly Successful		1.3

Note: Aggregate project performance is assessed as *highly successful* if the overall score is greater than or equal to 2.7; *successful* if it is greater than or equal to 1.6, ***partly successful*** if it is greater than or equal to 0.8; and *unsuccessful* if it is less than 0.8.

Source: Independent evaluation mission findings.

B. Relevance

38. The project is rated *partly relevant*.

- (i) The project was designed to support the government's main approach to the sector in an "integrated manner."³¹ After the project scope reduction in 2001 due to the AFC, water supply investment comprised only 14.5% of the appraisal target compared with 36.6% for roads, 34.3% for, drainage, and 39.8% for SWM (Appendix 2, Table 2.1). Despite the new regional autonomy brought about by decentralization, local governments found it difficult to adhere to LIDAPs and RIAPs, which were more comprehensive programs for institutional and financial management strengthening.
- (ii) On the PSP component, even without the AFC, the results would not have been much different, as the original project assumptions were overly optimistic, and there were not adequate assistance in the transaction advisory in the legal and financial dimensions.
- (iii) After being cut from \$228 million to \$74.6 million, or some 33% from the planned project, the project had less relevance for the population of the BOTABEK region. This is especially so because, according to the PCR, the estimated beneficiary population decreased from 6.1 million at appraisal to some 4.4 million in 2005. The project contributed to the overall efforts of government-BOTABEK local authorities to expand service coverage to some extent, but the expected benefits would be confined to the actual neighborhood that received the direct benefit, not to the entire area of the target cities. ADB's investment in the target Metro BOTABEK area did not achieve a level of critical mass.
- (iv) The project was seen as relevant at the time of conception, but was assessed as *partly relevant* at completion, due to the series of large reductions in scope. In the project documents, the loan size reductions once attributed to the AFC were generally explained as part of restructuring in the country programming. The government's absorptive capacity was reduced, compounded by local parliaments not approving any SLAs. The PCR did not clearly address those issues, but it showed that the original intent was no longer tenable even before the midterm stage.
- (v) The design for the institutional strengthening components was also not adhering to the envisaged objectives, and was substantially reduced to trainings on NRW reduction and financial management.

³¹ At appraisal, water supply and urban roads were identical at 31.5% of total cost; and drainage balanced solid waste at 6.0% and 5.8%, respectively.

C. Effectiveness

39. The project is rated *less effective*.
- (i) While the physical size of the project was reduced by some 67%,³² the institutional strengthening objectives were not attained mainly because the project did little to enhance the capacity of sector institutions, particularly for the concerned local governments, to plan and secure financial stability. Some TA-financed training and courses were conducted, and PDAMs were also assisted through a Dutch government TA in reducing NRW and undertaking more effective financial management. Not much effort was seen in the targeted municipalities to balance the budget by increasing property taxes, fees, tariffs, etc., or to undertake development.
 - (ii) During and after the AFC, local governments continued to increasingly rely on central government subsidy to balance their budgets. Although PDAMs increased tariffs mainly for industries, some became profitable only in the last few years.³³ Reduction of NRW, a major target of the project, was not attained, except in the Tangerang city PDAM.
 - (iii) Lack of PSP in the project was disappointing. The process of approving local projects and tariffs by local governors and local parliaments, and the political aspects of increasing water tariffs for PDAMs were critical obstacles to PSP. As a percentage of project financing, PSP declined from 25% in the RRP to just 2% in the final cost sharing. Poor market and lack of effective demand analysis were also major causes.
 - (iv) The major over-performing component was the KIP with more than three times higher achievement than the revised SPAR estimates (Appendix 2, Table A2.2). The KIP had a direct impact on the economic well-being of lower income households (e.g., increased property values), it was the second smallest (after MIIP) component, and its contribution to overall project impact was negligible.

D. Efficiency

40. The project is rated *efficient*.
- (i) PDAM economic internal rates of returns (EIRR) for water supply components (Appendix 7)—based largely on overall production increases and tariffs at consumers, which they were willing to pay according to the socioeconomic survey—are uniformly positive (EIRRs for water supply component per town ranged from 20.7% to 44.5%, with the highest in Bekasi). It is not easy to clearly determine to what extent the project contributed to the whole target city operation, as the project output was only part of the whole water supply operations in the cities. Thus, based on PDAM financial internal rate of returns (FIRR) and EIRR results, project performance can be considered efficient. Despite some data limitation, the IEM also reconstructed and recalculated the EIRR for the urban road (largest component). The result showed an acceptable range (4.6% to 32.8%, with the highest in Bekasi district). Water supply and urban roads were two largest subcomponents; the two combined accounted 69.5% of the total civil works investment.
 - (ii) With seven water treatment plants and nine reservoirs, the project has helped PDAMs increase water production and sales. However, total project-financed

³² Physical size reduction and financial reduction figures are coincidentally the same at 67%.

³³ There are about 10 financially self-sustaining PDAMS in the country, and the government in 2009 gave 29 better performing PDAMs some stimulus grants for drafting business plans.

production is a fraction of existing capacity. Thus, while the FIRRs are positive and higher than those in the PCR, PDAM institutional development aspect, especially lack of improvement in NRW, is a continuing issue. High NRW figures also indicate that the physical side of the operations is not efficient.

- (iii) The project completion was extended by 12 months. Given the impact by the AFC, compared to other ADB urban projects implemented in Indonesia at the time, this was acceptable.

E. Sustainability

41. The project is rated *less likely to be sustainable*.

- (i) The PCR viewed the sustainability of the project components by considering whether the institutional budget or the community provided for operation and maintenance was sufficient. Although this issue was already raised in the previous project, such provision in the local government and PDAM budgets was not considered by the same municipalities in this project (Metro BOTABEK). There was little organized community participation in the project components.
- (ii) Except in the Bekasi district PDAM, all FIRRs are substantially higher than the WACCs of 7.0% for the PCR and 4.5% for the PPER. This result is largely due to the stronger revenues and resulting net profits than was the case in the respective PDAMs shortly after the project ended 5 years ago.
- (iii) Analysis of the FIRR (Appendix 8) shows that subsidies and grants to local governments had been growing at some 18% per year until 2006: they made up 31% in Bekasi District, 33% in Tangerang District, and 57% in Bogor District of local government income. This is in spite of Government Decree No. 22 and 25 of 1999, which provides for devolution of government responsibility to the districts, along with the necessary financial means. On the other hand, local government financing is mixed, with Tangerang district growing substantially from 2003 to 2006, while financing for other local governments was either weak or negative (Depok city). Obviously, the AFC from 1997 to 1999 had an impact on the finances of the subject local governments, and ADB project assistance through the project did not really strengthen the targeted municipalities' financial sustainability.
- (iv) In terms of sustained stakeholder participation, the government officials and the Indonesia Resident Mission staff referred to the "new approach" of community-driven development projects in the Indonesian urban development sector in more recent projects. However, for this project (INO-1511), there was no strong evidence of community participation not only in project planning and development, but also in O&M, especially in the drainage and SWM components.

IV. OTHER ASSESSMENTS

A. Impacts

1. Impacts on the Socioeconomic Development Goals/MDG

42. **MDG Achievement.** The IEM examined the project's impact on the Millennium Development Goals (MDGs); however, city-level MDG data were nonexistent or unavailable, and there were no efforts to trace public service investments with public health standing in an organized or systematic manner. In addition, even if there had been city-level data, it would have been difficult to directly attribute the impact of the project investment, as no initial baseline was collected during

the project.³⁴ For child mortality rate, West Java showed slight improvements (Appendix 9). The rate in the province had been higher and continues to be above (worse than) the national average. West Java counted 50 deaths in 2003 and 47 in 2005, whereas the national figure was 33.9 per 100,000 in 2003. For the population with safe drinking water, the percentage of households using protected drinking water was 68.6% in 1992 but dropped to 51.0% in 2006. These figures are not better than the national average, which was 38.2% in 1994, but rose to 43% in 2000 and to 57.2% in 2006. The percentage of households having adequate sanitation in West Java was 61.1% in 2005-2006, where the national average was 69.3%. Again, the West Java figure is lower than the national average. This does not present the ADB project's position very favorably.

43. **Findings from Socioeconomic Survey.** Overall, the project impact on sanitation or livelihood enhancement was very much confined to some selected cities, where there was serious effort by the officials to improve adverse conditions. As the project's BME report did not capture the magnitude of project impact, (Appendix 4), the IEM conducted small-scale socioeconomic surveys in some sub-areas within the target cities, with the addition of one control area ("without the project") for comparison (Appendix 10). In the survey area, households can avail of piped water supply 20 hours a day throughout the year. The vast majority (88%) of the households had tap water inside the house. At 66% of the sample, Bogor city has slightly less than the three project cities, probably because more households have wells or boreholes in the area. High rates of satisfaction with water quantity and quality were recorded, with an average of 94% (100% in Bogor) boiling water before drinking and fully 97% saying they had not had any illness caused by the water supply. Since most of the sample areas have been served from the end of the project, it has had a definite impact on them. While the EA's BME attempted to track health data through the frequency of infectious diseases, in the survey data, waterborne disease cases were not evident. In any event, any causal relationship would be difficult, if not impossible, to determine without a long-term panel study of the same households before and after connecting to the water system. Bogor differed from other project cities in that it did not buy water from vendors. Information from the field showed that while shallow wells, or boreholes, are common in the Bogor area, they are not in either Bekasi or Tangerang where the groundwater is often polluted. A key indicator provided by the survey was the willingness to pay (WTP) for improved supply of clean, potable water with good pressure 24 hours a day. The responses revealed a high (65%) WTP for improved water supply in the Metro BOTABEK area. Of the 4 cities covered, Bogor City had the lowest rate of 44%. Except in Bogor city, tariffs that respondents were willing to pay were more than twice as high, on average, than the present tariff payments, i.e., Rp3,741 vs Rp1,664. The lower rate of WTP in Bogor could be due to the large percentage of households who obtain water from shallow wells at a cost lower than tariffs for piped water.

2. Social Impact

44. The project had some negative resettlement impact. As was reported in the PCR, no resettlement plan was prepared or submitted in the project. Neither did the IEM see any in the project files. This was despite reminders from the ADB review mission in 1997. Some officials of target cities have emphasized great challenges in land acquisition (especially for roads and FDS), escalating land prices, lack of funds for acquiring land, and project delays caused by land disputes. The project consultant also highlighted the general weakness of land use or spatial planning, or the legal basis of voluntary land donation for public infrastructure. The FDS that the PCR identified as non-operational—FDS Jatiwaringen (Tangerang city)—was still not operational in March 2009.

³⁴ As there is no PPMS or project data to trace the health impact, IEM used other publications, including: United Nations and the National Development Planning Agency. *Report on the Achievement of Millennium Development Goals Indonesia 2007*. Jakarta.

While the existing nearby Rawa Kucing FDS is still not full, there appears to be difficulties coming to an agreement over the government's offered compensation rate for land acquisition. As for FDS Pasir Muncang (Tangerang district), it was already closed in 2006. While officials mentioned that the larger portion of the site was already full of garbage and covered, but the IEM confirmed that the community close to the site had protested against the strong odor from poor operations, and the FDS was shut down by the district.

3. Poverty Impact

45. From the project documents and field visits, IEM did not note any special support to the poor for initial water supply connection fees or septic tanks. Generally, the initial connection fee could be paid in installments, but there were no specific measures to target the poor. The KIP was obviously the major component with a strong poverty reduction element, but this component was very small compared with even the reduced scale of other major components like urban roads and water supply. During the AFC, the government's commitment to disburse funding to poverty focus causes, at least in the BOTABEK region, was given very low priority. The socio-economic survey also confirmed that, where more groundwater was available, many people including the poor, did not opt to connect to the available water network, as they found the connection charge and fees too high.

4. Environmental Impact

46. The IEM confirms the PCR findings on the environmental impact. Generally, the water supply component had no negative environmental impact, but for the sanitation and solid waste components, there are still areas for improvement, specifically in managing the environmental impact. The IEM observed some leachate overflowing and spilling in the drains of Cipayung FDS site in Burabkeng in Bekasi district. Leachate was directly released into open drains (see photographs in Appendix 3). The IEM observed a highly advanced CDM mechanism being tried in Sumur Batu in Bekasi city, and the well-maintained facilities (weigh station, excellent controlled entrance and exit, good landfill) in Rawa Kucing in Tangerang city, but these two were not part of the project. Other FDS sites under the project were rather basic or had lower than acceptable operation. ADB's added value in the environmental impact was rather limited, and not innovative. There are visible differences in maintenance quality depending on the municipality. Stronger implementation guidelines, advice, and enforcement are needed from the central government and the provinces (see also para. 33).

B. Asian Development Bank Performance

47. According to the PCR,³⁵ ADB conducted nine missions during project implementation reviews, involving 30 persons and 605 person-days or about 20 person-months. Due to the extensive scope of the project, and the number of subprojects and institutions involved, the ADB reviews could not cover the entire project in each mission. Although the PCR mentions that the EA and participating municipalities considered ADB's role in achieving the project objectives as substantial, the EA noted some shortcomings in ADB performance, such as (i) the limited duration of supervision missions, (ii) frequent changes of project officers, and (iii) at times slow response to approval notifications (non-objection letters), which contributed to some delays in subproject implementation.³⁶ Although missions are crucial at the beginning of the project, after inception in June 1997, review missions began only in November 1999, or about 2.5 years later, which was

³⁵ PCR Basic Data, section D. Data on ADB Missions.

³⁶ PCR, paras. 30 and 31.

also at the height of the AFC. Shortly after the first review mission, the first loan cancellation of \$23 million occurred in December 1999. The next mission, midterm loan review, came a year later in November 2000, after which the second (partial) cancellation of \$4.9 million occurred.

48. The PPER notes that a part of the cost variance could be due to poor demand analysis and improper packaging of the project. Likewise, cost variance from the supply side components imply poor costing at the time of appraisal—PCR data gives an impression that such possibility exists. (footnote 16) To improve the chances of success as well as to work with the EA and the government in consolidating the project into a smaller, less complicated one, with fewer components and local governments/PDAMs, ADB could also have had greater presence during early project implementation. Delegating project implementation to the resident mission might also have helped as the resident mission staff could be in daily contact with government officials. Although loan processing in the sector continues to be done by Manila headquarters, and implementation supervision has been delegated to the resident mission since 2001. This project has been an exception to this policy, and no clear reason was given in the project file or in the review mission reports.

49. In two areas, the loan review missions particularly felt the need for improvement, environmental impact assessment (EIA) reviews, and resettlement. The missions stressed the need for the EA to screen all investments for environmental impacts and prepare an initial environmental examination (IEE) or EIA for those with possible adverse environmental impacts. Several SPARs had been approved, tendered, and contracted out without the necessary environmental clearance certificates.³⁷ In addition, along with reminders concerning the necessary EIAs, repeated requests for clarification on resettlement issues remained unanswered at the time of the PCR.³⁸ The mission leader was changed five times during the project life. This situation is common in many ADB projects. Given the very slow start, several scope reductions and cancellations, unsuccessful PSP initiatives, and municipalities' unwillingness to enter into any subsidiary loan agreements, there could have been more lengthy dialogues and reviews. The project area is in the suburbs of Jakarta, where even the headquarters staff would not have had much difficulty traveling and strengthening the engagement to encourage faster disbursement, but there was no strong record to that effect. Given the above reasons, ADB's overall performance is rated *partly satisfactory*.

C. Borrower Performance

50. A project management unit (PMU) was placed in West Java province (in Bandung), and a project implementation unit (PIU) was installed in each target municipality. Local PIUs were "non-structural" (which means that no specialized unit or division was created in each municipality), and were placed in different agencies: the local planning department in most cases, and urban planning and services division in Bekasi district. The central PMU in Bandung was also "non-structural." The nonstructural (the project management does not have a special body during implementation) unit was envisaged to be good, as the project management expertise and experience will be institutionalized in the existing department within the local administration. In reality, the PIUs became heavily burdened with coordinating responsibilities among various infrastructure divisions within the municipality. This made technical details, engineering adjustment, financial evaluation, and safeguards follow-up works dependent on the consultants. Thus, the transfer of technical skills and expertise from the project to the actual municipality staff was very limited. In addition, there was no full-time project manager, especially in the cities. Thus, all the key decisions and

³⁷ PCR, footnote 11.

³⁸ PCR, para. 27.

prioritization formally and informally depended on the mayor or the governor at the time, but institutional memories and detailed records are lost with the change of the head of localities.³⁹ ADB should look at the pros and cons of "structural" arrangement (having a full-time project manager) and "nonstructural" setup in the Indonesian decentralized environment. During the transitional stage, a mixture of both styles may be better while capacity is strengthened and the role of each hierarchy is streamlined. The IEM also observed ambiguity in the functions of the EA and the Bandung PMU, and the many layers for various approvals (SPAR, SLA) that also contributed to slow delivery.⁴⁰ Local authorities' commitment to the project was also not strong; given so many planned SLAs eventually rejected by the local parliaments. The Borrower's performance is *partly satisfactory*.⁴¹

V. ISSUES, LESSONS, AND FOLLOW-UP ACTIONS

A. Issues

51. The following are the main issues:

- (i) **Tariff increase and full cost recovery.** Indonesia is not an exception among developing nations in that there is strong resistance and reluctance to charging the necessary tariff level to cover water supply, maintenance, and service (including future expansion and improvements). The socioeconomic survey indicated that consumers are willing to pay, if they can get decent water. Currently, however, the final tariff approving authority lies with the local parliaments, and many PDAMs are not making profit and are deep in debt. The government needs to have a strategy for convincing the public and local politicians to allow tariff levels to be at least on cost recovery basis.⁴²
- (ii) **Quality of drinking water.** In all Metro BOTABEK areas, piped water is not drinkable. Almost all households depend on vendors of water in containers, while others boil water for drinking. Many PDAM staff and officials say water that has been provided since the services started is not potable. That may be the reason why the water supply project is not directly associated with impact on public health (reduction in water-borne diseases).
- (iii) **Retention of capable staff at central government.** The IEM observed that 5 years after loan closing, there was no staff at MPW involved in project processing or implementation. But in the target municipalities, some staff still working in the same division or department recall training they received during the project, and challenges and difficulties they faced. The central government agencies underwent various restructuring from the late 1990s, with amalgamation, merger, dissolution,

³⁹ Since 2003, all mayors are now elected.

⁴⁰ To avail of the ADB loan, PDAMs or the infrastructure division had to first seek approval from the city planning department for the concept and cost, and then it prepares the SPAR. It then goes to PMU officers in Bandung in West Java province to get the approval of the provincial planning department. Once the province endorsed the request, the PDAM goes to MPW in Jakarta for approval of the government counterpart funding either as grant or loan. In the case of a loan, the SLAs had to be discussed and approved by the project steering committee, mainly MPW, the national planning agency (BAPPENAS), and Ministry of Finance. All levels, MPW, Bandung PMU, and PIU, had to agree on all actions for the subprojects. There could have been a more systematic streamlined approval process with specific criteria, indicators, and checkpoints.

⁴¹ ADB and Borrower performance rating are based on indicators listed in paras. 77 and 78 of IED. ADB. January 2006. *Guidelines for Preparing Performance Evaluation Reports for Public Sector Operations*

⁴² At the same time, the whole PDAM organization must consolidate its strategy on how to tackle that issue by examining not only technical loss from leakage, but also financial loss from inaccurate meters and inappropriate billings.

and reconfiguration. It was disappointing that the capacity-building measures provided during the project were hard to see.

