Indonesia

Surabaya Urban Development Project (1)

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Field Survey：Nov 2006-May 2007

1. Project Profile and Japan's ODA Loan

Map of Project Area

Improved Margomulyo Street

1.1 Background

The City of Surabaya, the capital of the East Java Province, is the second largest city of Indonesia following the national capital Jakarta and it stands at the mouth of the River Mas facing the Madura Island. The city is densely populated, covering an area of 350 square kilometers, which is about equal to that of Fukuoka City in Japan. The city has a population of about 2.7 million people, a little bigger than that of Osaka City. Like other cities in Indonesia, Surabaya was not sufficiently equipped with necessary urban infrastructure. Aptly realizing those unfavorable circumstances and need for infrastructure development to provide the citizen with better living environment, the government of Indonesia was promoting a plan for improving urban environment of the Surabaya metropolitan area in which the city of Surabaya occupied its center.

1.2 Objective

To develop Urban Road, Drainage, Solid Waste and Water Supply sub-sectors in the city of Surabaya in order to improve living environment, and thereby activating the regional economy and upgrading the citizen's welfare.

1.3 Borrower/Executing Agency：

Government of Indonesia／DG. Cipta Karya, The Ministry of Public Works

1.4 Outline of Loan Agreement

Loan Amount/Disbursed Amount	11,251million yen/10,893 million yen
Exchange of Notes/Loan Agreement	September 1992/February 1998
Terms and Conditions - Interest Rate - Repayment Period - Grace Period - Procurement	 2.6% 30 years 10 years General Untied
Final Disbursement Date	March 2004
Main Contractors (More than 1 billion yen)	PT. Hutama Karya.(Indonesia), PT. Pembangunan Perumahan (Indonesia), CV. Lanang Adhi Daya (Indonesia), PT. Waskita Karya (Indonesia)
Consulting Services (More than 100 million yen)	Pacific Consultants International (Japan), IDEA Consultants, Inc (Japan), PT. Kartika Pradiptaprisma (Indonesia)
Feasibility Study, etc. (F/S)	"Surabaya Urban Development Plan" September, 1991, by the Government of Indonesia under the World Bank finance. SAPROF, January 1992

2. Evaluation Result (Rating: C)

2.1 Relevance (Rating: a)

2.1.1 Relevance at the time of appraisal

The 5th Five Year Development Plan (REPELITA V), 1989~1993, attached importance on regional development to support balanced economic development of the country, and set out the following national targets:

(1) Participatory rural development.

(2) Increase of job opportunity expanding value-added economic activities in non-agricultural sectors.

(3) Promotion of efficient and effective land use.

(4) Institutional strengthening of regional governments.

Based on the "Integrated Urban Infrastructure Development Program (IUIDP)" enacted in 1985 under the initiative of Cipta Karya, the Ministry of Public Works, and further supported by the "PP (Government Regulation) 14/1987: Penyerahan Sebagian Urusan Pemerintah di Bidang Pekerjaan Umum kepada Daerah (Transfer of Part of Government Duties in Public Works to Region), the Indonesian Government started to promote inter-sectoral integrated urban development aiming to totally improve living conditions of urban people. The "Coordination Team for Program Implementation (TKPP: Tim Koordinasi Pelaksana Program)" was organized in 1987 to implement the program under the following IUIDP basic policies:

(1) Regional governments carry primary responsibility of development, operation and maintenance of urban infrastructure, and the intervention of the central and provincial governments is to be limited to the function of assistance and support.
(2) Formulation of urban development plans and investment priority determination are headed by the regional governments specified in IUIDP taking integrated approaches.
(3) Regional governments must endeavor to strengthen their fund raising and implementation capacity for urban development on a financially sound base.
(4) To support decentralized urban development, the central government should develop appropriate systems to finance (including on-lending schemes) regional governments.
(5) Institutional strengthening of provincial and regional governments should be promoted for efficient and effective implementation of urban development.
(6) Coordination among the central, regional governments and agencies involved should be strengthened for efficient and effective implementation of urban development.