- (iv) **Municipality's strong resistance to borrowing.** The IEM confirmed that only three SLAs were signed in the project: (i) with Bogor PDAM, (ii) with Tangerang city for the bus terminal, and (iii) with Tangerang city PDAM. This means that only three cases of onlending from the central government to the municipalities took place. Originally, all the water supply projects and revenue-generating subcomponents (including SWM) had to be on onlent basis with the signing of a SLA. Bekasi city PDAM was able to avoid SLA (onlending) because in the first BOTABEK project, the city had already assumed many SLAs, and was unable to take on any more loans.
- (v) **Integrated approach with many subcomponents versus more focus on few subsectors.** An overriding issue is whether ADB continues to process and invest in IUIDP-type projects in Indonesia. Even under normal circumstances, the project, with five sub-elements for the institutional development component, eight subprojects, along with multiple agencies and approvals, and scattered locations in four administrative units, would require a large amount of resources and capacity to implement and manage, which neither the targeted local governments nor water supply companies had. Given their complexity and difficulty to implement, Indonesia has moved away from such projects, as perhaps have other countries (Viet Nam), in favor of more concentrated urban development in one or medium-sized cities and/or "bottom-up" type projects such as those using the community-driven design approach.

B. Lessons

52. Experience with the project points to a number of lessons in implementing urban development and water supply projects.

- (i) **Difficulties of securing approval from many levels of government under decentralization.** The project dealt with the new decentralized form of government, which allows financing of urban infrastructure projects with official development assistance. However, to avail of the ADB loan, almost all details in subproject selection, approval, and funding flow needed many layers of processing in the local government, then the province, and also many ministries of the central government. There could have been a more streamlined approval process with specific criteria, indicators, and checkpoints.
- (ii) **Impact tracking and benefit monitoring.** There is a need to maintain various project impact data, including health and socioeconomic data, to continuously monitor improvements in the public health and livelihood that social infrastructure projects will yield. Even with the physical infrastructure like urban road investment, the government and ADB need to agree on how to measure benefits and economic value.
- (iii) **Lack of PDAM drive to reduce NRW.** The IEM observed that initiatives to reduce NRW did not result in the target figure of 20% in Tangerang, which had the largest coverage among the eight targeted local areas. Reducing NRW will need continuous efforts by both the management and technical division to achieve better results with both short- and long-term targets. There should be a reduction not only in technical losses from leakage, but also in financial losses from inaccurate meters and inappropriate billings.
- (iv) **Lack of demand analysis.** Project experience highlights the adverse impact of lack of demand analysis on the project design and to the allocation of scarce

concessional resource to high priority projects. This, being an important issue with potential risk to economic viability, could be done at the very outset. In cases of loans for improving water supply, neighborhood upgrading (KIP), drainage and flood alleviation, sanitation (showers, laundries, toilets), and/or home improvement, in-depth analysis of demand and affordability is necessary. The findings should be part of an initial baseline survey in the project preparatory technical assistance.

- (v) **Private sector participation.** PSP should be treated carefully, not as a major component, particularly in smaller urban development projects. PSP should be based on the profit incentive and needs to include assurances of a reasonable rate of return within a reasonable time period. This entails full knowledge of issues. Projects should maintain the momentum with the private sector. Legal and transaction advisories are also very much needed.
- (vi) **Assure regulatory capacity of sector institutions.** Improved regulatory capacity of the sector institutions (including the need to separate regulation from the political process) should provide a level playing field for the private sector to provide services in urban areas.

C. Follow-Up Actions

- (i) **Sustainability.** The Ministry of Finance, Ministry of Public Works, and Ministry of Home Affairs need to jointly encourage the project's targeted PDAMs to consolidate and prepare business plans, that would promote self-reliant financial management to ensure sustainability. Business plans should clearly prioritize future plans for expansion and/or development in their local areas, together with projected necessary tariff levels. The plans should help the PDAMs deal with the central government and potential private investors for further assistance, collaboration, and investment. Similar to well-performing PDAMs that received incentive package grants from the central government to come up with business plans, other struggling PDAMs should also receive such grants.
- (ii) **Post-project monitoring.** As Jakarta region and the main metropolitan areas in Indonesia are continually facing urban boundary expansion and rapid influx of migrants from rural areas, the government agencies need to maintain and keep track of various urban infrastructure and service impact data, including health and socio-economic indicators. Particularly, post-project completion monitoring on key performance indicators of the PDAMs (e.g. NRW, tariff and debt-service ratio) should be continued.
- (iii) **Reduce NRW.** To reduce NRW, in addition to reducing leakages, there should be follow-ups on nonpaying connections. The government must identify local champions in this effort, and disseminate and promote the best practices and possible steps in the Indonesian context. Incentives to meter readers and technical personnel for correcting leakage are also needed.

**PROJECT DESIGN AND MONITORING FRAMEWORK AND ASSESSMENT RESULTS
AT PROJECT COMPLETION AND PERFORMANCE EVALUATION**

Design Summary	Expected Results	PCR Assessment Results	PPER Assessment Results and Comments
<p>Impacts</p> <p>1. Improve living conditions, public health standards, urban environment, and economic opportunities for BOTABEK urban residents.</p> <p>2. Improve the capacity and capability of provincial and local governments to provide services in a market-responsive, and financially and environmentally sustainable manner.</p> <p>3. Help the government achieve its urban policies for REPELITA VI, aimed at improving urban environments to national standards through the Integrated Urban Infrastructure Improvement Development Program (IUIDP).</p>	<p>1. The project is estimated to directly benefit the following number of people: (i) roads and bus terminals (BT)—4 million, (ii) water supply—1.4 million (0.8 million existing and 0.6 million new), (iii) sanitation—0.4 million, (iv) solid waste - 0.8 million, (v) drainage - 0.7 million, and (vi) (KIP) and (MIIP)—0.2 million. The urban poor will receive direct benefits from KIP.</p> <p>2. Some residents will benefit from several components, while others may benefit from only one. The urban poor will benefit through improved environmental drainage and road conditions, and less competition for scarce water resources—benefits shared by all urban residents.</p>	<ul style="list-style-type: none"> • PCR estimates of total project beneficiaries are as follows: <ul style="list-style-type: none"> (i) roads & BT – not known (ii) water supply – 228,825 (iii) sanitation – 1.7 million (iv) solid waste – 2.4 million (v) drainage – 7,803 (vi) KIP – 52,232 (vii) MIIP – 12,156 • No estimates in the PCR as to how many residents benefited from more than one component. 	<ul style="list-style-type: none"> • The IEM could not find any source for the Expected Results nor the PCR achievement figures, which in some cases (sanitation and solid waste) are quite large vs extremely small for drainage. • Some residents might have benefited from several components such as water supply, improved sanitation and solid waste collection, but the total number is not known. This is probably due to a lack of a comprehensive monitoring approach for each city/district.
<p>Outcomes</p> <p>1. Increase the capacity and capability of provincial and local government agencies to implement the project and to operate and manage the new project facilities.</p> <p>2. Improve the level of service of IUIDP facilities in the project area,</p>	<p>1. Strengthen the existing PMU and PIUs, as scheduled.</p> <p>2. Recruit consultants for subproject preparation, management, and</p>	<ul style="list-style-type: none"> • PMU and PIUs were established as scheduled. PIUs were parts of local government (LG) Bappedas. • National and international consultants were recruited for 	<ul style="list-style-type: none"> • CPMU was established in Bandung under the West Java provincial government. The IEM could not clarify the role of the CPMU in coordinating or managing the project. • Some 5.5 years after project completion, the IEM did not

Design Summary	Expected Results	PCR Assessment Results	PPER Assessment Results and Comments
<p>comprising 13 cities and towns with a projected population of 6.7 million in 2002.</p>	<p>institutional development support.</p> <p>3. Procure and install the required equipment and materials, and construct civil works (scheduled for completion by 2002).</p>	<p>detailed engineering design and institutional development (ID). DED and supervision for revised SPARs were acceptable. The PCR states that ID, "through establishment of PMU and PIUs contributed to efficient project implementation."</p> <ul style="list-style-type: none"> • Project reduced by about 50% due to AFC; remaining equipment and works procured and installed according to revised SPARs. 	<p>find significant traces of institutional strengthening, especially in the areas of LG and PDAM financial management, O&M budgeting, cost recovery tariff implementation, encouragement of PSP, environmental assessments, and resettlement sensitivity.</p> <ul style="list-style-type: none"> • The IEM found that the majority of the revised SPARs (after AFC) were implemented accordingly.
<p>Outputs</p> <p>1. Project development, implementation, management, and support for institutional development through several consultancies, and central, provincial, municipal, and district government agencies.</p>	<p>1. Directly involve or make staff in the following agencies responsible for the project: Directorate General of Human Settlements (DGHS), Ministry of Home Affairs, Urban Roads Directorate of the Directorate General for Roads, Ministry of Finance, National Development Planning Agency (BAPPENAS) and its provincial counterparts (Bappedas), PMU, PIUs, municipalities, districts, and cities.</p> <p>2. Reduce NRW by at least 20%.</p>	<ul style="list-style-type: none"> • Only a few staff of DGHS (<i>Cipta Karya</i>) were involved. PIUs were composed mainly of Bappeda staff. MOF and BAPPENAS major roles were reviewing and approving cutbacks in the project. The PCR states that "institutional reform proposals were perceived to be consultant driven and failed to promote ownership of the ID agenda." • The PCR maintains that NRW percentages were not substantially reduced. 	<ul style="list-style-type: none"> • Direct involvement or making staff of all agencies responsible would have made an already complex project impossible to implement. IEM found too many agencies and "layers" involved such that responsibility for project shortcomings was very difficult to sort out. • According to IEM calculations, between 2002 and 2008, Tangerang district PDAM reduced NRW by 33.5%. Reduction in the other PDAMs was 13.9% in Bogor, 9.4% in Tangerang city, and 7.0% in

Design Summary	Expected Results	PCR Assessment Results	PPER Assessment Results and Comments
	<p>3. Increase water supply operational efficiency to 100 connections/staff.</p> <p>4. Increase tariffs, user fees, and taxes for urban services as projected and agreed upon.</p> <p>5. Have community organizations carry out construction and operation of KIP and MIIP.</p> <p>6. Ensure PSP in the provision of water supply, solid waste management, and environmental sanitation services particularly in the larger cities.</p>	<ul style="list-style-type: none"> • No data given in the PCR for this indicator • The PCR states that PDAMs "remain hesitant to implement a consistent policy of gradual tariff increases, in accordance with advice from ADB." A similar situation exists with LGs regarding taxes and fees for urban services. • The PCR felt that there was "very limited" community involvement or participation during implementation, except in KIP. • The PCR firmly states that "PSP under the project was unsatisfactory." Also that "the participation of the private sector was not emphasized enough in the project design or during training, so the project's PSP component did not perform well." PDAMs also have done "little to exploit PSP opportunities." 	<p>Bekasi.</p> <ul style="list-style-type: none"> • Connections per staff varied from 500 in Tangerang district to 111 in Tangerang city. • PDAM average tariffs have been increasing since 2003, but mainly for industry, commercial and high-income homes; tariffs on medium-sized and smaller homes are subsidized. • Community was actively involved in maintaining KIP project visited by the IEM. It is not clear to what extent they were involved in construction. Market improvement for MIIP seemed to have been done by contractors. • PSP participation declined from 25% envisaged at appraisal to 2% at the end of the project. The IEM agreed with the PCR that this was mainly due to the economic slowdown during the AFC, a lack of incentives from PDAMs and LGs, and absence of clear guidelines, regulatory framework, and standards.
<p>2. Accelerate the provision of essential urban infrastructure in the</p>	<p>1. Upon project completion in 2002, the following levels of service will have been</p>	<ul style="list-style-type: none"> • (a) Water supply- estimated 229,000 beneficiaries is a 	<ul style="list-style-type: none"> • The IEM agrees that the RRP expected results are too

Design Summary	Expected Results	PCR Assessment Results	PPER Assessment Results and Comments
project area.	achieved: (a) 20–25% coverage of the urban areas population; (b) improved traffic flow, shortened travel time, and reduced vehicle damage; elimination of localized recurrent flooding; (c) 50–60% of the urban areas population; (d) 60–70% of the urban areas population; (e) provision of improved public water, laundry and sanitation facilities, solid waste and wastewater disposal facilities, drainage and access for low-income <i>kampungs</i> (neighborhoods).	fraction of 20-25% BOTABEK population. <ul style="list-style-type: none"> • (b) Travel time shortened, but no mention of elimination of localized flooding. • (c) Projected drainage for 7,800 beneficiaries is far too optimistic. • (d) & (e) Projections for solid waste and sanitation also too optimistic. • The PCR found that KIP was the only component that has overachieved (152% vs revised SPAR) 	optimistic and not based on realistic projections.
	2. Improved water quality and increased duration of water supplies. 3. Enhanced levels of operational capacity of facilities for solid waste, sanitation, drainage, roads, and KIP and MIIP, resulting in more hygienic conditions.	<ul style="list-style-type: none"> • All four PDAMs had positive FIRR above the WACC of 7%. • The project did enhance operational capacity in the relevant sectors. However, hygienic conditions could not be measured. 	<ul style="list-style-type: none"> • PDAM water production and duration have increased several fold since the end of the project, resulting in strong FIRRs. • The IEM found uncontrolled dumping at one solid waste FDS to be an environmental and health hazard.

AFC = Asian financial crisis, BOTABEK = Bogor, Tangerang, and Bekasi, BT = bus terminal, CPMU = central project management unit, FDS = final disposal site, FIRR = financial internal rate of return, ID = institutional development, IEM = Independent Evaluation Mission, IUIDP = integrated urban infrastructure development project, KIP = Kampung Improvement Program, MIIP = market infrastructure improvement program, NRW = nonrevenue water, PCR = project completion report, PDAM = Perusahaan Daerah Air Minum (local government water supply enterprise), PIU = project implementation unit, PMU = project management unit, PPER = project performance evaluation report, PSP = private sector participation, REPELITA = Rencana Pembangunan Lima Tahun (5-year development plan), RRP = report and recommendation of the President, SPAR = subproject appraisal report, WACC = weighted average cost of capital.

Source: ADB project completion report and Independent Evaluation Mission findings.

PROJECT COSTS, FINANCING, AND ACHIEVEMENTS

Table A2.1: Project Costs and Financing

	Appraisal (\$ million)	Actual (\$ million)	Actual/ Appraisal (%)	Change (+/-)
A. Project Cost				
Foreign Currency Cost	65.0	23.0	35.4	-
Local Currency Cost	163.0	51.6	31.7	-
Total	228.0	74.6	32.7	-
B. Financing Plan				
ADB-Financed	80.0	39.7	49.6	-
Borrower-Financed				
Central Government	13.0	6.2	47.3	-
Provincial & Local Governments	70.0	21.9	31.3	-
PDAMs	8.0	5.5	68.1	-
Private Sector & Communities	57.0	1.4	2.4	-
Total	148.0	34.9	23.6	-
C. Project Cost by Component				
Institutional Development	14.3	7.3	51.0	-
ADB-Financed	5.8	7.3	125.7	+
Borrower-Financed	8.5	0.0	0.0	-
Subprojects				
Water Supply	71.9	10.4	14.5	-
ADB-Financed	14.6	2.5	16.8	-
Borrower-Financed	57.3	8.0	13.9	-
Urban Roads	71.8	26.3	36.6	-
ADB-Financed	29.7	10.7	36.0	-
Borrower-Financed	42.1	15.6	37.1	-
Drainage	13.8	4.7	34.3	-
ADB-Financed	7.2	1.9	26.8	-
Borrower-Financed	6.6	2.8	42.6	-
Solid Waste Management	13.2	5.3	39.8	-
ADB-Financed	5.0	1.0	20.2	-
Borrower-Financed	8.2	4.3	51.8	-
Sanitation	4.1	1.3	31.5	-
ADB-Financed	0.9	0.3	30.0	-
Borrower-Financed	3.2	1.0	31.9	-
KIP/MIIP	5.5	1.0	17.5	-
ADB-Financed	0.2	0.3	135.0	+
Borrower-Financed	5.3	0.7	13.0	-
Bus Terminals	4.0	3.8	95.8	-
ADB-Financed	2.2	1.3	58.6	-
Borrower-Financed	1.8	2.5	141.1	+
Subtotal	184.3	52.8	28.6	-
ADB-Financed	59.8	17.9	30.0	-
Borrower-Financed	124.5	34.9	28.0	-
Equipment	0.0	8.4	-	-
ADB-Financed	0.0	8.4	-	-
Borrower-Financed	0.0	0.0	-	-
Incremental O&M	15.0	0.0	-	-
ADB-Financed	0.0	0.0	-	-
Borrower-Financed	15.0	0.0	-	-
Interest during Construction	14.4	6.1	42.4	-
ADB-Financed	14.4	6.1	0.0	-
Borrower-Financed	0.0	0.0	-	-
Total	228.0	74.6	32.7	-

ADB = Asian Development Bank, KIP = kampung improvement program, MIIP = market infrastructure improvement program, O&M = operation and maintenance, PDAM = local government water enterprise.

Source: Asian Development Bank Project Completion Report (Basic Data).

Table A2.2: Project Achievements

Bogor	Kabupaten Bogor							Kota Depok					Total						
	Prog	SPAR		Actual	Achieved (%)		Prog	SPAR		Actual	Achieved (%)		Prog	SPAR		Actual	Achieved (%)		
		Appr	Revised		Supp.	vs Prog		vs SPAR	Appr		Revised	Supp.		vs Prog	vs SPAR		Appr	Revised	Supp.
Urban Road and Bus Terminal (BT)																			
Civil Works (CW)	km	37	9.8	0.0	9.8	26.4	100.0	-	42.7	0.5	43.2	-	100.0	-	52.4	0.5	52.9	-	100.0
BT (location)	unit	1	0	0	0	0	0	-	0	0	0	-	0.0	-	0.0	0.0	0.0	-	0.0
BT (area)	ha.	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	0.0
Water Supply and Sanitation																			
WTP	l/sec	545	200.0	0.0	200.0	36.7	100.0	-	200.0	0.0	200.0	-	100.0	-	400.0	0.0	400.0	-	100.0
Reservoir	m3	840	2,000.0	0.0	2,000.0	238.1	100.0	-	2,200.0	0.0	2,200.0	-	100.0	-	4,200.0	0.0	4,200.0	-	100.0
Transmission Pipe	km	21	5.6	0.0	5.6	26.5	100.0	-	0.8	0.0	0.8	-	100.0	-	6.3	0.0	6.3	-	100.0
Distribution Pipe	km	62	32.5	0.0	32.5	-	100.0	-	34.3	0.0	9.7	-	28.2	-	66.8	0.0	42.2	-	63.1
Reticulation	km	-	332.5	0.0	44.0	-	13.2	-	342.7	0.0	113.0	-	33.0	-	675.1	0.0	157.0	-	23.3
House Connection	unit	39,000	18,332	0	4,693	12.0	25.6	-	13,300	0	1,454	-	10.9	-	31,632	0	6,147	-	19.4
ND Connection	unit	-	639	0	30	-	4.7	-	766	0	190	-	24.8	-	1,405	0	220	-	15.7
STP	unit	0	0	0	0	0.0	0.0	-	1	0	1	-	100.0	-	1	0	1	-	100.0
Vacuum Truck	unit	0	0	0	0	0.0	0.0	-	0	0	0	-	0.0	-	0	0	0	-	0.0
Submersible Pump	unit	0	0	0	0	0.0	0.0	-	0	0	0	-	0.0	-	0	0	0	-	0.0
Solid Waste Management and Drainage																			
SWFDS	ha.	3	1.0	0.0	1.0	33.3	100.0	-	4.8	0.0	4.8	-	100.0	-	5.8	0.0	5.8	-	100.0
Transfer Depot	unit	-	0	0	0	-	0.0	-	0	0	0	-	0.0	-	0	0	0	-	0.0
Dump Truck	unit	2	5	0	5	250.0	100.0	-	2	0	5	-	250.0	-	7	0	10	-	142.9
Arm Roll Truck	unit	12	2	0	2	16.7	100.0	-	3	0	2	-	66.7	-	5	0	4	-	80.0
Container	unit	86	10	0	10	11.6	100.0	-	18	0	10	-	55.6	-	28	0	20	-	71.4
Bulldozer	unit	1	0	0	0	0.0	0.0	-	1	0	1	-	100.0	-	1	0	1	-	100.0
Loader	unit	2	1	0	1	50.0	100.0	-	1	1	1	-	50.0	-	2	1	2	-	66.7
Composter	unit	-	0	0	0	-	0.0	-	0	0	0	-	0.0	-	0	0	0	-	0.0
Excavator	unit	-	0	0	0	-	0.0	-	0	1	0	-	0.0	-	0	1	0	-	0.0
Light Truck	unit	-	0	0	0	-	0.0	-	0	0	0	-	0.0	-	0	0	0	-	0.0
Mini Truck	unit	-	0	0	0	-	0.0	-	0	0	0	-	0.0	-	0	0	0	-	0.0
Hand Carts	unit	-	0	0	0	-	0.0	-	0	0	0	-	0.0	-	0	0	0	-	0.0
Backhoe	unit	-	0	0	0	-	0.0	-	0	0	0	-	0.0	-	0	0	0	-	0.0
Drainage CW	km	21	19.5	0.0	19.5	93.0	100.0	-	5.7	0.0	5.7	-	100.0	-	25.3	0.0	25.3	-	100.0
Kampung Improvement Program (KIP)/Market Infrastructure Improvement Project (MIIP)																			
KIP (location)	unit	-	2	0	2	-	100.0	-	4	0	4	-	100.0	-	6	0	6	-	100.0
KIP (area)	ha.	70	36.3	0.0	36.3	51.8	100.0	-	49.1	0.0	49.0	-	99.7	-	85.4	0	85.2	-	99.8
MIIP (location)	unit	-	0	0	0	-	0.0	-	1	0	1	-	100.0	-	1	0	1	-	100.0
MIIP (area)	ha.	2	0.0	0.0	0.0	0.0	0.0	-	1.3	0.0	1.3	-	100.0	-	1.3	0.0	1.3	-	100.0

=not available/calculated, appr=appraisal, ha=hectare, km=kilometer, l/s=liters per second, ND=nondomestic, Prog=program, SPAR = subproject appraisal report, STP= sludge treatment plant, Supp=supplement
 SWFDS=solid waste final disposal site, WTP=water treatment plant
 Sources: ADB RRP and PCR on Loan 1511-INO.

Tangerang	Kota Tangerang							Kabupaten Tangerang							Total				
	Prog Appr	SPAR		Actual	Achieved (%)		Prog Appr	SPAR		Actual	Achieved (%)		Prog Appr	SPAR		Actual	Achieved (%)		
		Revised	Supp.		vs Prog	vs SPAR		Revised	Supp.		vs Prog	vs SPAR		Revised	Supp.		vs Prog	vs SPAR	
Urban Road and Bus Terminal (BT)																			
Civil Works	km	66	66.6	0.0	66.6	101.0	100.0	81	48.2	6.6	48.2	59.5	87.9	147	114.8	6.6	114.8	78.1	94.6
BT (location)	unit	1	1	0	1	100.0	100.0	0	1	0	1	0.0	100.0	1	2.0	0.0	2.0	200.0	100.0
BT (area)	ha.	-	0	0	0	-	0.0	0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	-	0.0
Water Supply and Sanitation																			
WTP	l/sec	70	80.0	50.0	130.0	185.7	100.0	100	0.0	0.0	0.0	0.0	0.0	170	80.0	50.0	130.0	76.5	100.0
Reservoir	m3	2,750	1,000.0	750.0	1,750.0	63.6	100.0	2,000	1,000.0	0.0	1,000.0	50.0	100.0	4,750	2,000.0	750.0	2,750.0	57.9	100.0
Transmission Pipe	km	20	6.9	0.0	6.9	34.5	100.0	8	3.1	0.0	3.2	40.3	103.2	28	10.0	0.0	10.1	36.1	101.0
Distribution Pipe	km	62 }	27.5	0.0	64.2	-	233.8	51 }	45.6	0.0	44.9	-	98.6	113 }	73.0	0.0	109.1	-	149.4
Reticulation	km	- }	132.2	0.0	0.0	-	0.0	- }	38.4	0.0	39.0	-	101.5	- }	170.7	0.0	39.0	-	22.9
House Connection	unit	12,000	2,500	5,500	2,964	24.7	37.1	11,000	5,039	0	5,239	47.6	104.0	23,000	7,539	5,500	8,203	35.7	62.9
ND Connection	unit	-	60	0	0	-	0.0	-	60	0	0	-	0.0	-	120	0	0	-	0.0
STP	unit	1	1	0	1	-	100.0	2	1	0	1	50.0	100.0	3	2	0	2	66.7	100.0
Vacuum Truck	unit	2	7	0	4	-	57.1	13	7	0	3	23.1	42.9	15	14	0	7	46.7	50.0
Submersible Pumps	unit	-	4	0	4	-	100.0	-	0	0	0	-	0.0	-	4	0	4	-	100.0
Solid Waste Management and Drainage																			
SWFDS	ha.	0	10	0	10	-	100.0	10	4.0	0.0	4.8	48.0	120.0	10	14.0	0.0	14.8	148.0	105.7
Transfer Depot	unit	-	0	0	0	-	0.0	-	0	0	0	-	0.0	-	0	0	0	-	0.0
Dump Truck	unit	-	4	0	4	-	100.0	15	7	0	5	33.3	71.4	-	11	0	9	-	81.8
Arm Roll Truck	unit	44	0	0	0	0.0	0.0	5	4	0	2	40.0	50.0	49	4	0	2	4.1	50.0
Container	unit	274	9	0	9	3.3	100.0	10	19	0	10	100.0	52.6	284	28	0	19	6.7	67.9
Bulldozer	unit	4	1	0	1	25.0	100.0	-	1	0	1	-	100.0	-	2	0	2	-	100.0
Loader	unit	-	0	0	0	-	0.0	2	1	1	0	0.0	0.0	-	1	1	0	-	0.0
Composter	unit	-	0	0	0	-	0.0	-	0	0	0	-	0.0	-	0	0	0	-	0.0
Excavator	unit	-	1	0	1	-	100.0	-	0	1	0	-	0.0	-	1	1	1	-	50.0
Light Truck	unit	-	0	0	0	-	0.0	-	0	0	0	-	0.0	-	0	0	0	-	0.0
Mini Truck	unit	-	0	0	0	-	0.0	-	2	2	0	-	0.0	-	2	2	0	-	0.0
Hand Carts	unit	87	0	0	0	0.0	0.0	444	0	0	0	0.0	0.0	531	0	0	0	0.0	0.0
Backhoe	unit	-	0	0	0	-	0.0	1	0	0	0	0.0	0.0	-	0	0	0	-	0.0
Drainage CW	km	45	40.3	0.0	40.3	89.5	100.0	61	5.3	0.0	5.3	8.7	100.0	106	45.6	0.0	45.6	43.0	100.0
Kampung Improvement Program/Market Infrastructure Improvement Project																			
KIP (location)	unit	-	25	0	15	-	60.0	-	2	0	2	-	100.0	-	27	0	17	-	63.0
KIP (area)	ha.	90.0	39.0	0.0	229.0	254.4	587.2	70	20.0	0.0	20.0	28.6	100.0	160	59.0	0.0	249.0	155.6	422.0
MIIP (location)	unit	-	8	0	8	-	100.0	-	0	0	0	-	0.0	-	8	0	8	-	100.0
MIIP (area)	ha.	58.0	45.0	0.0	45.0	77.6	100.0	-	0.0	0.0	0.0	-	0.0	-	45.0	0.0	45.0	-	100.0

- = not available/calculated, appr = appraisal, ha = hectare, km = kilometer, l/s = liters per second, ND = nondomestic, Prog = program, SPAR = subproject appraisal report, STP = sludge treatment plant, Supp = supplement, SWFDS = solid waste final disposal site, WTP = water treatment plant.
Sources: Asian Development Bank RRP and PCR on Loan 1511-INO.

Bekasi	Kota Bekasi						Kabupaten Bekasi						Total						
	Prog	SPAR		Actual	Achieved (%)		Prog	SPAR		Actual	Achieved (%)		Prog	SPAR		Actual	Achieved (%)		
		Appr	Revised		Supp.	vs Prog		vs SPAR	Appr		Revised	Supp.		vs Prog	vs SPAR		Appr	Revised	Supp.
Urban Road and Bus Terminal (BT)																			
Civil Works	km	-	34.2	1.4	42.1	-	118.1	173	49.3	6.2	55.4	32.0	99.8	-	83.5	7.6	97.5	-	0.0
BT (location)	unit	-	0	0	0	-	0.0	1	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	-	0.0
BT (area)	ha.	-	0.0	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	0.0
Water Supply and Sanitation																			
WTP	l/sec	-	100.0	0.0	100.0	-	100.0	240.0	50.0	0.0	50.0	20.8	100.0	-	150.0	0.0	150.0	-	100.0
Reservoir	m3	-	500.0	0.0	500.0	-	100.0	1,400.0	2,000.0	0.0	2,000.0	142.9	100.0	-	2,500.0	0.0	2,500.0	-	100.0
Transmission Pipe	km	-	4.8	0.0	4.8	-	100.0	26.0	0.1	0.0	0.1	0.4	100.0	-	4.9	0.0	4.9	-	100.0
Distribution Pipe	km	-	30.2	0.0	30.2	-	100.0	40.0	67.9	0.0	66.3	-	97.7	-	98.1	0.0	96.5	-	98.4
Reticulation	km	-	126.0	0.0	171.4	-	136.0	103.0	103.0	0.0	117.4	-	114.0	-	229.0	0.0	288.8	-	126.1
House Connection	unit	-	16,000	0	15,931	-	99.6	34,000	9,350	0	11,505	33.8	123.0	-	25,350	0	27,436	-	108.2
ND Connection	unit	-	60	0	148	-	246.7	-	0	0	0.0	-	0.0	-	60	0	148	-	246.7
STP	unit	-	1	0	1	-	100.0	1	0	0	0.0	0.0	0.0	-	1	0	1	-	100.0
Vacuum Truck	unit	-	1	0	1	-	100.0	10	1	0	1.0	10.0	100.0	-	2	0	2	-	100.0
Submersible Pump	unit	-	0	0	0	-	0.0	-	0	0	0.0	-	0.0	-	0	0	0	-	0.0
Solid Waste Management and Drainage																			
SWFDS	ha.	-	4.0	1.9	4.0	-	67.8	-	10.0	0.0	7.6	-	76.0	-	14.0	1.9	11.6	-	73.0
Transfer Depot	unit	-	0	0	0	-	0.0	-	0.0	0.0	0.0	-	0.0	-	0	0	0	-	0.0
Dump Truck	unit	-	8	0	8	-	100.0	33	3.0	0.0	3.0	9.1	100.0	-	11	0	11	-	100.0
Arm Roll Truck	unit	-	3	0	3	-	100.0	9	7.0	0.0	7.0	77.8	100.0	-	10	0	10	-	100.0
Container	unit	-	19	0	19	-	100.0	34	23.0	0.0	23.0	67.6	100.0	-	42	0	42	-	100.0
Bulldozer	unit	-	0	1	0	-	0.0	-	0.0	1.0	1.0	-	100.0	-	0	2	1	-	50.0
Loader	unit	-	1	0	1	-	100.0	-	0.0	0.0	0.0	-	0.0	-	1	0	1	-	100.0
Composter	unit	-	0	0	0	-	0.0	-	0.0	0.0	0.0	-	0.0	-	0	0	0	-	0.0
Excavator	unit	-	1	0	1	-	100.0	-	1.0	0.0	1.0	-	100.0	-	2	0	2	-	100.0
Light Truck	unit	-	0	0	0	-	0.0	-	0.0	0.0	0.0	-	0.0	-	0	0	0	-	0.0
Mini Truck	unit	-	0	0	0	-	0.0	-	0.0	0.0	0.0	-	0.0	-	0	0	0	-	0.0
Hand Carts	unit	-	0	0	0	-	0.0	150	0.0	0.0	0.0	0.0	0.0	-	0	0	0	-	0.0
Backhoe	unit	-	0	0	0	-	0.0	-	0.0	0.0	0.0	-	0.0	-	0	0	0	-	0.0
Drainage CW	km	-	21.6	1.5	23.1	-	100.0	68	23.5	0.0	23.5	34.5	100.0	-	45.1	1.5	46.6	-	100.0
Kampung Improvement Program/Market Infrastructure Improvement Project																			
KIP (location)	unit	-	6	0	6	-	100.0	-	11.0	0.0	11.0	-	100.0	-	17	0	17	-	100.0
KIP (area)	ha.	-	27.4	0.0	27.4	-	100.0	70.0	91.0	0.0	91.0	130.0	100.0	-	118.4	0.0	118.4	-	100.0
MIIP (location)	unit	-	0	0	0	-	0.0	-	1.0	0.0	1.0	-	100.0	-	1	0	1	-	100.0
MIIP (area)	ha.	-	0.0	0.0	0.0	-	0.0	15.0	3.0	0.0	3.0	20.0	100.0	-	3.0	0.0	3.0	-	100.0

=not available/calculated, appr=appraisal, ha=hectare, km=kilometer, l/s=liters per second, ND=nondomestic, Prog=program, STP= sludge treatment plant, Supp=supplement

SWFDS=solid waste final disposal site, WTP=water treatment plant

Sources: ADB RRP and PCR on Loan 1511-INO.

Metro Botabek	Prog Appr	SPAR		Actual	Achieved (%)	
		Revised	Supp.		vs Prog	vs SPAR
Urban Road and Bus Terminal (BT)						
Civil Works	km	-	250.8	14.7	265.2	99.9
BT (location)	unit	-	2	0	2	100.0
BT (area)	ha.	-	0.0	0.0	0.0	0.0
Water Supply and Sanitation						
WTP	l/sec	-	630.0	50.0	680.0	100.0
Reservoir	m3	-	8,700.0	750.0	9,450.0	100.0
Transmission Pipe	km	-	21.3	0.0	21.4	100.5
Distribution Pipe	km	-	237.9	0.0	247.9	104.2
Reticulation	km	-	1,074.8	0.0	484.8	45.1
House Connection	unit	-	64,521	5,500	41,786	59.7
ND Connection	unit	-	1,585	0	368	23.2
STP	unit	-	4	0	4	100.0
Vacuum Truck	unit	-	16	0	9	56.3
Submersible Pump	unit	-	4	0	4	100.0
Solid Waste Management and Drainage						
SWFDS	ha.	-	33.8	1.9	32.2	90.2
Transfer Depot	unit	-	0	0	0	0.0
Dump Truck	unit	-	29	0	30	103.4
Arm Roll Truck	unit	-	19	0	16	84.2
Container	unit	-	98	0	81	82.7
Bulldozer	unit	-	3	2	4	80.0
Loader	unit	-	4	2	3	50.0
Composter	unit	-	0	0	0	0.0
Excavator	unit	-	3	2	3	60.0
Light Truck	unit	-	0	0	0	0.0
Mini Truck	unit	-	2	2	0	0.0
Hand Carts	unit	-	0	0	0	0.0
Backhoe	unit	-	0	0	0	0.0
Drainage CW	km	-	116.0	1.5	117.5	100.0
Kampung Improvement Program/Market Infrastructure Improvement Project						
KIP (location)	unit	-	50.0	0.0	40.0	80.0
KIP (area)	ha.	-	262.8	0.0	452.6	172.3
MIIP (location)	unit	-	10.0	0.0	10.0	100.0
MIIP (area)	ha.	-	49.3	0.0	49.3	100.0

=not available/calculated, appr=appraisal, ha=hectare, km=kilometer, l/s=liters per second, ND=nondomestic, Prog=program, SPAR=subproject appraisal, STP=sludge treatment plant, supp=supplement, SWFDS=solid waste final disposal site, WTP=water treatment plant

Sources: ADB RRP and PCR on Loan 1511-INO.

Table A2.3: Urban Road Component: Project Achievements

	Loan 1077-INO: Botabek UDP	Loan 1511-INO: Metro Botabek UDP	Total
Bekasi (km)	66.7	97.5	164.2
Bogor (km)	45.2	52.9	98.1
Tangerang (km)	84.9	114.8	199.7
Total project (km)	196.8	265.2	462.0
Capital Cost for Urban Road Component (\$ million)	19.5 ^a	26.3	45.8
Cost per kilometer (\$)	\$9,900	\$9,900	\$9,900

Km = kilometer, UDP = urban development project.

^a Cost at appraisal.

Source: Project documents for Loans 1077-INO and 1511-INO.

PROJECT FACILITIES DURING INDEPENDENT EVALUATION MISSION VISITS

(1) Tangerang City

Bajuceper Water Treatment Plant



Long-distance bus terminal



(2) Tangerang Kabupaten

**Pasir Muncang Final Disposal Site
(Closed due to bad odor and complaints from residents)**



Sepatan Sewage Treatment Plant



(3) Bekasi City

Local Government Water Supply



**New Clean Development Mechanism
Component in Sumur Batu
Final dump site**



(4) Bekasi Kabupaten

Urban roads expansion funded under the project



(5) Depok City

**Kampung Improvement Project (KIP)
neighborhood area**



Clogged drain in the KIP area



**Local market under the market infrastructure
improvement program (Pasar Agung)**



Cipayung Final Disposal Site Leachate



SUMMARY OF BENEFIT MONITORING AND EVALUATION RESULTS

A. Overview of BME Approach and Outputs

1. A team of consultants carried out benefit monitoring evaluation (BME) starting in March 2001.¹ Working with local government (LG) officials, the consultants collected baseline data, developed the system, and implemented it with continuous monthly survey updates. The methodology applied was the Analytic Hierarchy Process often used by Bintek/ Directorate-General of Urban and Rural Development to monitor and evaluate projects. This rigorous methodology is in a software package that quantitatively monitors project benefits on the basis of:

- (i) level of service: measures the degree to which construction of the project facility achieved the targeted;
- (ii) use of service: measures the degree to which use of the facility achieved what was planned; and
- (iii) impact of service: gives a preliminary evaluation of impacts of the improvements.

2. For each of the three elements, basic indicators were established, and parameters within each indicator helped determine quantitative measures. Weights were then fixed so that cumulative scores could be calculated for each sector and *kota/kabupaten* (city/district).

3. On the basis of the methodology, benefits from level of service, use of service, and impact of service can be quantified to yield a composite or overall benefit score for each discrete project and thus for each sector and *kota/kabupaten*. The scores provide a useful comparison of the benefits by sector and by *kota/kabupaten* over time in the project.