The 5th Five Year Regional Development Plan of the East Java Province placed the city of Surabaya as a prioritized development area. This Project aims to develop four major sub-sectors of urban development of the city of Surabaya in line with the regional and national economic development programs and policies stated above.

2.1.2 Relevance at the time of evaluation

The "Medium-Term National Development Plan (Rencana Pembangunan Jangka

Menengah Nasional : RPJM) <2004-2009>" proposes three general targets based on the vision, mission and the strategy of the country's national development as follows:

(1) Create safe and peaceful Indonesia
(2) Realize equal and democratic Indonesia
(3) Increase welfare of Indonesian nation

Following the first objective under the target (3) aiming for the reduction of poverty rate down to 8.2% in 2009, RPJN sets out the 2nd objective to achieve equalized national development devoting the country's effort to promote regional development, and assigns this topic to its Chapter 26. While recognizing a city as an "engine of development," Chapter 26 of RPJN "Adjustment of Bias in Regional Development" acknowledges that function has not been well discharged from various aspects. As one of the devices to improve the said situation and activate the city function, it proposes the "Control Program for Development of Metropolitan and Big Cities." Greater Surabaya called "Gerbangkertosusila (Gresik – Bangkalan – Mojokerto – SURABAYA – Sidoarjo – Lamongan)" is nominated as one of the seven metropolitan areas in Indonesia.

The "Control Program for Development of Metropolitan and Big Cities" consists of the following "Activities."

(1) Prepare "Land use and development management" system.
(2) Strengthen role and function of satellite cities.
(3) Revitalize functions of downtown areas.
(4) Reuse dormant state-owned assets located in the central cities.
(5) Strengthen cooperative development (primarily urban infrastructure development) among core and satellite cities in the metropolitan areas throughout the planning, financing, and O&M processes.
(6) Strengthen good urban governance and private sector participation in urban development
(7) Organize "Metropolitan Coordination Committee" inviting private sector, citizens, regional government, academic society and NGO.

The Activity (5) includes promotion of consolidated development of urban infrastructure like; transportation system, garbage dumps, water supply facilities and drainages, with extensive coverage over the metropolitan area to realize the "economy of scale."

IUIDP and TKPP finished their function and do not exist any more. TKKP was an ad hoc institution for coordinating integrated urban development plans under the then immature regional autonomy, but is not necessary now where BAPPEKO

is given autonomous authority of urban development through the whole process from the planning and implementation. An integrated approach which has ever supported IUIDP and other inter-sectoral projects is not expressly backed up by a statutory background under the current circumstances. However, the sectors to which the sub-projects of SUDP belong carry continued priority in the respective sectoral development plans. The regional autonomy on development planning and its execution, on the other hand, is legitimately enhanced by the national law UU No.32, 2004 (Regional Administration) and No.32, 2004 (Fiscal Balance between the Central and Regional Governments). The needs of the integrated urban development with a strong legal support thus sustain the relevancy of this Project.

2.2 Efficiency (Rating: c)

2.2.1 Output

The outputs of the respective four sub-sectors under the Project, "Urban Roads," "Drainage," "Solid Waist" and "Water Supply" are as follows. As will be discussed later in the succeeding sections, the Project implementation was interrupted and faced significant delay in the urban roads and water supply sub-sectors (some components of the former were cancelled) because of land acquisition bottlenecks. Some of the portion (indicated with italic letters below) still remained uncompleted even at the time of the Ex-post Evaluation in March 2007. The details of this issue with the outline of the current status will be presented in **section 5**.

Meanwhile, the scope of the Project were amended several times due to the following reasons: (1) a part of planned construction works became unable to be implemented prevented by land acquisition problems, and (2) to cope with that issue, items which had been supposed to be a part in the succeeding phase were included beside the scope modification aiming to recover expected project benefit. Consequently the rupiah-term amount of loan disbursement was increased.

In the following list of the outputs, the inserted items during the project implementation that had not been included in the original plan were underlined, and the items of cancelled road construction were attached in the notes.