4. Evaluation of the three elements will yield a value of the benefit achieved on the developed infrastructure, as described by the following categories:

0 % - ≤ 25 %	= Not Beneficial
> 25 % - ≤ 50 %	= Low Benefit
> 50 % - ≤ 75 %	= Medium Benefit
> 75 % - ≤ 100 %	= High Benefit
> 100 %	= More Benefit

5. The presentation in the following sections provide analytical summaries of BME results, by sector.

¹ This appendix is an excerpt from the BME report commissioned by the government using ADB loan proceeds. Ministry of Settlements and Regional Infrastructure (DGURD). September 2003. *Final Report. Volume VI. Lessons Learnt from M-Botabek Project and Recommendations for Future Urban Development in Jabodetek* (Main Report). Jakarta.

B. Concluding Comments Regarding BME Approval and Results

1. Positive Contributions from the BME Approach and Results

6. The BME approach/methodology (Analytical Hierarchy Process) allows for rigorous tracking of project benefits with the use of a series of indicators and parameters set for each sector. The benefits are monitored and updated monthly so that progress by implementation agencies can be studied.

7. The results can be used to compare either the same benefits in one sector among LGs, or the extent of benefits among sectors in one LG. The comparisons will enable managers at all levels to pinpoint where implementation problems arise, and provide the opportunity to inform PIU staff and make corrections in the field.

8. Table A4 summarizes the composite BME scores (results) by sector and LG. At a composite level, the results are as follows:

(i) By *Kota/Kabupaten* (City/District)

Despite the relatively slow implementation progress of sanitation (IPLT) and drainage, Kota Bekasi ranked first in composite score because of success on roads and small water supply program. *Kabupaten Bekasi* ranked second. Kota Depok was lowest, primarily due to disappointing results in the water supply and sanitation sectors. *Kabupaten Tangerang* was the next lowest because of poor implementation progress and quality of the sanitation ponds (*Tempat Pembuangan Akhir*) as well as late completion of drainage works. *Kabupaten Bogor* and *Kota Tangerang* ranked third and fourth, respectively.

(ii) By Sector

KIP's composite BME score ranked highest even exceeding 100% because level of service ranked second. Its scores were very high except in *Kabupaten Tangerang*.

Water supply ranked lowest among all sectors, especially due to the late and disappointing results from private sector participation (PSP) in Kota Depok and others. Sanitation and water management was second lowest because of problems with completion of TPAs in Depok and Kota and *Kabupaten Tangerang*.

Table A4: Summary of BME Scores by Sector and Local Government

	Kab. Bogor (%)	Kota Depok (%)	Kab. Tangerang (%)	Kota Tangerang (%)	Kab. Bekasi (%)	Kota Bekasi (%)	Com-posite (%)	Rank
Water supply								
• Level of service	40.1	23.0	92.4	66.0	135.4	90.7	74.9	
• Use of service	100.0	33.3	92.2	66.5	-27.1	74.6	57.0	
• Impact of service	79.3	80.0	23.7	79.0	82.4	82.4	67.3	
Overall benefit	72.3	44.3	75.2	69.1	61.2	82.6	65.6	7
SWM								
• Level of service	45.6	53.7	31.1	52.3	41.9	68.8	48.9	
• Use of service	66.6	72.4	71.6	91.3	86.8	66.8	75.9	
• Impact of service	93.7	83.5	111.6	35.3	110.2	84.6	86.5	
Overall benefit	65.6	68.2	66.4	62.7	75.8	72.0	69.2	6
Sanitation								
• Level of service	–	42.2	72.5	74.0	91.2	92.5	74.5	
• Use of service	–	7.9	77.2	69.1	85.7	28.9	53.8	
• Impact of service	–	87.6	72.6	100.0	100.0	79.7	88.0	
Overall benefit	–	40.7	74.3	78.7	91.3	65.4	71.3	4
Urban Roads								
• Level of service	93.0	83.0	81.3	80.5	89.0	84.0	85.1	
• Use of service	55.0	80.0	63.5	64.5	83.5	76.0	70.4	
• Impact of service	100.0	100.6	82.9	81.6	85.4	111.7	93.7	
Overall benefit	80.5	86.3	75.0	74.8	86.0	87.9	81.5	3
Drainage								
• Level of service	119.4	100.0	64.9	92.6	95.6	51.8	87.4	
• Use of service	100.0	100.0	65.7	92.7	93.8	88.6	90.1	
• Impact of service	97.6	97.9	101.6	102.2	99.0	95.7	99.0	
Overall benefit	106.7	99.5	74.4	95.0	95.8	76.6	86.2	2
KIP								
• Level of service	143.8	84.9	110.3	274.7	104.9	77.6	132.7	
• Use of service	98.0	100.0	65.9	75.6	85.5	100.0	87.5	
• Impact of service	96.9	86.5	101.4	106.5	106.2	100.0	99.6	
Overall benefit	114.9	91.0	91.4	158.0	97.9	91.6	109.7	1
MIIP								
• Level of service	–	60.4	–	54.3	104.8	–	73.2	
• Use of service	–	62.0	–	80.0	44.0	–	62.0	
• Impact of service	–	78.6	–	81.3	75.0	–	78.3	
Overall benefit	–	65.5	–	70.7	74.6	–	70.1	5
Bus Terminals								
• Level of service	(BME analysis was not applied)							
• Use of service	(BME analysis was not applied)							
• Impact of service	(BME analysis was not applied)							
Overall benefit	(BME analysis was not applied)							
Composite	76.8	71.1	74.1	76.7	79.2	79.7	76.3	
Rank	3	6	5	4	2	1		

BME = benefit monitoring and evaluation, Kab = *kabupaten* (district), KIP = Kampung Improvement Program, Kota = city, MIIP = Market Infrastructure Improvement Program, SWM = solid waste management.

Source: Independent Evaluation Mission findings.

2. General Limitations of BME Approach and Results

9. Perhaps the chief limitation of the BME approach is that, in terms of level and use of service, the quantitative monitoring indicators measure achievements or benefits against planned targets set for the project. However, if these targets are in some way inadequate (or wrong), and thus do not fully consider present and future problems and "needs," the approach does not account for that shortcoming.

10. For example, the Metro BOTABEK project KIP, which has been criticized for its conventional approach, ranked first among sectors in BME scores. Also, the project's drainage sector program, which showed clear shortcomings during the 2002 flood, received the second highest BME scores.

11. The second limitation of the BME system relates to indicators used to measure the impact of service. Impact evaluation is in fact a complex science, and evaluation is generally begun only after a program has been implemented and output indicators from the program are monitored.

12. Outcomes or effects of a specific program then become impacts, which can be either short-term or long-term. However, we should be cautious in measuring impacts while a project is still running. Another difficulty is "spuriousness," that is, the problem of determining to what extent specific impacts are derived from a particular program as opposed to other factors. For example, how can we determine the environmental impacts of the Metro BOTABEK project in view of many other activities taking place?

13. The third and final limitation of the BME system applied to the project relates to its meaning or use for key LG decision makers and planners responsible for programming future infrastructure investments. Specifically, the issue can be posed as follows: how can this complicated BME assessment system help decision makers and planners determine priorities for new projects, either within a single sector or among sectors? Somehow there is a need to cut through all the numbers to determine directions for future urban development policies and programs.

STATUS OF COMPLIANCE WITH LOAN COVENANTS

Covenant	At Project Completion	At Independent Evaluation
<p>No withdrawal may be made from the Loan Account for items of expenditure under a subproject (i) if such subproject does not meet the criteria agreed between the Borrower and ADB; (ii) if the environmental assessment procedures required in para. 20 of Schedule 5 to this Loan Agreement have not been complied with, or (iii) for items of expenditure to be financed under a subsidiary loan agreement, until such subsidiary loan agreement, satisfactory to ADB, shall have been concluded and furnished to ADB.</p>	<p>Partly complied with. IEE/EIA for 18 programs have been approved by local/ provincial environmental agency. IEE/EIA being prepared for approval for the only program with adverse environmental impact. Four out of eight SLAs have been approved; four others were replaced by DAU or PAD. Two new SLA have been approved.</p>	<p>Partly complied with.</p>
<p>The Borrower shall make available and shall cause DGRD and the project implementing agencies concerned, to make available, the funds, facilities, services, land and other resources required, in addition to the proceeds of the Loan, for the carrying out of the project and for the O&M of the project.</p>	<p>Partly complied with. Shortage of local government funds contributed to delays and cancellation of parts of the project.</p>	<p>Partly complied with.</p>
<p>Competent and qualified consultants and contractors shall be employed in carrying out the project.</p>	<p>Complied with.</p>	<p>Complied with.</p>
<p>The project shall be carried out in accordance with plans, design standards, specifications, work schedules and construction methods acceptable to the Borrower and ADB. The Borrower shall furnish ADB such plans, design standards specifications and work schedules.</p>	<p>Complied with.</p>	<p>Complied with.</p>
<p>The Borrower shall ensure that the activities of its departments and agencies are conducted and coordinated in accordance with sound administrative policies and procedures.</p>	<p>Partly complied with. Some construction started before ADB approval was received.</p>	<p>Partly complied with.</p>
<p>The Borrower shall make arrangements for insurance of the project's facilities.</p>	<p>Complied with.</p>	<p>Complied with.</p>
<p>The Borrower shall maintain records and accounts to identify the goods and services and other items of expenditure financed out of the proceeds of the Loan, to disclose the use in the project, to record the progress of the project and to reflect the operation of project facilities.</p>	<p>Complied with.</p>	<p>Complied with.</p>
<p>The Borrower shall furnish ADB all reports and information concerning (i) the Loan, and the expenditure of the proceeds and maintenance of the services; (ii) the goods and services and other items or expenditure financed out of the proceeds of the Loan; (iii) the project; (iv) any Subproject; (v) the agencies of the Borrower responsible for carrying out</p>	<p>Complied with.</p>	<p>Complied with.</p>

Covenant	At Project Completion	At Independent Evaluation
the project and operation of the project facilities; (vi) financial and economic condition in the territory of the Borrower and the international balance-of-payments position of the Borrower; and (vii) any other matters relating to the purposes of the Loan.		
DGURD shall furnish to ADB consolidated quarterly reports on the carrying out of the project and on the operation and management of the project facilities. Such consolidated reports shall indicate, among other things, progress made and problems encountered during the quarter under review, steps taken or proposed to be taken to remedy these problems, and proposed program of activities and expected progress during the following quarter.	Complied with.	Complied with.
Promptly after physical completion of the project, and not later than 3 months thereafter, DGURD shall prepare and furnish to ADB a report on the execution and initial operation of the project, including its cost, performance by the Borrower of its obligations under the Loan Agreement and the accomplishment of the purposes of the Loan.	Complied with.	Complied with.
The Borrower shall ensure that the project facilities are operated, maintained and repaired in accordance with sound administrative, financial, engineering, environmental, urban development, public utilities and maintenance and operational practices.	Partially complied with. Some facilities have not been completed yet: (i) Balaraja reservoir (<i>Kab. Tangerang</i>) is not equipped with generator set; (ii) Pasir Muncang TPA (<i>Kab. Tangerang</i>) is not equipped with leachate circulation pump; and (iii) transmission and distribution network for Ciledug reservoir (<i>Kota Tangerang</i>) has not been developed.	Partly complied with. Transmission and distribution network for Ciledug reservoir (<i>Kota Tangerang</i>) has not been developed due to right-of way issues, while the Balaraja reservoir (<i>Kab. Tangerang</i>) is reportedly still not equipped with a generator set.
BAPPENAS shall provide policy coordination among MSRI, MOHARA, MOF, and other relevant government agencies.	Complied with.	Complied with.
DGURD shall be the project Executing Agency, responsible for overall technical supervision, management, and monitoring of the project and shall ensure that the project Implementing Agencies perform their respective roles in an adequate manner.	Complied with.	Complied with.
DGURD shall be (i) responsible for monitoring project implementation, including services, in coordination with BAPPENAS; (ii) responsible for the coordination	Complied with.	Complied with.

Covenant	At Project Completion	At Independent Evaluation
and approval, jointly with the relevant national government agencies and BAPPEDA I, of the SPARs; and (iii) oversee and prepare all Project related accounting and auditing activities and monitor disbursements of proceeds of the Loan.		
The DGPARA and DGRD within MOHARA shall assist with the overall administrative and institutional development direction for the provincial government of West Java and the local governments. DGPARA shall oversee the institutional development of PDAMs and other local enterprises.	Complied with. Special services for RIAP and LIDAP consultancies were adjusted to accommodate new needs like financial management assistance to PDAM and reduction of UFW for PDAM.	Complied with.
PUCF shall be established in the province of West Java within 1 month of the Effective Date to provide guidance on policy and institutional development and overall coordination for appraisal of Subprojects. The PUCF shall be chaired by the head of BAPPEDA 1 of the province of West Java.	Complied with.	Complied with.
The BAPPEDA 1 of the province of West Java shall provide guidance, assistance, and coordination to the local governments with respect to Subproject planning, programming, and budgeting.	Complied with.	Complied with.
The SETWILDA of the province of West Java shall be responsible for monitoring the LIDAPs and RIAPs under the project.	Complied with. Special services for RIAP and LIDAP consultancies were adjusted to accommodate new needs such as financial management assistance to PDAM, and reduction of UFW for PDAM following national standard for local government autonomy.	Complied with.
A PMU shall be established in the province of West Java within 1 month of the Effective Date. Under the guidance of DGRD, the PMU shall (i) prepare overall project implementation plan and consolidated annual work plan, (ii) assist local governments and PDAMs to prepare SPARs as required, (iii) advise on terms of reference for consultants to the local governments and PDAMs, (iv) oversee institutional financial development of the local governments and PDAMs, (iv) facilitate project coordination, vertically and horizontally, (vi) assist local governments and PDAMs with procurement, (vii) organize BME activities, and (viii) undertake preparation of the project completion report.	Complied with.	Complied with.
A LUCF shall be established within 1 month of the Effective Date or such later date as shall be agreed by the Borrower and ADB, in each local government, and shall be chaired by the head of the relevant	Complied with.	Complied with.

Covenant	At Project Completion	At Independent Evaluation
BAPPEDA II (local planning board). LUCFs shall be responsible for overall coordination of the preparation and implementation of the Subproject in their respective areas.		
Each local government shall establish and maintain a PIU within DPUK with an adequate number of suitably qualified staff. PIUs shall prepare SPARs and the various plans required under the project, and assist in the preparation of feasibility studies and project designs.	Complied with. Not all PIUs are under DPUK, such as PIU Kota Depok, <i>Kab. Tangerang</i> , <i>Kab. Bogor</i> , and Kota Bekasi, which are under BAPPEDA II and PIU Kota Tangerang.	Complied with.
Each local government shall appoint qualified project managers within the relevant local government agencies and PDAMs to implement respective project investments, including procurement activities and construction supervision.	Complied with.	Complied with.
The BAPPEDA II of each local government shall be responsible for Subproject planning, programming, and budgeting.	Complied with.	Complied with.
The SETWILDAS of each local government shall be responsible for the implementation of the respective RIAPs/LIDAPs under the project.	Not complied with. RIAP and LIDAP technical assistance will not be implemented. These were changed to FMA and UFW to PDAMs, under Dinas Tarkim West Java province.	Not complied with.
Subprojects shall be identified and selected in accordance with the agreed criteria to include the following: (i) technical design standards, requiring each investment to be technically viable and employ appropriate technology; (ii) economic standards, requiring non-revenue-generating investments to be economically viable; and (iii) financial standards requiring revenue-generating to be financially viable. Subprojects shall be designed to be within the financial capability of the local governments and PDAMs. The debt service for each local government and PDAMs shall not be less than 1.5 and 1.3, respectively.	Complied with. ADB criteria used in the preparation of revised/new SPAR.	Complied with.
A FIRR shall be calculated in constant prices for investments in the water supply and bus terminal components. If the FIRR is less than 7% for any investment, an EIRR or a socioeconomic justification shall be prepared for such an investment. EIRRs shall also be calculated for all investments in the roads and bridges, drainage, kampung improvement, and market infrastructure improvement components estimated to cost more than \$400,000 equivalent	Complied with. ADB criteria used in the preparation of revised/new SPAR.	Complied with.

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<p>each; for such investments, the EIRR shall not be less than the economic cost of capital of the Borrower. Estimated costs and revenues per unit of service of potential investments in the solid waste and sanitation components shall be compared to facilitate privatization and selection.</p>		
<p>Each local government shall prepare a five-year indicative program of investments, supported by RIAPs/LIDAPs/CPs. Based on the indicative program, each local government and PDAM shall prepare an annual work plan comprising (i) all investments determined to be feasible for implementation during the forthcoming year, and (ii) all investments determined to require further consideration during the forthcoming year. The annual work plan shall be provided by each local government and PDAM to the PMU and then to DGURD, for review and approval, and forwarded to ADB for review.</p>	<p>Complied with. RIAPs and LIDAPs changed to FMA and UFW reduction assistance to PDAMs.</p>	<p>Complied with.</p>
<p>Each local government and PDAM shall update its respective annual work plan and provide this to PMU and then to DGURD.</p>	<p>Complied with. Annual report plans were accommodated in revised SPAR (October 2002).</p>	<p>Complied with.</p>
<p>LIDAPs, RIAPs, and CPs shall be updated from time to time as required to confirm their institutional feasibility. Subprojects requiring particular institutional provisions, such as for improved operations (solid waste), water loss reduction (water supply) or tariff increases, the updated LIDAPs, RIAPs and CPs shall be reviewed and approved by the LUCF and PUCF.</p>	<p>Complied with. LIDAP and RIAP were changed to FMA and UFW reduction for PDAM.</p>	<p>Complied with.</p>
<p>On the basis of the annual work plan, the relevant BAPPEDA II shall prepare the Subproject for the review of the relevant <i>Bupati</i> (Mayor) through the LUCF. If a feasibility study is required, it shall be conducted by consultants for the local government or PDAM under the guidance of DPUK. The terms of reference of the feasibility study shall be provided to DPUK for review, and progress reports shall be provided for information. The report of the feasibility study shall be provided to DPUK for its review.</p>	<p>Complied with.</p>	<p>Complied with.</p>
<p>If a Subproject is considered suitable for further processing, the PUCF team shall help (i) make any adjustment required, (ii) finalize cost estimates, financial plan and implementation arrangements and justification, and (iii) prepare the SPAR (full SPAR for Subprojects estimated to cost more than \$10 million equivalent and a summary SPAR for other Subprojects). The SPAR shall be submitted in parallel to the LUCF and the PUCF. After approval from the LUCF and the PUCF, the SPAR shall be forwarded to</p>	<p>Complied with.</p>	<p>Complied with.</p>

Covenant	At Project Completion	At Independent Evaluation
DGURD for review and approval. After approval by DGURD, full SPARs shall be sent to be Bank for review and approval and summary SPARs shall be sent to ADB for review.		
Each of the Subprojects shall be implemented using appropriate technology that promotes economic and efficient delivery of services in accordance with the needs of the beneficiaries and their capacity to carry out the necessary O&M. The local governments shall implement a program to monitor discharges and to enforce applicable regulations against polluters in the sanitation and solid waste components. A community-based approach shall be used for the <i>kampung</i> improvement and market infrastructure improvement components.	Complied with. O&M have been realized. Increase of distribution through the implementation of local government regulation (<i>perda</i>) on tariff has been performed by local governments under the approval of the local legislative.	Complied with.
The Borrower shall ensure that (i) the special account and the expenditures liquidated under the SOE procedures are audited, and (ii) the opinion of the auditors relating thereto is included in the auditor's reports required pursuant to Section 4.06 (b) of the Loan Agreement.	Complied with.	Complied with.
The Borrower shall ensure that all necessary budget requests are submitted and all necessary budget approvals are issued in sufficient time to avoid delays in Subproject implementation. The Borrower shall cause the provincial government of West Java and the local governments to provide their respective counterpart financing in a timely manner. The borrower shall review the provisions for the project in the annual budgets of the participating entities and ensure that suitable adjustments are promptly made.	Partly complied with. Shortage of local government funds has contributed to delays and cancellation of parts of the project.	Partly complied with.
SLAs shall carry standard terms and conditions acceptable to ADB, including the prevailing terms of MOF loans for urban sector projects. The Borrower shall bear the foreign exchange risk.	Complied with. But only 4 of 18 SLAs have been approved. The four others were replaced by DAU or PAD.	Complied with.
The financing plan of a Subproject for the local governments and PDAMs shall depend upon (i) the specific investments and components that are proposed, and (ii) the financial resources of the implementing entity. All the proceeds of the Loan made available to PDAMs shall be in the form of loans.	Complied with. PDAMs were provided grants except for the costs of reticulation and house connections, which were funded by PDAM and the private sector.	Complied with.
Grants shall be provided for (i) social and nonrevenue- earning investments, including solid waste and sanitation disposal sites, and (ii) institutional development and preparation of master plans and feasibility studies. Loans shall be provided	Complied with. All project packages were directed based on these financing criteria.	Complied with – no SLA on lending for SWM components.