(Urban Road)

1. Improvement of Jalan Kenjeran Stage I. ***IB*** & II <7,590 m>
2. Improvement of Jalan Margomulyo Second Carriageway <1,700 m>
3. Improvement of Jalan Margomulyo Additional Work <200 m>

4. Improvement of Jalan Margomulyo III <3,254 m>
5. Construction of Eastern Middle Ring Road Stage (MERR) ***IIA*** & IIB <5,100 m>
6. Improvement of Jalan Mastrip I <3,209 m>

Total length:
New Construction: 5,100 m
Improvement: 15,843 m (Excluding uncompleted Jl. Kenjelan Stage IB 1,810 m).

(Note) The "Construction of Eastern Middle Ring Road Stage I (MERR I) <4,415 m>" and the "Improvement of Jalan Banyu Urip Stage I & II <5,870 m >" were included in the original schedule, but were dropped as no progress in implementation was made due to land acquisition problems.

7. Consulting Services
(1) Review of detailed design
a. Construction of EMRR I
b. Improvement of Jl. Kenjelan I, IB & II
c. Improvement of Jl. Banyu Urip I & II
d. Improvement of Jl. Margomulyo 2nd Carriageway, Additional Work and III
(2) Detailed Design
a. Construction of EMRR IIA & IIB
b. Improvement of Jalan Mastrip I
(3) Construction supervision

(Drainage)
1. Improvement of Perbatasan River
- Design flood: 5-year flood[1]
- Channel improvement: 14.3 km
2. Improvement of Kebonagung Canal
- Design storm: 5-year flood[2]
- Channel improvement: 6.0 km
- Excavation of channel bed: 6.4 km

[1] The design level was not fully materialized in a part of the total length being prevented by land acquisition problems
[2] ditto

3. Morokrembangan Boezem Improvement

- Design storm: 5-year flood
- Total area of pond: 80.7 ha (2 nos.)

4. Remaining critical works of Kedurus River Improvement

(Kedurus River)

- Design flood: 20-year flood
- Channel improvement: 2.7 km

(Kebonagung Canal)

- Design storm: less than 5-year flood
- Replacement of structures: 1 Weir (irrigation), 3 road bridges

Total canal length: 29.4 km
Total pond area: 80.7 ha
Structure replacement: 1 Weir (irrigation), 3 road bridges

The planned total canal length was 26.8 km and the total pond area was 28ha.

(Solid Waste)

1. Procurement of Equipment
(1) Truck: 43 units
(2) Hand Cart: 280 units
(3) Container: 219 units
(4) Bulldozer: 2 units
(5) Excavator: 1 unit

Note: A set of "Rotary Screen" and 525 pieces of "1m^3 Waste Bin" were not procured due to the amendment of procurement component following the advice of the JICA Master Plan on solid waste in Surabaya in consideration of the road conditions and the possibility of private sector participation.

2. Supply & Spare-parts for Repair
(1) Bulldozer: 4 units
(2) Land Compactors: 2 units

3. Civil Works

(1) Construction of Solid Waste Depots: 9 units
(2) Construction of Temporary Disposal Sites: 19 units
(3) Rehabilitation of Solid Waste Depots: 31 units
(4) Rehabilitation of Temporary Disposal Sites: 44 units

4. Technical Assistance

Improvement of solid waste management

(Water Supply)

1. Transmission / Primary / Secondary Water Supply and Distribution Pipelines
   (1) Wonocolo – Putat Gede
   (2) Putat Gede – Demak
   (3) Banyu Urip – Tandes
2. Secondary Distribution (steel pipe) – Zones 4 + 5 (Totally 415 km)
3. Pipe Materials for Reservoir Sites
4. Secondary Tertiary Distribution Mains – Zones 4 + 5
5. House Connections – Zones 4 + 5
6. Wonocolo Pump Station
7. Putat Gede Installations
8. Takeover of the uncompleted IBRD portion[3]
   <(1) Pipe installation connecting Wonocolo Pump Station to existing East Side Ring Main (ESRM) (Package 6.2 I)>
   <(2) Connection of missing portion of ESRM near Galaxy Mall toward Jl. Kenjeran (Package 6.2 J)>
   <(3) Connection of missing portion of ESRM, Wadung Asli - Rungkut>

(Uncompleted and Un-operated Facilities)

As of the new loan expiry date (March 2004) after the 3-year extension from the original date (March 2001), the following parts of the Project in the Urban Road and Water Supply sub-sectors had not been completed due to the land acquisition delay. Additionally, un-operated facility existed among the completed portion in the Water Supply sub-sector.