Covenant	At Project Completion	At Independent Evaluation
for revenue-earning investments, including water supply, solid waste, sanitation collection facilities, and bus terminal. The roads and bridges and drainage components shall be financed partly by loans and partly by grants.		
The equity contribution of each local government and PDAM in any Subproject shall range between 25–40% of the estimated cost of such subproject.	Complied with. After revised SPAR for completion of work, financing contribution from local governments and PDAM is 39.1% in accordance with the Loan Agreement.	Complied with.
If involuntary resettlement is required in connection with the project, the Borrower shall ensure that the responsible agency prepares a resettlement plan, in consultation with the affected community, providing inter alia for suitable compensation and assistance in resettlement. Such resettlement plan shall be submitted to ADB for its review and approval as part of the related SPAR.	Complied with.	Complied with.
The Borrower shall ensure that the identification, preparation, and implementation of Subprojects reflect environmental and social concerns, and shall take steps to alleviate negative environmental or social effects. IEEs shall be prepared for all Subprojects and EIAs shall be prepared for each Subproject with a substantial adverse environmental impact. Any recommendation made in an EIA requiring mitigating measures, design changes, or monitoring systems shall be incorporated in the subproject design. The Environmental Impact Management Commission of the provincial government of West Java or of MPW shall approve the EIAs before disbursement may be permitted. Each IEE and EIA prepared shall be promptly submitted to ADB for its review.	Partly complied with. IEE/EIA for 18 programs have been approved by local/provincial environmental agency.	Partly complied with.
The LUCF of each local government shall meet at least twice a year. In the preparation of Subprojects, the relevant local government shall consult with concerned community leaders and ensure that community-based organizations and informal groups are encouraged to participate in the planning, construction, O&M of the project facilities.	Complied with. Training of trainers in the local community is performed although implementation is not followed by intensive monitoring from central government.	Complied with.
Each PIU shall develop and implement a coordinated public information campaign to enhance the beneficial impact of the project.	Complied with.	Complied with.
The Borrower shall ensure that social dimensions are incorporated in the preparation of each Subproject.	Partly complied with. Public acceptance problem experienced with sanitation program (IPLT Bantar Gebang,	Partly complied with. Objection by local people to the project

Covenant	At Project Completion	At Independent Evaluation
	Kota Bekasi).	facilities faded after the start of operations.
The Borrower shall ensure that the kampung improvement component shall be implemented through a community-based approach so that each participating community will plan and carry out its own improvements.	Complied with. KIP-CBD approach has enhanced community involvement.	Complied with.
The Borrower shall review the opportunities and proposed arrangements for private sector participation in the provision of urban services in the project Area and facilitate partnerships between the public and private sectors in providing such services. The Borrower shall keep ADB informed of progress in accomplishing such partnership.	Complied with. PSP in water supply, solid waste, and sanitation are now in various stages of development.	Complied with.
The respective PDAMs shall prepare budgets and undertake responsibility for O&M of water supply systems, piped sewage collection, and treatment provided or improved under the project, and levying and collecting water charges.	Complied with. PSP fund also used for O&M.	Complied with.
The local governments shall prepare budgets and undertake responsibility for O&M of the project facilities for drainage, solid waste, sanitation, kampong improvement, market infrastructure improvement and urban roads, and levying and collecting charges, fees and tariffs.	Partly complied with. Some previously constructed drain sections not maintained.	Partly complied with.
The local governments shall encourage the relevant communities to assist with O&M of the <i>kampung</i> improvement and market infrastructure improvement investments provided under the project.	Complied with. Training of trainers for local government in public campaign conducted for KIP and MIIP O&M.	Complied with.
The LIDAPs and RIAPs shall include the following measures: (i) steps will be taken to improve municipal accounting systems by (a) improving financial management of municipal services, including segregation of revenues and expenditures of each municipal service provided, and (b) strengthening the municipal management information system; (ii) tariffs and fees for sanitation services and solid waste will be set at levels high enough to cover the aggregate of estimated operating cost and debt service; (iii) steps will be taken to increase revenue from tariffs, property taxes and local taxes through regular property revaluation and tariff reviews and improved collection; and (iv) encourage community and private sector participation.	Complied with. LIDAP and RIAP technical assistance changed to FMA and UFW reduction for PDAM.	Complied with.
The CPs shall include the following features: (i)	Complied with.	Complied with.

Covenant	At Project Completion	At Independent Evaluation
statement of the corporate goal operational strategy, administrative support, financial plan management, policy on private sector participation and resource mobilization; (ii) regular reviews and adjustments of tariffs to levels high enough to cover (a) the aggregate of operation costs and either depreciation or debt service, whichever is higher and (b) at least 25% of incremental development expenditures (tariffs should be affordable to low-income consumers); (iii) improvement of bill collection efficiency, including write-offs of bad debts, and reduction of accounts receivable to not more than 3 months billings by 31 December 1998; (iv) implementation of an annual program to change UFW at a minimum of either a 20% reduction over a 5 year period from Subproject appraisal or the accomplishment of the 30% target of REPELITA VI; and (v) establishment or improvement of a properly staffed and financed leakage control division within each PDAM to implement a program of leakage reduction, meter recalibration, repairs, detection and reduction of illegal connections.	Terms of reference revised to focus on financial management assistance to PDAMs, implemented by FMA and UFW consultants.	
The Borrower shall cause all participating PDAMs to (i) introduce and maintain tariff systems that ensure full cost recovery at or above the marginal cost of water from households using large volumes of water, industrial and commercial users; and (ii) encourage low-income households to seek water connections by taking account of the capacity to pay when setting connection fees and establishing an installment system for payment of such fees.	Complied with.	Being complied with.
The Borrower shall ensure that a comprehensive program acceptable to ADB is implemented to monitor and evaluate the technical performance and social and economic benefits of the project.	Complied with. The consultant's monitoring and evaluation work finalized in September 2003.	Complied with.
Annual reports shall be furnished to ADB through DGURD throughout the project implementation period.	Complied with.	Complied with.
The Borrower and ADB shall actively consult each other on a regular basis regarding the progress in implementation of REPELITA VI and REPELITA VII as they apply to the urban sector. The Borrower shall keep ADB informed about finalization and implementation of the proposed Urban Policy Action Plans for REPELITA VI and REPELITA VII.	Complied with.	Complied with.

ADB = Asian Development Bank, BAPPEDA = provincial/local planning board, BAPPENAS = national development planning agency, BME = benefit monitoring and evaluation, CBD = community-based development, CP = corporate plans, DAU = *Dana Alokasi Umum* (general budgetary allocation), DGPARA = Directorate General of Public Administration and Regional Autonomy, DGRD = Directorate General for Regional Development, DGURD = Directorate General of Urban and Rural Development, DPUK = Office of Public Works, EIA = environmental impact assessment, EIRR = economic internal rate of

return, FDS = final disposal site, FIRR = financial internal rate of return, FMA = financial management assistance, IEE = initial environmental examination, IPLT = sludge processing plant, LIDAP = local institutional development action plan, LUCF = local urban development coordination forum, MOF = Ministry of Finance, MOHARA = Ministry of Home and Regional Affairs, MPW = Ministry of Public Works, MSRI = Ministry of Settlement and Regional Infrastructure, O&M = operation and maintenance, PAD = *Pendapatan Asli Daerah* (local revenue), PDAM = local government water supply enterprise, PIU = project implementation unit, PMU = project management unit, PSP = private sector participation, PUCF = provincial urban development coordination forum, REPELITA = *Rencana Pembangunan Lima Tahun* (5-year development plan), RIAP = revenue improvement action plan, SETWILDA = *Sekretariat Wilayah Daerah* (regional secretary), SLA = subsidiary loan agreement, SOE = statement of expenditure, SPAR = subproject appraisal report, TPA = final solid waste disposal site, UFW = unaccounted-for water.

Source: Asian Development Bank.

OVERALL PERFORMANCE ASSESSMENT

Table A6.1: Rating Matrix of Core Evaluation Criteria

Criterion	Weight (%)	Definition	Rating Description	Rating Value
1. Relevance	20	Relevance is the consistency of a project's impact and outcome with the government's development strategy, the Asian Development Bank's (ADB) lending strategy for the country, and ADB's strategic objectives at the time of approval and evaluation and the adequacy of the design.	Highly relevant Relevant Partly relevant Irrelevant	3 2 1 0
2. Effectiveness	30	Effectiveness describes the extent to which the outcome, as specified in the design and monitoring framework, either as agreed upon at approval or as subsequently modified, has been achieved.	Highly effective Effective Less effective Ineffective	3 2 1 0
3. Efficiency	30	Efficiency describes, ex post, how economically resources have been converted to results, using the economic internal rate of return, or cost-effectiveness, of the investment or other indicators as a measure and the resilience to risk of the net benefit flows over time.	Highly efficient Efficient Less efficient Inefficient	3 2 1 0
4. Sustainability	20	Sustainability considers the likelihood that human, institutional, financial, and other resources are sufficient to maintain the outcome over its economic life.	Most likely Likely Less likely Unlikely	3 2 1 0
Overall Assessment (weighted average of above criteria)		Highly Successful: Overall weighted average is greater than or equal to 2.7. Successful: Overall weighted average is greater than or equal to 1.6 and less than 2.7. Partly Successful: Overall weighted average is greater than or equal to 0.8 and less than 1.6. Unsuccessful: Overall weighted average is less than 0.8.		

Source: ADB. 2006. *Guidelines for Preparing Performance Evaluation Reports for Public Sector Operations*. Manila.

Table A6.2 Assessment of Metro BOTABEK Overall Performance

Criterion	Weight (%)	Assessment	Rating Value	Weighted Rating
Relevance	20	Partly Relevant	1	0.2
Effectiveness	30	Less Effective	1	0.3
Efficiency	30	Efficient	2	0.6
Sustainability	20	Less Likely	1	0.2
Overall Rating		Partly Successful		1.3

ECONOMIC REEVALUATION

A. Background and Methodology

1. The economic analysis of the project was prepared in accordance with the Asian Development Bank's (ADB) *Guidelines for the Economic Analysis of Water Supply Projects* and the *Handbook for the Economic Analysis of Water Supply Projects*. Financial prices were valued at their economic prices by applying the world price numeraire. The shadow price adjustment factors used are

- (i) Shadow exchange rate factor (SERF) = 1.111
- (ii) Standard conversion factor = 0.900
- (iii) Unskilled labor = 0.80
- (iv) Skilled labor = 1.00

2. The main economic benefit is the incremental benefits due to more water being produced and distributed by the Perusahaan Daerah Air Minum (PDAM) or local government water supply enterprises, and therefore available to domestic consumers. As in the project completion report (PCR), it is estimated that "incremental" or increased consumption generated by the additional supply of water is some 15% of the total water sold. But because the water supplied by the PDAMs is not potable, the majority of the consumers (93% on average) either boil their drinking water or buy it from vendors in 5-gallon (19 liters) containers. Since the socioeconomic survey carried out as part of the Independent Evaluation Mission (IEM) (see Appendix 10 for details) was implemented in the areas already served by networks financed by the project, the amount of drinking water consumed (from 5% to 12% of total consumption) and the price paid per container were considered part of total incremental water.

B. Water Supply Components

3. Table A7.1 gives a summary of the works implemented in the water supply sector under the project. Figures in the latest subproject appraisal report (SPAR) are compared with the amounts actually achieved. According to IEM analysis, only some 14.5% of the total works in the water supply sector envisaged at appraisal were actually financed, the lowest among the project components.

Table A7.1: Summary of Achievements of Water Supply Components

Works	Unit	SPAR Revised	SPAR Supplement	Actual	Achieved (%) vs SPAR
WTP	l/s	630.0	50.0	680.0	100.0
Reservoir	m ³	8,700.0	750.0	9,450.0	100.0
Transmission Pipe	km	21.3	0.0	21.4	100.5
Distribution Pipe	km	237.9	0.0	247.9	104.2
Reticulation	km	1,074.8	0.0	484.8	45.1
House Connections	unit	64,521.0	5,500.0	41,786.0	59.7
Nondomestic Connections	unit	1,585.0	0.0	368.0	23.2

l/sec = liters per second, m³ = cubic meter, SPAR = subproject appraisal report, WTP = water treatment plants.

Source: ADB operations project file documents and IEM mission findings.

4. Although this low percentage is largely due to the necessary cutbacks by ADB and the government of Indonesia due to the Asian financial crisis, the proportion of water infrastructure financed by the project is sometimes only a small percentage of the total production capacity of the respective PDAMs, either at the time of project processing or at the time of the IEM. Due largely to the extraordinary growth of the Metro BOTABEK area and investment by local governments and

other aid agencies, all PDAMs are now producing water in tens of millions of cm³ per year, far more than the capacity supplied by the project. For example, in Bekasi province, the project financed a total production capacity of 50 liters/second (l/s) versus an existing capacity in 1997 of 514 l/s for Bekasi district. At present, the total production capacity for Bekasi district is 680 l/s, a 32% increase. In addition, production capacity in Bekasi city was 2,080 l/s in 2008, of which only 100 l/s was provided by the project. The following economic analysis must therefore be viewed in this context. Since it was impossible for the financial staff of each PDAM to supply financial data for only the project components, the data utilized to calculate the economic internal rate of return (EIRR) was performed for the total PDAM.¹

C. Economic Benefits

5. The major economic benefits of the project include (i) the total increase in the amount of water supplied to local consumers, as evidenced by the total number of water treatment plants, reservoirs, and domestic connections provided; and (ii) the reduction in nonrevenue water (NRW), especially in PDAMs of Tangerang city and Tangerang district. Reduction in NRW was used to define the price of water per m³ with the project. In addition, another benefit identified, but not quantified, is the savings in medical costs and time due to the reduced morbidity rate from waterborne diseases. The latter is evident in responses to the IEM socioeconomic survey where an average of 96.5% of the subjects, including those in the control city of Bogor (98%), responded that, in the previous year, they did not have any illness related to the water supply. In previous ADB and World Bank projects, land and house prices, especially in *kampungs*, have been known to increase with the installation of water networks. However, the networks have usually been in combination with improved footpaths, drainage, public toilets/baths, and the local government's awarding of land tenure to the inhabitants.

6. Incremental benefits of increased water consumption were valued according to the results of the project's socioeconomic survey in the three project cities of Bekasi, Tangerang, and Depok as well as areas adjacent to the districts of Bekasi and Tangerang. Bogor city, where there was no project activity, was selected as the control city for the survey. The survey used willingness-to-pay (WTP) techniques in estimating incremental benefits. WTP, however, depends to a great extent on the difference in the water resources in each of the four cities. That in turn affects the demand for piped water connections and therefore the operations of their respective PDAMs. While Bogor and Depok have considerable² groundwater resources, the low-lying coastal cities of Bekasi and Tangerang have little if any such resources. Thus, many consumers in Bogor and Depok rely on boreholes or wells, while in Bekasi and Tangerang, there is a greater demand for the PDAMs' services. In addition, field investigations found that Depok city does not produce its own water but buys it in bulk from the Bogor PDAM at Cibinong and treats it at two separate plants at Citayam and Legong. Hence, economic investigations were carried out for the four PDAMs that participated in the project, i.e., Tangerang city, Bekasi district (including a portion of Bekasi City), Tangerang district (branch PDAM at Tigarska), and Bogor District (which supplies Depok). The differences among the PDAMs at the end of 2008 as well as the respective WTPs are shown in Table A7.2.

¹ This is with the exception of the branch PDAM at Tigarska in Tangerang district, which provides for only some 4% of the total district population.

² According to officials at the Bogor/Cibinong PDAM, the groundwater contains some iron and sulphur manganese, and the well water is not too "good" in Depok.

Table A7.2: PDAM Characteristics

City/District	No. of Connections	Amount of Water Sold (m ³)	NRW (%)			WTP (Rp/ m ³)	
			2002	2008	(% change)	Tariff	WTP
Tangerang City	16,774	8,218,517	21.33	19.33	(9.4)	2,400	2,510
Bekasi District	134,275	32,207,574	39.39	36.62	(7.0)	2,913	6,355
Tangerang District	5,500	2,309,295	32.50	21.60	(33.5)	2,400	2,510
Bogor District (2007)	110,448	32,907,000	40.12	34.54	(13.9)	2,340	1,693

m³ = cubic meter, PDAM = Perusahaan Daerah Air Minum (local government water supply enterprise), Rp = rupiah, WTP = willingness to pay.

Source: Independent evaluation mission findings.

7. Substantial differences in PDAM activities can be seen in Table A7.2 with the Bekasi and Bogor PDAMs carrying out major operations for large numbers of consumers (connections should be multiplied by 5 to 6 for the total number of people served). However, the Tangerang district PDAM has by far the largest decrease in NRW, followed by Bogor. In both cases, the decrease is largely due to (i) "zoning isolation" or creation of district metering areas, (ii) upgrading of the standard of house connections, (iii) meter replacements, (iv) firing of employees for illegal connections, (v) competition among branches, and (vi) in the case of Bogor, holding of training sessions for smaller PDAMs.

8. According to the survey, WTP for additional drinking water was strong in Bekasi, Rp6,355 per m³ vs a present tariff of Rp2,913 per m³. The lower WTP than the existing tariff in Bogor may be explained by the fact that, due to plentiful sources of groundwater, most families have their own boreholes or wells and do not wish to pay a tariff for piped water that is higher than what they presently pay. The resulting EIRRs are compared with those in the PCR in Table A7.3 and Tables A7.4-7.7.

Table A7.3: Economic Internal Rate of Return

City/District	EIRR		Comments
	PCR	PPER	
Tangerang City	33.4%	20.7%	No tariff increase for some time.
Bekasi District	28.5%	44.5%	High WTP; substantial increase in production capacity
Tangerang District	19.9%	24.5%	Reduction in NRW and increase in net income
Bogor District	20.5%	27.4%	56.4% in average tariff in 2006 plus large production capacity

EIRR = economic internal rate of return, PCR = project completion report, PPER = project performance evaluation report, UFW = unaccounted-for water, WTP = willingness to pay.