(1) Uncompleted Construction Works

(Urban Road)

a. MERR IIA

The construction had been suspended at the commencement of the Ex-post Evaluation, but the construction started in February 2007 after clearing the land acquisition issue and finished in April 2007.

b. Kenjeran 1B

The construction was suspended at the time of the Ex-post Evaluation. The complexity and ambiguity of property title on the bottleneck house

[3] JBIC took over the IBRD's portion which had not been completed due to their withdrawal after one-year loan extension from the original deadline in September 1999, because full connection of the ESRM water distribution was indispensable. Connection was implemented mostly using the pipes already procured under the IBRD loan. However, "(1)" has not been installed yet at the time of the Ex-post Evaluation in March 2007 because of the partly unsettled land acquisition problem.

staying on the Kenjeran Street has been obstructing the negotiation by the city government. So far, no outlook for solution is in sight.

(Water Supply)

a. Pipe Connection to East Side Ring Main

Land price negotiation between PDAM (Regional Drinking Water Company) and the landowner had not been settled long, but both have agreed to arbitrate the price dispute on land compensation to an authorized independent entity (Sukopindo). The price will be presented shortly to settle this issue.

(2) Un-operated Facility

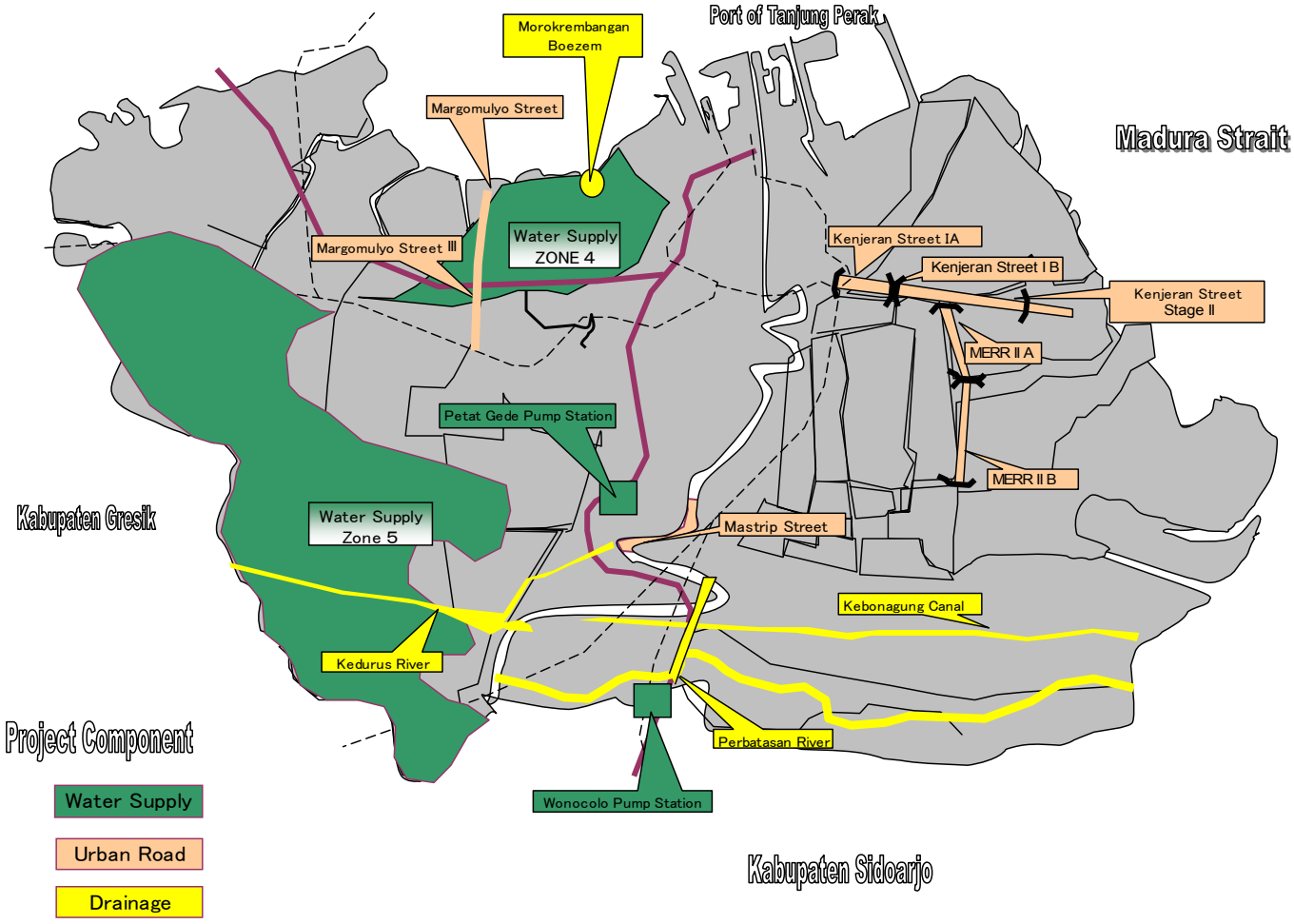
(Water Supply)

Wonocolo Pump Station

Wonocolo Pump Station has not been operational at the time of the Ex-post Evaluation because of the failure of the original water intake plan from the Umbulan Spring which was supposed to be developed under the private participation scheme. However it will be able to start operation expecting water supply from Karangpirang 3 Water Treatment Plant which will be completed in 2009. The facility is well maintained for its operation commencement.

The Project involves four sub-sectors for urban infrastructure development and its components are extensive and complex. Each location of major components in Surabaya is collectively shown in the following map. The solid waste sub-sector is excluded because its component consists of procurement of mobile garbage trucks and other equipment and construction of waste depots scattered in 103 locations throughout the city.

Figure 1: Location Map of Major Facilities Developed under the Project



2.2.2 Period

Under the initial plan, the loan period of the Project was from February 1993 to March 2001 (97 months), but the actual period ran from February 1993 to March 2004 (133 months) including three-year extension of the loan disbursement period, which turned out 37.1% longer than planned. The sub-Sectoral breakdown is as follows[4].

[4] The new loan expiry date was March 2004 and no disbursement from the loan proceeds was made afterward. However as a matter of fact, some parts of the Project had not been completed at the time of the Ex-post Evaluation. The Project period ran into 169 months as of March 2007, which is 76% longer than planned. This Ex-post Evaluation regards the Project completion as the time of loan expiry.