Source: Project PCR and independent evaluation mission findings.

9. With the exception of the Tangerang city PDAM, which has not had a tariff increase for some time, the EIRRs in the project performance evaluation report (PPER) are more robust than those at the time of the PCR. All EIRRs exceed the assumed economic opportunity cost of capital (EOCC) of 12%. At the time of the PCR, the project, while finished, was not entirely complete. Several reticulation networks had to be completed along with the accompanying house connections. However, perhaps the major factor is the maturation of the PDAMs over the past 4 years, not only in the population served but also in increased total production capacity, which is

some 17% in Tangerang city and over 0% in Bekasi district. Also, as mentioned above, except for the PDAM branch in Tangerang district, the project components were not a major part of the overall operations of the respective PDAMs. However, the project investment did serve to catalyze PDAM operations, expanding their connections by some 42,000, or over 250,000 people, and encouraging them to streamline their operations by focusing on reducing unaccounted-for water (UFW).

D. Urban Roads Component

10. The economic reevaluation of the urban roads component reviewed³ the sample of roads covered at project completion review.⁴ There were two types of work, namely, road improvement (or enhancement of alignment) and road widening including additional lanes. The analyses followed the approach and methodology used at the time of subproject appraisal and project completion. This economic analysis draws from an economic model developed at subproject appraisal. The IEM noted that vehicle operating cost (VOC) benefits were re-estimated during the revision of the subproject appraisal reports (SPARs) before the final approval. Road works were completed within the year when construction started. Benefits comprised mainly savings in VOCs. Using the same initial traffic volume as in the original subproject appraisal, traffic growth is estimated to range from 12% to 15% per year after the first year of operation. Estimated traffic growth is 12% per year in Depok city, and the districts of Tangerang, Bekasi, and Bogor. Traffic is estimated to have grown by 15% per year in the cities of Tangerang and Bekasi. An economic life of 5 years is assumed for road betterment and 10 years for road widening. Routine maintenance is assumed at 1.5% of total investment cost while periodic maintenance costs are 30% of total investment cost every 4 years.

Table A7.4: Summary of Economic Analysis, Depok City and Bogor District

Road	Works			SPAR	PPER	Remarks
1. Jalan Nangewer-Cimandala, Bogor District	B	Length	km	4.00	1.63	Recalculated EIRR is below the SPAR target and EOCC. The subproject EIRR is considered <i>inefficient</i> . Realized benefits were relatively small compared to the actual capital cost. For example, actual road length from which benefits are drawn was reduced from 4 km to 1.63 km.
		Capital Cost	Rp million	771.00	186.64	
		Cost per km	Rp	192.75	114.50	
		EIRR	%	19.80	4.55	
2. Jalan Karang-Tengah-Limoh, Depok City	B	Length	km	6.00	5.05	Recalculated EIRR met the SPAR target. Actual cost of works per kilometer was 68% of SAP target. Overall, the subproject is considered <i>highly efficient</i> .
		Capital Cost	Rp million	3,960.00	2,279.00	
		Cost per km	Rp	660.00	451.29	
		EIRR	%	17.10	30.61	
3. Jalan Margonda Raya, Depok City	W	Length	km	5.00	2.50	Recalculated EIRR met the SPAR target. Situated in the city center, this main road has been continually widened to avoid congestion. Based on a 17 second observation (peak hour) of vehicle flow, the IEM estimated one-way traffic at around 138 vehicles per minute, mainly motorcycles and light vehicles. Benefits
		Capital Cost	Rp million	4,500.00	4,326.00	
		Cost per km	Rp	900.00	1,730.00	
		EIRR	%	20.80	23.57	

³ The PPER findings are based mainly on secondary data (i.e., traffic, etc.) and augmented by rapid field observations during the Independent Evaluation Mission's short visit in the BOTABEK area. The results should be interpreted with caution and cannot be generalized, bearing in mind the need for updated traffic surveys and vehicle cost data for the sample roads.

⁴ These consisted of two types of works namely road improvement or enhancement of alignment and road widening including additional strips.

Road	Works			SPAR	PPER	Remarks
						from this significant traffic base offset a net increase of 92% in actual cost of works per kilometer. The subproject is rated <i>highly efficient</i> .

B=betterment, EIRR=economic internal rate of return, EOCC=economic opportunity cost of capital, IEM=Independent Evaluation Mission, km=kilometer, PPER=project performance evaluation report, SPAR= subproject appraisal report, W=widening.

Sources: ADB project files and Independent evaluation mission estimates.

11. The urban road component is considered *efficient* on the high side.⁵ This is largely explained by the recalculated EIRRs of 11 road sections (from 14 reviewed) ranging from 13.8% to 32.8%. Subproject EIRRs in nine sections fall in the *highly efficient* category.⁶ Traffic on the project roads appears to generally meet or exceed appraisal targets. The recalculations reveal that net benefits generally met the associated capital costs. Two factors detract from a higher overall performance for the urban roads. First, the EIRRs of three of the study roads are below the Asian Development Bank's 12% EOCC (i.e., between 4.5% and 11.5%). Second, the recalculated EIRRs were generally found to be less than the subproject appraisal (SAP) estimates (i.e., only five generally met or were close to their SAP targets). Key developments since SAP, which influenced these observations, relate to (i) higher than expected investment costs required;⁷ (ii) changes in the length of road works, mostly reductions;⁸ and (iii) "without project" original SAP conditions being more optimistic than those in the "without project" revised SAP and project completion report (PCR) conditions due to delays.

12. The results of the economic analyses are summarized in Tables A7.5–A7.7. Table A7.8 gives the sensitivity analysis. Base case results show that the recalculated EIRRs are between 5% and 31% for road betterment works and between 17% and 33% for road widening. Given the higher than expected investments required per kilometer, the level of realized benefits is critical. If benefits were 10% lower than the base case assumptions, the EIRRs for road betterment will range from –0.2% to 25% and those for widening from 15% to 29%.

Table A7.5: Summary of Economic Analysis, Tangerang District

Road	Works			SPAR	PPER	Remarks
1. Jalan Serua–Dukuh Ciater, Tangerang District	B	Length	km	5.20	3.00	Recalculated EIRR is below the SPAR target and EOCC. The subproject EIRR is considered <i>less efficient</i> with realized benefits comparatively less than actual capital costs. Actual road works were shortened by 2.2 km to 3.0 km even as actual capital costs remained slightly above target.
		Capital Cost	Rp million	614.00	634.00	
		Cost per km	Rp	118.08	211.33	
		EIRR	%	24.70	11.50	
2. Jalan Kp Utan –Pd Betung Tangerang District	B	Length	km	6.50	3.75	Recalculated EIRR is below the SPAR target and EOCC. The subproject is considered <i>inefficient</i> with realized benefits comparatively less than the amount of
		Capital Cost	Rp million	872.00	1,717.00	
		Cost per	Rp	134.15	457.87	

⁵ Due to constraints in time and resources, the analysis is based on observations of four locations. PCR-related data and updated traffic counts were not available.

⁶ Subproject EIRR results were as follows: 9 highly efficient (64.3%), 2 efficient (14.3%), 1 less efficient (7.1%), and 2 inefficient (14.3%).

⁷ The investment costs per kilometer increased in 10 of the roads reviewed. Physical implementation of the project was delayed. Most of the roads have deteriorated badly since minimal budget, if any, was allocated by local governments (thinking that the project would soon rehabilitate the road).

⁸ The actual length of road works was reduced in eight roads. Five of the eight had higher than expected capital costs.

Road	Works			SPAR	PPER	Remarks
		km				investments. Actual capital costs increased by 97% although actual road works completed were shorter by 42% at 3.75 km.
		EIRR	%	26.50	5.15	
3. Jalan Balkaraja-Ceplak Tangerang District	B	Length	km	5.90	5.00	Recalculated EIRR is generally in line with the SAP target. The subproject is considered <i>highly efficient</i> . Although actual road works completed were 0.9 km short, the capital cost per km was only about three fourths of SPAR estimates.
		Capital Cost	Rp million	1,956.00	1,225.00	
		Cost per km	Rp	331.53	245.00	
		EIRR	%	25.10	22.71	

B = betterment, EIRR = economic internal rate of return, EOCC = economic opportunity cost of capital, km = kilometer, PPER = project performance evaluation report, SPAR = subproject appraisal report.

Sources: ADB project files and Independent evaluation mission estimates.

Table A7.6: Summary of Economic Analysis, Tangerang City

Road	Works			SPAR	PPER	Remarks
1. Jl. KHA. Dahlan, TC	B	Length	km	3.00	3.55	Recalculated EIRR is below the SAP target. Realized economic benefits were comparatively lower than the amount of actual investments. The subproject EIRR is still considered <i>highly efficient</i> .
		Capital Cost	Rp million	490.00	459.50	
		Cost per km	Rp	163.33	129.44	
		EIRR	%	48.60	19.61	
2. Jl. KH Ashary	W	Length	km	6.00	3.95	Recalculated EIRR is generally in line with the SAP target. The subproject is considered <i>highly efficient</i> . Located in an established commercial/residential area, the road was observed to have a heavy traffic of motorcycles and light vehicles. Based on a 66 vehicle count from a 30-second observation of midday vehicle flow, traffic observed is in line with estimated ADT capacity for the road at appraisal.
		Capital Cost	Rp million	5,432.00	4,917.50	
		Cost per km	Rp	905.33	1,244.94	
		EIRR	%	30.08	27.12	
3. Jl. Teuku Umar, TC	W	Length	km	2.00	1.80	Recalculated EIRR met the SAP target. The subproject is considered <i>highly efficient</i> . Despite a shorter road, realized benefits offset a 22% increase in actual investment cost per kilometer.
		Capital Cost	Rp million	1,540.00	1,691.60	
		Cost per km	Rp	770.00	939.78	
		EIRR	%	22.90	29.60	

ADT= average daily traffic, B = betterment, EIRR = economic internal rate of return, km = kilometer, PPER = project performance evaluation report, SPAR = subproject appraisal report, TC = Tangerang City, W=widening.

Sources: ADB project files and independent evaluation mission estimates.

Table A7.7: Summary of Economic Analysis, Bekasi District and Bekasi City

Road	Works			SPAR	PPER	Remarks
1. Jalan Pilar-Sukatani (HOS Cokraminoto), Bekasi District	B	Length	km	5.00	11.05	Recalculated EIRR is below the SAP target. Realized benefits are less than incremental investments. Actual road length increased by 121% to 11.05 km. On the other hand, actual cost per km increased by 258%. Overall, the subproject is considered <i>efficient</i> .
		Capital Cost	Rp million	869.00	6,880.00	
		Cost per km	Rp	173.80	622.62	
		EIRR	%	39.50	13.82	
2. Jl. Raya Serang-	W	Length	km	5.00	19.66	Recalculated EIRR is below the

Road	Works			SPAR	PPER	Remarks
Tegal Danas, Bekasi District		Capital Cost	Rp million	5,683.00	12,303.00	SPAR target. Actual completed road works increased by 293% to 19.7 km. At the same time, capital cost per km is only 55% of SPAR estimate. The subproject is considered <i>highly efficient</i> .
		Cost per km	Rp	1,136.60	625.79	
		EIRR	%	42.90	32.82	
3. Jl. Kartini, Bekasi City	W	Length	km	2.10	2.47	Recalculated EIRR is below the SPAR target. Capital cost per kilometer increased by 264% due to a 310% increase in the amount of actual capital cost. The subproject is rated <i>efficient</i> .
		Capital Cost	Rp million	1,644.00	5,103.61	
		Cost per km	Rp	782.86	2,066.24	
		EIRR	%	41.40	17.38	
4. Jalan Pd. Kopi-Pasar Kranji, Bekasi City	W	Length	km	3.50	3.50	Recalculated EIRR is below the SPAR target. Realized benefits were less than actual investments made. Actual capital cost was about 38% higher than SPAR estimates. The subproject is considered <i>highly efficient</i> .
		Capital Cost	Rp million	1,121.00	1,548.18	
		Cost per km	Rp	320.29	442.34	
		EIRR	%	44.20	22.93	
5. Jalan Kalimalang, Bekasi City	W	Length	km	6.00	10.50	Recalculated EIRR is below the SPAR target. Realized benefits are less than incremental investments made. Actual road works completed increased by 75% to 10.5 km. The actual capital cost per km increased by 252%. Overall, the subproject is considered <i>highly efficient</i> .
		Capital Cost	Rp million	1,569.00	6,930.40	
		Cost per km	Rp	261.50	660.04	
		EIRR	%	45.30	24.51	

B = betterment, EIRR = economic internal rate of return, km = kilometer, PPER = project performance evaluation report, SPAR = subproject appraisal report, W = widening.

Sources: ADB project files and independent evaluation mission estimates.

Table A7.8: Sensitivity Analysis of Economic Internal Rate of Return (%)

Road Section	Works Done	PCR	Base Case	Benefits 10% Lower	O&M 10% Higher	Combined
1. Jalan (Jl.) Nangewer-Cimandala, Bogor District	B	2.2	4.6	-0.2	4.3	-0.5
2. Jl. Karang-Tengah-Limoh, Depok City	B	56.2	30.6	24.6	30.4	24.4
3. Jalan Serua-Dukuh Ciater, Tangerang District	B	19.8	11.5	6.7	11.4	6.5
4. Jalan Kp Utan-Pd Betung Tangerang District	B	17.3	5.2	0.7	4.9	0.4
5. Jalan Balkaraja-Ceplak Tangerang District	B	19.6	22.7	16.8	22.5	16.5
6. Jl. KHA. Dahlan, TC	B	13.7	19.6	14.0	19.4	13.7
7. Jalan Pilar-Sukatani (HOS Cokraminoto), Bekasi District	B	26.7	13.8	8.5	13.6	8.2
1. Jalan Margonda Raya, Depok City	W	33.1	23.6	21.2	23.4	21.1
2. Jl. KH Ashary	W	47.6	27.1	24.3	27.0	24.2
3. Jl. Teuku Umar, TC	W	25.2	29.6	27.1	29.5	27.0
4. Jl. Raya Serang-Tegal Danas, Bekasi District	W	38.4	32.8	29.4	33.2	29.8
5. Jl. Kartini, Bekasi City	W	26.4	17.4	14.7	16.9	14.2
6. Jalan Pd. Kopi-Pasar Kranji, Bekasi City	W	24.6	22.9	20.4	23.1	20.5
7. Jalan Kalimalang, Bekasi City	W	52.7	24.5	21.9	24.1	21.4

FINANCIAL REEVALUATION

A. Background and Methodology

1. The financial assessment for the project evaluation used the Asian Development Bank (ADB) guidelines¹ in preparing the financial assessment for the project appraisal and project completion report (PCR) phases. Because most of the project's physical works were completed by September 2003, full operation had gone on for about 5.5 years before the Independent Evaluation Mission (IEM) for the project performance evaluation report (PPER). The physical component of the project comprises the construction of some 8 water treatment plants, 7 reservoirs; laying out of 21.4 kilometers (km) of transmission pipe, 248 km of distribution pipe, 485 km of reticulation pipe; and connection of 41,786 houses and 386 nondomestic establishments. The financial analysis was conducted at the level of the water supply entity, or PDAM. The sanitary component, which had very limited revenue-generating capacity, was not included in the financial analysis. In addition, it came under a different service department in the local government.

2. Financial revenues for each PDAM included net water sales revenue, nonwater revenue, and allowances for bad debt, while costs included capital costs, production and distribution (operation and maintenance [O&M]) costs, and general and administration (G&A) costs. Except for the Tangerang district PDAM, where costs and revenues began in 2004, all costs and revenues are in current rupiah (Rp) beginning in 1998/99 when capital construction began. Since the ADB-financed works were only a small portion of existing PDAM operations, it was assumed that project-financed water supply components would not deteriorate by a certain date. It was found that the ADB-financed components were integral parts of the expanded works of each PDAM and in general were well-maintained. As stated in the economic analysis (Appendix 7) and in the main paper, total capital costs for the project-financed water supply were \$10.4 million, or some 14.5% of the appraisal target. Although water supply had the smallest achievement percentage among the components, it accounted for the second largest share (32.1%) of the final project cost after urban roads (40.2%).

B. Financial Analysis of the Subprojects

3. **Tariffs.** Due to the size and variation of the clients served, PDAM tariffs are listed by type of client, i.e., residential, commercial, industrial, social, and, in the case of Tangerang city, the international airport. Residential tariffs are set out based on house size in square meters (m²) and three to four categories of consumption in cubic meters (m³) per month, i.e., 0–10 m³, 11–20 m³, 21–30 m³, and over 30 m³. The residences involved in the socioeconomic survey were categorized as "simple" housing (24 m²–45 m²) and middle-income housing (45 m²–70m²). However, PDAM revenues are largely based on average tariffs due to the large volumes supplied to industry and the airport (Tangerang). Table A8.1 compares the household tariffs (21 m³–30 m³/month, 45 m²–70 m²) and the PDAM average (or industrial) tariffs in December 2008.

¹ ADB. 2005. *Financial Management and Analysis of Projects*. Manila.

Table A8.1: Existing PDAM Water Tariff Rates (Household and Average)

City/District PDAM	Household Tariff (Rp/m ³)	Average Tariff (Rp/m ³)
Tangerang City	4,591	6,502 (industry) 5,500 (international airport)
Bekasi District	3,565	2,800 (average) 6,555 (industry)
Tangerang District	4,210/5,100 (new tariff)	3,701 (average) 7,000/8,050 (business)
Bogor District (2007)	3,840	2,867 (average) 6,260 (industry)
Depok Sales Office	2,700	4,550 (industry)

m³ = cubic meter, PDAM = *Perusahaan daerah air minum* (local government water supply enterprise),
RP = rupiah

Source: Independent evaluation mission findings.

4. Except in Depok, household tariffs are fairly consistent. The major revenue earners are water supplied to large houses, industry, and the Tangerang airport, while water supplied to smaller houses (categories 1 and 2) and social institutions (schools, hospitals, etc.) incur losses. For example, 60% of the Tangerang district PDAM's bulk water delivered to Jakarta had about 12% unaccounted-for water (UFW) vs about 32% UFW when delivered to households. Having had no tariff increase for 5 years (since 2003), the Tangerang district PDAM received an average 22% tariff increase for all clients as of April 2009. Due to professional management and technical assistance from Holland to reduce UFW, the Tangerang district PDAM has gone from a Rp9.7 billion loss in 2005 to a Rp18.0 billion profit in 2008. However, at Rp1,200,000 per household (payable in 5 to 6 installments), connection charges remain high, discouraging new connections, especially among lower income families and those in Bogor district where groundwater is plentiful.

5. **Affordability of Tariffs.** The socioeconomic survey conducted for the PPER shows that the ratio of monthly water bills ranges from 1.6% (Depok) to 6.1% (Tangerang city) as a percentage of household income. Except in Tangerang city, all ratios were well below the international norm of 4% of income. However, when monthly expenditures on water are taken as a percentage of household expenses, the range varies from 4.3% in Bogor district to 6.7% in Tangerang city, all of which are above the international norm. The lowest tariffs per m³ of water are in Depok (Table 8.1), which does not produce its own water.

6. **Weighted Average Cost of Capital.** Although some 53% of the final project cost of \$74.6 million was financed by ADB, there were only two subloans; one to the Tangerang city PDAM and one to the Bogor district PDAM. Both were signed in September 2002 with payments of principal from 2004 to 2018. At the time, the central Government (Ministry of Finance and BAPPENAS) felt that the two other PDAMs, i.e., Bekasi district and Tangerang district, already had heavy loan burdens.

7. Based on a funding ratio for revenue-generating projects, a weighting of ADB-to- Borrower financing of 24% to 76% was calculated. Table A8.2 shows that the reestimated weighted average cost of capital (WACC) is 4.47%.

Table A8.2; Weighted Average Cost of Capital (WACC)

Item	ADB	Borrower	Total
Amount (\$000)	5.30	16.45	21.75
Weighting	24.4%	75.60%	100.00
Nominal Cost	6.0	6.00	
Tax Rate		30.00%	
Tax-Adjusted Nominal Cost	6.0	4.20	
Inflation Rate	1.0%	6.00%	
Real Cost	5.9	3.90	
Minimum Rate Test (H=4%)	5.9	4.00	
Weighted Component of WACC	1.45	3.03	
WACC (Real)	4.47		4.47

8. **Financial Internal Rate of Return (FIRR).** The resulting FIRRs for the PPER and those calculated for the PCR are compared in Table A8.3. Except in the Bekasi district PDAM, all FIRRs are substantially higher than the WACCs of 7.0% for the PCR and 4.5% for the PPER. This result is largely due to the stronger revenues and resulting net profits than was the case in the respective PDAMs shortly after the project ended 5 years ago.

Table A8.3: Financial Internal Rate of Return (%)

Location	FIRR		Remark
	PCR	PPER	
Tangerang City	16.8	23.1	
Bekasi District	14.2	11.4	Continuing high UFW at nearly 40% since the project
Tangerang District	9.4	14.5	
Bogor District	7.9	19.1	

FIRR = financial internal rate of return, PCR = project completion report, PPER = project performance evaluation report, UFW = unaccounted-for water.

Source: Project completion report and independent evaluation mission findings.

C. Financial Assessment of Water Supply Companies

1. Tangerang City PDAM

9. Since 2003, i.e., the end of the project, the Tangerang city PDAM has been doing well with a rapid, annual 33.4% growth in net income based on a 26.1% annual growth in gross revenues, 96% of which was from water sales (Tables A8.4 and A8.5)). Hence, in 2008, net income was a healthy 22% of revenues. The Tangerang city PDAM is also one of the two subject PDAMs that borrowed a subloan project investment. However, at 0.021 the debt coverage service ratio (DCSR) is minimal. At the end of 2008, the PDAM had some 16,774 connections, a 75% increase (9.8% per year) since the end of the project. However, with a service population of only 104,596 out of 1.616 million in the city, service coverage remained small at 6.5%. Two of the reasons usually given for such a low figure are the high connection costs of Rp1.2 million as well as the fact that the PDAM has a guaranteed bulk-market with the international airport and the adjacent industries. In the past 10 years, however, PDAM staff per 1,000 connections has declined from 39 to 9 in 2008 (or 111 per staff member).²

² A ratio of more than 100 connections per staff member is considered efficient.

2. Bekasi District PDAM

10. Second only to the Bogor district PDAM, the Bekasi district PDAM realized Rp112 million in revenue in 2008 (more than twice as much as the Tangerang city PDAM), 93% of which is from water sales. It is also the healthiest financially among the subject PDAMs. Since 2000, it incurred a net loss only in 2002 and has seen a growth in net income since that year. In 2008 net income was a high of 8.8% of revenues. At the end of 2008, the PDAM had some 134,275 connections, a 44% increase since 2003. With a service population of 805,650 out of 920,235 in the area, it has the highest coverage of 87.5%. However, of the total 3.4 million population in Bekasi district, service coverage is only some 23.6%. At 3.08 (vs 6.1 before the project) per 1,000 connections (or 325 per staff member), the PDAM has the lowest number of staff per 1,000 connections.

3. Tangerang District PDAM

11. Although the project invested in only one PDAM branch at Tigaraksa, the Tangerang district PDAM is probably one of the most interesting financially in that it has contracted a professional financial manager to turn the overall PDAM into a profitable organization. It seems he has succeeded in doing so, since net income has grown from a loss of Rp9.8 billion in 2005 to Rp7.0 billion (2006), Rp16.7 billion (2007), and Rp18.0 billion (2008). The high net income is largely due to reduction of UFW especially for bulk water sales, meter replacement, establishment of district metering areas, and punishment of illegal connections. As a result, net income as a percentage of revenue jumped from 2.9% in 2005 to 6.6% in 2008. In the Tigaraksa branch, however, the number of connections increased from only 5,500 after the project to 8,128 in 2008 for a service coverage of only 4.8%.

4. Bogor District PDAM

12. In 2008, the Bogor district PDAM had a total revenue of Rp125.7 million (93% of it from water sales), making it the largest financially of the four subject PDAMs (Table 8.4). However, with total operating expenses of Rp113.8 million, the net income-to-revenue ratio is only 7.1%. Nonetheless, the Bogor district PDAM is a leader in tracking UFW with a total decline of nearly 14% since the end of the project. Due partially to its large consumer base of 3.9 million, its service coverage ratio has remained somewhat constant at about 20%. Payments also seem up-to-date in that the number of disconnected customers is only some 5% of those metered. It was reported that after disconnection, payments for arrears are usually made within 1 month.

Table A8.4: PDAM Financial Characteristics
(Rupiah million)

City/District	Gross Revenue (1)	Operating Expenses (2)	Net Income (3)	% (3)/(1)	No. of Connections (4)	% Service Coverage (5)	Employees per 1,000 Connections (6)
Tangerang City	51,753	36,629	11,387	22.0	16,774	6.47	18
Bekasi District	112,027	103,749	9,809	8.8	134,275	23.6	3
Tangerang District ^a	272,391	259,953	18,000	6.6	8,128	4.8	2
Bogor District	125,691	113,786	8,984	7.1	116,269	20.7	6

^a For Tangerang district PDAM, columns 1-4 are for the total district, while columns 5-7 are for the Tigaraksa branch.

Source: Independent evaluation mission findings.

D. Financial Performance of Local Governments

13. Table A8.5 summarizes the financial performance of the project's participating local governments from 2003 to 2006. It is evident that "subsidies and grants" (income line no. 3) to local governments have been growing in the range of 9–19% per year. In 2006 they made up from 31% in Bekasi District, 33% in Tangerang District, and 57% in Bogor District of local government income. This is in spite of Government Decrees No. 22 and 25 of 1999, which provides for the devolution of government responsibility to the districts along with the necessary financial means. On the other hand, local government financing (income line no. 5) is mixed, with Tangerang district growing substantially from 2003 to 2006, while financing of other local governments is either weak or negative (Depok city). Obviously, the Asian financial crisis from 1997 to 1999 had an impact on the finances of the subject local governments. None of the BOTABEK local governments borrowed for project investment.

Table A8.5: Financial Performance of Local Governments
Summary of Consolidated Income Statements - FY2006, % Growth Rate FY2003–FY2006^a
(Rupiah million and percent)

Category	Bogor District		Depok City		Tangerang District		Tangerang City		Bekasi District		Bekasi City	
	2006 (Rp m)	% Growth 2003-06	2006 (Rp m)	% Growth 2003-06	2006 (Rp m)	% Growth 2003-06	2006 (Rp m)	% Growth 2003-06	2006 (Rp m)	% Growth 2003-06	2006 (Rp m)	% Growth 2003-06
A. Income												
1. Local Gov't	202,199	10.7	65,149	31.2	184,213	13.9	117,140	15.6	161,659	15.6	138,872	17.4
2. Taxes/Non-Taxes	145,947	5.7	83,511	5.5	244,469	3.4	182,096	6.5	209,045	2.0	257,511	15.9
3. Subsidies and Grants	829,610	17.4	320,565	15.2	520,896	12.3	301,737	17.5	303,234	9.3	427,840	18.6
4. Other Income	93,885	(0.6)	92,241	90.2	173,800	20.8	—	—	14,050	(45.6)	19,390	(17.1)
5. Local Gov't Financing	185,200	15.1	34,102	(11.9)	464,108	58.4	—	—	294,378	23.8	66,580	14.3
TOTAL INCOME	1,456,841	13.3	595,569	16.9	1,587,485	19.6	600,973	7.1	982,366	8.1	910,193	15.8
B. Expenditures												
1. Civil Servants	769,126	16.4	177,746	16.1	175,872	(12.5)	206,698	11.5	394,406	34.2	317,209	16.4
2. Public Services	605,618	24.4	403,599	16.3	710,664	6.5	632,242	20.3	665,774	13.8	564,653	18.0
3. Local Government	82,097	(25.6)	14,224	71.2	304,982	57.5	19,255	80.6	10,000	(60.4)	28,330	(12.1)
TOTAL EXPENDITURES	1,456,841	13.3	595,569	16.9	1,191,518	8.7	858,196	18.5	1,070,180	11.3	910,193	15.8
% Subsidies of Total Income (2003-06)	51.1 - 56.9		56.2 - 53.8		39.6 - 32.8		38.0 - 50.2		29.9 - 30.9		43.8 - 47.0	

— = not available

^a Performance budgeting took effect from FY2003.

ACHIEVEMENT OF MILLENNIUM DEVELOPMENT GOALS RELATED TO WATER SUPPLY AND SANITATION SECTOR

Table A9.1: Status of MDGs as Shown in Government Statistics

Indicator	1990	Present	Target	Remarks	Status
GOAL 4: REDUCING THE INFANT MORTALITY RATE					
Target 5: Reducing the mortality rate of children under five by two thirds between the period 1990–2015					
Under-five mortality rate (per 1,000 live births)	81	40	32	Decreasing	Likely to achieve
Infant mortality rate (per 1,000 live births)	57	32	19	Decreasing	Likely to achieve
Proportion of one-year-old children immunized against measles	44.5%	72%	(Indicator)	Increasing slowly	
Proportion of children aged 12-23 months who have been immunized against measles	57.5%	82%	(Indicator)	Increasing slowly	
Target 10: Reducing by half, the proportion of the population having no access to safe and sustainable drinking water sources and basic sanitation facilities by 2015					
Proportion of population with sustainable access to an improved water source, urban and rural	38.2%	52.1%	67.0%	Increasing	Likely to achieve
Coverage of pipeline water – urban		30.8%	67.7%	Decreasing	Needs improvement
Coverage of pipeline water – rural		9.0%	52.8%	Progressing slowly	Needs improvement
Protected water source – urban		87.6%	76.1%		Already achieved
Protected water source – rural		52.1%	65.5%	Progressing	Likely to achieve
Proportion of population with sustainable access to basic sanitation, urban, and rural	30.9%	68.0%	78.8%		Likely to achieve
Urban		81.8%	59.6%	Lack of quality	Already achieved
Rural		60.0%		Lack of quality	Already achieved

MDG = millennium development goal.

Source: Report on the Achievement of Millennium Development Goals Indonesia 2007, published by the United Nations and the National Development Planning Agency, Indonesia.

Table A9.2: Status of MDGs by Province, 1993–2006
(Goal 1: Eradicating Extreme Poverty and Hunger)

Code	Province	People Living in Poverty (%)			Malnutrition Children < 5 Years (%)		
		1993	2000	2006	1992	2000	2006
11	Aceh	13.46	29.83	28.70	39.34	38.63	
12	North Sumatra	12.31	13.00	14.31	35.39	26.48	28.65
13	West Sumatra	13.47	11.41	11.61	30.86	21.77	30.44
14	Riau	11.20	10.26	10.48	38.14	16.87	25.81
15	Jambi	13.38	21.03	10.00	24.65	26.66	24.27
16	South Sumatra	14.89	17.58	18.17	36.79	24.35	26.06
17	Bengkulu	13.11	17.72	20.90	26.36	15.13	26.55
18	Lampung	11.70	30.32	22.64	31.58	22.24	23.97
19	Riau Islands		21.55	10.16			25.74
20	Riau islands			7.21			27.47
31	Jakarta	5.65	4.96	4.52	27.45	19.87	22.34
32	West Java	12.20	15.45	12.05	34.04	21.43	22.00
33	Central Java	15.78	21.11	20.17	34.40	21.27	23.97
34	Yogyakarta	11.77	33.32	20.32	19.76	17.57	15.05
35	East Java	13.25	22.72	20.23	33.60	23.01	23.76
36	Banten		14.57	10.67			26.17
51	Bali	9.46	5.66	6.10	28.37	14.23	20.52
52	West Nusa Tenggara	19.52	28.01	23.04	42.41	27.25	33.39
53	East Nusa Tenggara	21.84	32.69	27.99	46.41	33.60	41.07
61	West Kalimantan	25.05	29.28	15.50	47.42	29.17	32.71
62	Central Kalimantan	20.85	11.86	9.17	38.54	30.20	27.38
63	South Kalimantan	18.61	12.97	7.66	38.75	29.24	35.78
64	East Kalimantan	13.75	16.15	12.55	29.63	22.88	25.92
71	North Sulawesi	11.79	8.28	14.51	24.84	22.44	23.11
72	Central Sulawesi	10.48	24.36	23.67	25.37	25.68	31.32
73	South Sulawesi	8.97	15.38	13.99	35.63	27.89	30.16
74	South-East Sulawesi	10.84	23.65	22.89	35.51	26.87	29.38
75	Gorontalo		24.04	31.54			41.48
76	West Sulawesi			18.64			
81	Maluku	23.93	34.80	30.12	38.57	26.04	33.66
82	North Maluku		14.03	10.11			27.30
94	Papua	24.16	45.96	39.26	29.50	30.14	31.21
95	West Irian Jaya			33.01			
	Indonesia	13.67	18.95	16.58	35.57	24.66	28.05

MDG = millennium development goal.

Source: Report on the Achievement of Millennium Development Goals Indonesia 2007, published by the United Nation and the National Development Planning Agency, Indonesia.

Table A9.3: Status of MDGs by Province, 1993–2006
(Goal 2: Achieving Universal Primary Education)

Code	Province	NER PS/MT (7–12 Years)			NER JHS/MT (13–15 Years)		
		(%)			(%)		
		1993	2000	2006	1992	2000	2006
11	Aceh	89.0		95.5	43.8		78.4
12	North Sumatra	89.0	94.2	94.0	56.4	67.2	73.1
13	West Sumatra	90.2	92.7	94.2	53.2	63.0	67.8
14	Riau	91.5	93.9	94.7	36.6	62.7	72.9
15	Jambi	85.9	92.8	94.4	34.6	56.5	65.3
16	South Sumatra	87.0	92.3	93.0	40.2	59.6	68.0
17	Bengkulu	88.1	91.5	93.9	43.8	57.3	66.7
18	Lampung	84.9	93.2	93.9	34.0	59.3	66.7
19	Bangka Belitung			91.5			55.3
20	Riau islands			93.7			72.0
31	Jakarta	94.2	91.4	90.8	69.2	77.0	71.4
32	West Java	87.9	92.7	94.2	35.3	57.7	62.1
33	Central Java	92.8	93.9	94.1	38.2	62.6	67.7
34	Yogyakarta	95.2	94.3	94.4	62.9	75.4	72.3
35	East Java	91.7	92.3	94.2	44.7	63.3	70.3
36	Banten			94.8			66.6
51	Bali	91.1	93.4	93.3	59.5	70.6	70.2
52	West Nusa Tenggara	80.0	89.9	94.5	38.9	58.2	69.6
53	East Nusa Tenggara	82.3	88.9	91.6	20.9	34.2	47.2
61	West Kalimantan	71.6	89.5	93.8	22.1	47.0	60.9
62	Central Kalimantan	93.3	94.3	96.0	39.7	60.7	67.7
63	South Kalimantan	90.4	92.4	93.3	33.3	51.8	62.1
64	East Kalimantan	90.2	91.4	92.9	51.6	60.4	64.0
71	North Sulawesi	89.0	90.4	90.4	46.8	63.1	66.0
72	Central Sulawesi	89.8	91.1	92.9	47.2	48.5	63.0
73	South Sulawesi	80.8	88.6	91.1	39.8	52.4	60.3
74	South-East Sulawesi	84.2	89.5	92.3	40.5	60.6	72.4
75	Gorontalo			90.5			52.3
76	West Sulawesi			91.7			55.2
81	Maluku	85.7		92.2	41.4		76.9
82	North Maluku			93.1			65.3
94	Papua	71.6	81.8	78.1	42.7	35.1	47.4
95	West Irian Jaya			88.2			53.9
	Indonesia	88.7	92.3	94.7	41.9	60.3	66.5

JHS = junior high school, MDG = millennium development goal, MT = Madrasah Tsanawiyah, NER = net enrollment ratio, PS = primary school.

Source: Report on the Achievement of Millennium Development Goals Indonesia 2007, published by the United Nations and the National Development Planning Agency, Indonesia.

Table A9.4: Status of MDGs by Province, 1993–2006
(Goal 3: Promoting Gender Equality and Empowering Women)

Code	Province	PS NER Ratio F/M			JHS NER Ratio F/M			Mean Ratio F/M
		1992	2000	2006	1992	2000	2006	Salary/Mo. (Rp)
								Feb 2007
11	Aceh	99.9		96.4	111.4		99.3	84.8
12	North Sumatra	99.5	99.5	98.5	99.4	102.3	101.3	76.4
13	West Sumatra	102.4	99.6	99.2	125.0	112.0	108.7	96.4
14	Riau	101.1	99.6	100.4	82.5	105.8	99.3	73.4
15	Jambi	101.5	100.6	98.8	81.0	101.6	102.7	75.8
16	South Sumatra	98.2	99.6	99.5	110.6	104.3	109.0	70.7
17	Bengkulu	101.5	99.3	99.7	89.0	105.3	97.3	92.6
18	Lampung	101.8	99.2	98.9	106.4	108.5	106.2	78.5
19	Bangka Belitung			99.0			97.6	69.8
20	Riau islands			99.8			101.4	80.4
31	Jakarta	99.0	100.4	96.5	100.2	94.4	90.7	80.0
32	West Java	101.9	100.7	100.8	94.9	103.6	93.8	78.9
33	Central Java	100.9	99.8	98.2	101.7	106.6	103.1	66.0
34	Yogyakarta	101.3	101.9	97.9	104.0	108.9	103.6	76.5
35	East Java	101.1	100.2	99.0	97.1	104.2	101.4	74.1
36	Banten			99.5			94.7	72.4
51	Bali	97.7	99.3	99.0	87.9	87.5	89.1	69.6
52	West Nusa Tenggara	97.4	103.9	101.3	98.8	98.5	96.4	68.1
53	East Nusa Tenggara	97.4	102.3	99.6	98.7	114.3	110.7	102.9
61	West Kalimantan	95.9	98.9	100.6	92.0	91.6	99.1	80.5
62	Central Kalimantan	98.5	101.1	99.9	95.9	104.2	102.4	78.8
63	South Kalimantan	96.3	100.7	100.2	91.3	107.4	97.6	74.9
64	East Kalimantan	95.5	101.5	98.4	107.2	94.3	100.2	56.4
71	North Sulawesi	105.6	100.8	99.5	123.8	104.9	109.5	110.2
72	Central Sulawesi	100.0	101.1	100.5	103.9	99.4	104.7	90.1
73	South Sulawesi	100.5	101.1	100.4	116.4	107.2	97.9	75.9
74	South-East Sulawesi	100.3	102.1	99.0	101.2	113.6	102.1	76.0
75	Gorontalo			101.4			148.3	115.6
76	West Sulawesi			100.6			111.0	78.6
81	Maluku	98.7		100.3	110.1		95.2	95.5
82	North Maluku			97.5			88.3	77.8
94	Papua	99.5	102.2	98.4	75.4	126.5	87.9	81.0
95	West Irian Jaya			99.3			102.1	72.4
	Indonesia	100.6	100.3	99.4	101.3	104.2	100.0	74.8

F = female, JHS = junior high school, M = male, MDG = millennium development goal, Mo = month, NER = net enrollment ratio, PS = primary school; Rp = rupiah.

Source: Report on the Achievement of Millennium Development Goals Indonesia 2007, published by the United Nations and the National Development Planning Agency, Indonesia.

Table A9.5: Status of MDGs by Province, 1993–2006
(Goals 4 and 6: Reducing Child Mortality and Combating HIV/AIDS, Malaria and Other Diseases)

Code	Province	IMR (Per 1,000 LB)		CMR (Per 1,000 LB)		AIDS Total Cases (People)	Malaria Total Cases (People)	Total Forest Area (ha)
		1994–2003	2005	1994–2003	2005	SEP 2007	2005	2005
11	Aceh		39		46	15	3,312	3,335,713
12	North Sumatra	42	26	57	32	416	11	3,742,120
13	West Sumatra	48	32	59	40	131	145	2,600,286
14	Riau	43	22	60	27	163	1,707	3,906,333
15	Jambi	41	32	51	40	96	4,305	2,179,440
16	South Sumatra	30	30	49	38	143	2,246	920,964
17	Bengkulu	53	36	68	45	23		4,399,837
18	Lampung	55	28	64	35	123	3,025	993,903
19	Bangka Belitung	43	24	47	28	65	5,378	657,510
20	Riau islands		19		22	238	6,140	
31	Jakarta	35	18	41	21	2,849		430
32	West Java	44	37	50	47	1,445	1,124	816,603
33	Central Java	36	24	44	28	369	1,966	647,133
34	Yogyakarta	20	19	23	22	102	175	16,820
35	East Java	43	32	52	40	1,043	1,822	1,357,206
36	Banten	38	35	56	45	43	21	201,787
51	Bali	14	25	19	31	628	76	127,271
52	West Nusa Tenggara	74	66	103	93	74	10,535	1,010,012
53	East Nusa Tenggara	59	46	73	60	88	70,390	1,555,068
61	West Kalimantan	47	30	63	37	553		8,990,875
62	Central Kalimantan	40	21	47	25	3	4,559	10,735,935
63	South Kalimantan	45	41	57	53	15	2,304	1,839,475
64	East Kalimantan	42	26	50	32	12	62	14,651,553
71	North Sulawesi	25	19	71	22	124	2,613	1,526,005
72	Central Sulawesi	52	42	72	55	2	5,919	4,394,932
73	South Sulawesi	47	36	92	46	124	601	3,299,006
74	South-East Sulawesi	67	38	97	49	7	346	2,518,337
75	Gorontalo	77	50		67	3	817	
76	West Sulawesi							
81	Maluku		34		43	154	10,824	7,146,109
82	North Maluku		40		53	7	4,140	
94	Papua		29		36	1,268	38,449	40,546,360
95	West Irian Jaya					58		
	Indonesia	35	32	46	40	10,384	183,102	123,459,514

CMR = child mortality rate, ha = hectare, HIV/AIDS = human immunodeficiency virus/acquired immune deficiency syndrome, IMR = infant mortality rate, LB = live birth, MDG = millennium development goal.

Source: Report on the Achievement of Millennium Development Goals Indonesia 2007, published by the United Nations and the National Development Planning Agency, Indonesia.

Table A9.6: Status of MDGs by Province, 1993–2006
(Goal 7: Ensuring Environmental Sustainability)

Code	Province	Piped Protected Drinking Water (%)			Adequate Sanitation (%)		
		1994	2002	2006	1992	2000	2006
11	Aceh	24.1		41.4	25.1		62.7
12	North Sumatra	39.6	50.2	55.2	41.1	72.7	76.7
13	West Sumatra	33.2	47.0	53.6	19.8	41.3	49.8
14	Riau	44.5	50.6	46.6	32.0	76.3	83.2
15	Jambi	39.6	50.3	46.9	25.0	55.1	60.9
16	South Sumatra	32.1	41.3	50.6	29.3	62.1	69.1
17	Bengkulu	24.4	36.3	36.5	32.3	60.5	68.0
18	Lampung	18.9	39.6	43.9	34.4	84.9	83.7
19	Bangka Belitung		41.9	33.9			67.4
20	Riau islands			60.1			75.9
31	Jakarta	54.8	70.4	63.0	82.5	92.7	93.8
32	West Java	28.9	41.2	51.0	26.4	54.0	61.1
33	Central Java	39.3	53.2	65.2	26.2	59.9	69.8
34	Yogyakarta	45.4	61.3	61.7	40.9	81.4	90.6
35	East Java	46.9	57.8	64.8	27.6	64.0	72.5
36	Banten		40.3	48.5			69.0
51	Bali	59.9	73.2	66.9	39.9	77.0	80.3
52	West Nusa Tenggara	28.4	43.5	62.4	17.0	44.2	46.2
53	East Nusa Tenggara	37.5	42.5	57.7	21.9	63.2	68.9
61	West Kalimantan	48.3	51.8	55.1	21.3	59.1	61.5
62	Central Kalimantan	30.2	34.1	41.6	16.7	40.8	52.0
63	South Kalimantan	41.5	47.7	55.7	28.0	53.8	66.4
64	East Kalimantan	53.2	64.6	66.9	43.3	68.4	80.2
71	North Sulawesi	46.5	57.8	63.8	33.5	73.2	84.1
72	Central Sulawesi	27.3	38.0	56.6	21.1	49.6	56.5
73	South Sulawesi	35.8	45.8	62.0	36.8	63.6	70.5
74	South-East Sulawesi	41.2	51.3	62.6	37.1	64.2	68.2
75	Gorontalo		30.5	52.1			52.0
76	West Sulawesi			45.5			47.5
81	Maluku	44.8		68.3	24.0		52.0
82	North Maluku			52.6			58.3
94	Papua	30.1		38.7	27.6	48.7	54.7
95	West Irian Jaya			46.5			51.0
	Indonesia	16.2	50.0	57.2	30.9	62.7	69.3

MDGs = millennium development goal.

Source: Report on the Achievement of Millennium Development Goals Indonesia 2007, published by the United Nations and the National Development Planning Agency, Indonesia.

**Table A9.7: Status of MDGs by Province, 1993–2006
(Goal 8: Partnership for Development)**

Code	Province	Youth (15–24 Years) Unemployment Rate (%)	Households with Fixed Line (%)	Households with Cellular Phone (%)	Households with Personal Computer (%)	Households with Access to Internet (%)
		Feb 2007	2006	2006	2006	2006
11	Aceh	22.92	5.43	20.75	2.01	1.26
12	North Sumatra	25.75	9.00	24.96	2.78	1.20
13	West Sumatra	29.44	10.14	27.16	3.82	1.72
14	Riau	24.88	7.29	33.95	4.70	1.68
15	Jambi	17.76	5.96	22.49	2.38	0.91
16	South Sumatra	21.36	7.75	18.30	2.81	0.65
17	Bengkulu	13.77	7.04	19.14	3.45	1.31
18	Lampung	17.50	5.68	16.79	1.80	0.86
19	Bangka Belitung	14.85	6.14	31.46	2.38	0.84
20	Riau islands	13.96	17.89	52.79	7.05	4.43
31	Jakarta	26.18	38.34	59.90	16.99	8.53
32	West Java	37.84	12.69	22.88	5.15	2.22
33	Central Java	24.01	6.07	21.64	2.77	1.36
34	Yogyakarta	21.32	14.63	46.57	15.74	10.57
35	East Java	22.48	12.70	21.48	3.48	1.66
36	Banten	39.83	16.80	27.68	6.57	3.25
51	Bali	12.32	15.27	42.03	5.76	2.92
52	West Nusa Tenggara	17.59	4.09	16.84	2.02	0.57
53	East Nusa Tenggara	7.54	3.59	8.83	1.44	0.41
61	West Kalimantan	16.90	6.61	21.28	3.12	1.22
62	Central Kalimantan	11.34	6.68	19.02	2.27	0.41
63	South Kalimantan	18.90	8.93	30.38	4.32	1.18
64	East Kalimantan	28.84	18.97	47.06	8.38	3.33
71	North Sulawesi	42.50	12.09	20.80	2.28	1.48
72	Central Sulawesi	17.16	5.39	13.05	2.17	0.68
73	South Sulawesi	27.79	12.25	23.64	3.21	1.30
74	South-East Sulawesi	18.00	5.35	14.82	2.11	0.97
75	Gorontalo	19.75	5.29	12.06	1.63	0.95
76	West Sulawesi	13.12	3.04	10.71	.75	0.43
81	Maluku	38.57	7.82	14.72	2.30	0.58
82	North Maluku	22.91	4.56	13.06	1.92	0.83
94	Papua	22.85	6.14	15.74	2.07	0.68
95	West Irian Jaya	12.76	5.91	16.23	2.57	0.76
	Indonesia	25.43	11.20	24.60	4.36	1.95

MDG = millennium development goal.

Source: Report on the Achievement of Millennium Development Goals Indonesia 2007, published by the United Nations and the National Development Planning Agency, Indonesia.

HIGHLIGHTS OF THE SOCIOECONOMIC SURVEY

A. Background

1. In the absence of any mention in the (project completion report (PCR) that benefit monitoring and evaluation (BME) had been carried out during and after project implementation, the Independent Evaluation Mission (IEM) for the project performance evaluation report (PPER) decided to carry out a basic socioeconomic survey in Depok, Tangerang, and Bekasi cities with some overlap in the districts of Tangerang, Bekasi, and Bogor. Since it did not experience any project investments, Bogor city was selected as control to find out any project impact on areas without project investments. During the IEM, however, it was found that national consultants had carried out basic BME for the executing agency (EA). That BME measured the performance of the project using three indicators: (i) level of service, as measured by physical achievement of project components; (ii) use of service, as measured by percentage of water consumption by domestic and nondomestic users against what was planned; and (iii) impact of service, as measured by three PDAM financial ratios and the “frequency of infectious disease.”¹ Since the results were essentially percentage achievements against targets set out in the report and recommendation of the President (RRP) or the respective subproject appraisal reports (SPARs) and did not gauge the satisfaction of individual households with project outputs, the IEM felt that the results of the survey would be essential in estimating the impact of the project. This was especially so for the economic analysis since the survey included questions on willingness to pay (WTP) for improved water supply.

B. Methodology

2. The sample comprised 100 middle and lower income households, including those in *kampung* (informal settlement) areas, from each of the cities, including Bogor. To estimate satisfaction with water supplied by the project, the sample came from areas that had been connected to the PDAM water reticulation network financed by the project. The questionnaire was developed by the IEM, translated by the survey team leader, and pretested in both Depok and Tangerang cities. The questionnaire also had sections on the sanitation and solid waste subprojects. The survey was conducted by a local team based in each of the sample towns and well acquainted with the survey areas. In Bekasi city, the water supply subproject was part of the *kampung* improvement project (KIP), while in Tangerang City, *kampung* Gunung had a long waiting list for PDAM water supply. Data were entered and initially processed in Jakarta, and the IEM conducted site visits to obtain additional information on the conditions and context of the survey.

C. Household Characteristics

3. Table A10.1 gives the socioeconomic profile of the sample households. Across the cities, the households were relatively large, averaging seven members. Employment rates were high for male members of the household (86%) and about 40% for female members. Most households derived income from several members, including children (40% employed). This is typical of large households in Indonesia and in other countries of Southeast Asia. At about Rp120 million (about \$10,000), sample house and land values were also fairly uniform in both the project cities and in Bogor, the non-project city. Household income was slightly higher than expenses in several households, mainly in Depok, which have over Rp16 million (\$1,400) in loans. Ownership of TV sets and motorbikes was common, but cars were rare at less than 20%.

¹ It is not known how this component was measured or on what data it was based.

Table A10.1: Socioeconomic Profile of Sample Households^a

Household Characteristics	Depok City	Tangerang City	Bekasi City	Bogor City	BOTABEK Average
Average family size	6.7	6.8	7.7	7.3	7.13
% Household - Male	87	79	90	89	86
Employment - Female	31	24	58	46	40
% part-time employed -	9	10	43	30	23
% unemployed -	34	11	48	17	28
% with working children	33	—	52	36	40
Estimated value of house & land (Rp million)	120.5 (66%)	133.8 (98%)	121.9 (81%)	95.3 (100%)	117.9
Monthly income (Rp million)	4.2 (96%)	1.5 (98%)	3.1 (89%)	2.0 (100%)	2.7
Monthly expenditure (Rp million)	1.4 (100%)	1.4 (92%)	1.5 (98%)	1.2 (100%)	1.4
% Households with:					
Car	19	10	26	12	17
Motorbike	85	83	85	62	79
Television set	98	99	100	98	99

— = not available, Rp = rupiah.

^a Number of households in parentheses.

Source: Independent evaluation mission findings.

D. Water Supply, Consumption, and Expenses

4. The vast majority (88%) of the households had tap water inside the house, while somewhat more than half obtained water through an outside tap or had both inside and outside taps (Table A10.2). At 66% of the sample, Bogor city has slightly less than the three project cities, probably because more households have wells or boreholes in the area. The high connection percentage is largely due to the fact that selection of the sample areas was based on whether they had benefited from the project water supply. As expected, more than one household share the water source, which is available some 20 hours a day throughout the year. Except for Depok, which buys water from the Bogor treatment plant at Cibinong, tariffs are fairly uniform across the cities, including Bogor, at Rp2,500/cubic meter. High rates of satisfaction with water quantity and quality were recorded, with an average of 94% (100% in Bogor) boiling water before drinking and fully 97% saying they had not had any illness caused by the water supply. Since most of the sample areas have been served since the end of the project, the project has had a definite impact on them. While the EA's BME attempted to track health data through the frequency of infectious diseases, in the data, waterborne disease cases were not evident. In any event, any causal relationship would be difficult, if not impossible, to determine without a long-term panel study of the same households before and after connecting to the water system.

Table A10.2: Type and Use of Water Supply (%)

Household Water Supply Characteristics	Depok City	Tangerang City	Bekasi City	Bogor City	BOTABEK Average
Water source:					
% house tap inside –	94	94	98	66	88
% house tap outside –	84	82	2	57	56
No. of households sharing the source	3.1	3.7	4.9	4.4	4.0
Hours per day available	18	24	24	14	20
Tariff per m ³ (Rupiah)	1,342	2,400	2,913	2,340	1,664
% satisfied with water quantity	76	90	84	82	83
% satisfied with water quality	79	93	71	82	81
% boiling water before drinking	81	96	98	100	94
% never sick from water	97	91	100	98	97

m³ = cubic meter.

Source: Independent evaluation mission findings.

E. Alternative Water Sources

5. The survey found that the major alternative sources to piped water supply were vendors and shallow wells (Table A10.3). In contrast to the PCR, water vendors were not those selling water from shallow wells or boreholes. Rather, they were vendors of drinking water in containers, which made boiling water from the tap unnecessary. Hence, the cost of water per liter in a 20-liter container was high. Significantly, Bogor differed diametrically from the project cities in that it did not buy water from vendors. Information from the field showed that while shallow wells, or boreholes, are common in the Bogor area, they are not in either Bekasi or Tangerang where the groundwater is often polluted. The high figure for a shallow well source in Bekasi might therefore be due to the fact that a large portion of the survey was carried out as part of the KIP, which did not include a piped water supply to each household. Results also show that stored rainwater was not an alternative water source.

Table A10.3: Alternative Water Sources

Alternative Water Sources	Depok City	Tangerang City	Bekasi City	Bogor City	BOTABEK Average
Vendors					
% Yes	85	70	90	1	62
% No	9	30	10	93	36
Price from vendors (Rp/liter)	17.4	19.2	n/a	n/a	18.3
Number of liters per container	18	20	n/a	n/a	19.0
Shallow well					
% Yes	60	25	86	39	53
% No	40	73	13	61	47
Stored rainwater					
% Yes	0	1	-	0	0
% No	98	97	-	100	98

n/a = not available, Rp = rupiah.

Source: Independent evaluation mission findings.

F. Sanitation and Solid Waste

6. Although the project did not provide individual sewerage connections and solid waste services, it did provide improved sewage treatment plants, sanitary landfills, and some 30 dump trucks, 16 arm roll trucks, 81 solid waste containers, and other equipment for moving solid waste. The survey therefore took the opportunity to cover the present means of sewage and solid waste disposal as well as the satisfaction with them. Practically every household (including those in Bogor) has an indoor, pour-flush toilet with sullage going to a septic tank (Table A10.4). Except in Bekasi city, the septic tanks are emptied within the year, and there are no health problems from that aspect of sanitation.

Table A10.4: Sanitation Conditions

Sewage Disposal	Depok City	Tangerang City	Bekasi City	Bogor City	BOTABEK Average
% with toilet in house	98	98	98	100	99
% with pour flush toilet	94	99	92	79	91
% with sullage going to septic tank	95	97	93	90	94
How long ago septic tank emptied (months)?	7	10	15	10	10
% with no health problems from sanitation	94	98	83	98	93

Source: Independent evaluation mission findings.

7. Only in Depok (85%) is there a high percentage with garbage collection service, while a substantial number of households in Tangerang and Bogor cities burn or bury their garbage (Table A10.5). This might be expected since payment for garbage services is only about \$1.00 per month and there are many informal service providers that supplement local government providers. Despite the shortfall in service provision, nearly 90% of the respondents reported no health problems from the solid waste disposal system.

Table A10.5: Solid Waste Management

Solid Waste Disposal	Depok City	Tangerang City	Bekasi City	Bogor City	BOTABEK Average
% with garbage collection	85	33	61	38	54
% burned or buried garbage	0	64	8	33	26
Number of times garbage collected per week	2	2	2	2	2
Payment per month (Rupiah)	13,680	12,793	12,068	6,375	11,229
% with no health problems from solid waste	90	86	81	100	89

Source: Independent evaluation mission findings.

G. Willingness to Pay (WTP)

8. A key indicator provided by the survey was the willingness to pay (WTP) for improved supply of clean, potable water with good pressure 24 hours a day (Table A10.6). This question was asked near the end of the interview and the responses were a component in calculating the economic

internal rate of return. The responses revealed a high (65%) WTP for improved water supply in the Metro BOTABEK area. Of the 4 cities covered, Bogor City had the lowest rate of 44%. Except in Bogor city, tariffs that respondents were willing to pay were more than twice as high, on average, than the present tariff payments, i.e., Rp3,741 vs Rp1,664. The lower rate of WTP in Bogor could be due to the large percentage of households who obtain water from shallow wells at a cost lower than tariffs for piped water. Combined with increased PDAM water production figures, the strong WTP figures for project cities resulted in high EIRRs. From the survey, a high percentage of respondents already had connections. While the percentage for the control city was lower, slightly more on average wanted their respective PDAMs to improve the quality of water supply and the quantity.

Table A10.6: Willingness to Pay (WTP)

Willingness to Pay	Depok City	Tangerang City	Bekasi City	Bogor City	BOTABEK Average
% WTP for clean, potable water with good pressure	95	53	68	44	65
How much WTP/m ³ (Rp)	4,405	2,510	6,355	1,693	3,741
% already with house connection	78	88	—	66	58
PDAM should concentrate on:					
-improving quality of water	64	72	61	18	54
-improving quantity of water	29	66	50	24	42

— = not available, m³ = cubic meter.

Source: Independent evaluation mission findings.