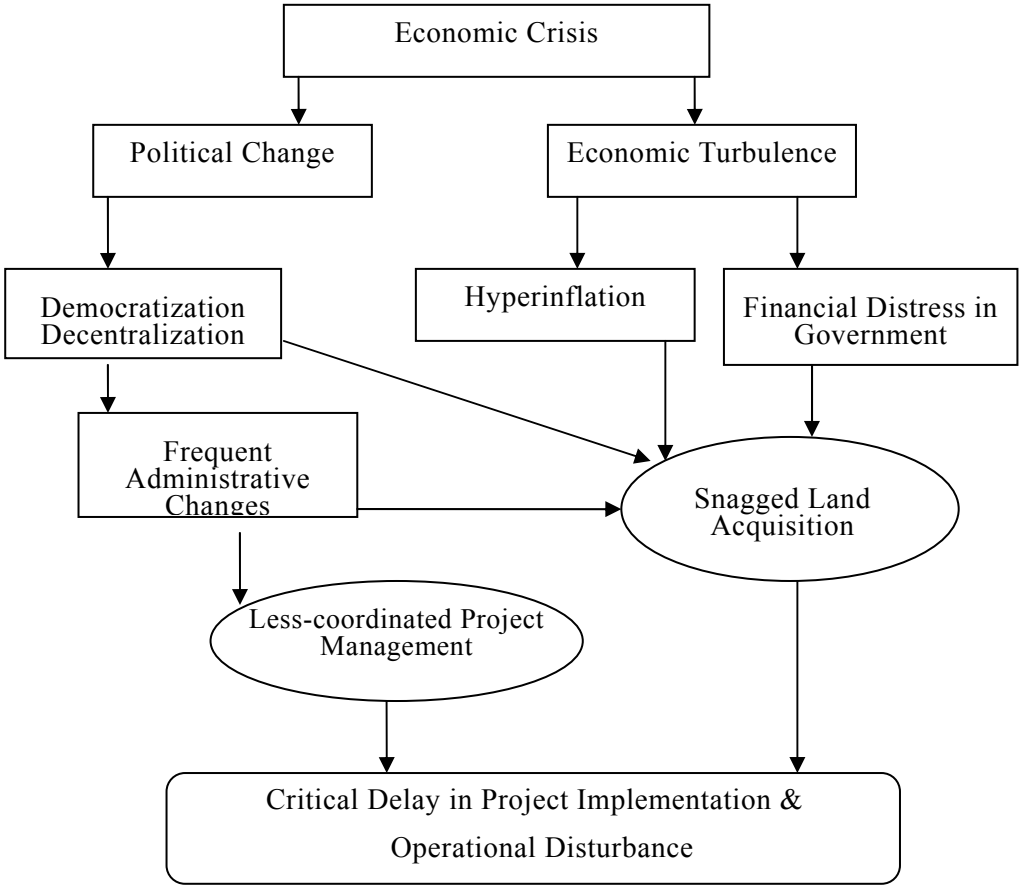
Table1：Comparative Sub-Sectoral Breakdown of Planned and Actual Implementation Periods

	Plan[5]	Performance	Delay (Counted from L/A Date)
Urban Road	April 1992～ September 1997	April 1992～March 2004	78 months
Drainage	July 1992～March 1998	January 1993～March 2003	60 months
Solid Waste	October 1992～March 1995	January 1994～April 1997	25 months
Water Supply	July 1992～December 1997	September 1993～March	75 months
Technical Assistance	April 1993～March 1998	April 1992～March 2004	72 months

The direct cause of this significant delay was land acquisition even at the begging of project implementation. the economic, social and administrative disturbance, however, underlies the affair brought by the economic disturbance and high inflation from Asian economic crisis in 1997, and the collapse of the Soeharto regime and consequent large-scale and frequent administrative changes at the central as well as the regional levels. This complex state of affairs is illustrated in the following figure.

5 The starting points may precede the L/A dates, because as is sometimes the case that preparation of consultant employment commences prior to L/A signing.

Figure 2: Causal Relationship among Factors of Implementation Delay



2.2.3 Project Cost

Planned project cost was 15,602 million yen (11,251 million yen covered by ODA loan), and the actual project cost was 13,196 million yen (10,894 million covered by ODA loan), 15% smaller than planned. Despite the scope extension, main reasons of the cost reduction are the remarkable depreciation (about 80%) of the local currency rupiah caused by the Asian economic crisis and the facts that parts of the urban road and water supply sub-sectors remained unfinished at the time of the loan expiry in March 2004.[6] However, the remarkable scope change due to the land acquisition makes simple cost comparison between the plan and performance irrelevant. The evaluation of efficiency also takes the output changes (three times) into consideration.

[6] Cf. Section **2.2.1** (1) Uncompleted Construction Works

2.3 Effectiveness (Rating: a)

Although the Project completion is defined as the loan expiry, the actual construction includes the portion which has completed just before the Ex-post evaluation. As it takes time till the Project materializes full benefit, the effect from the unfinished portion was not analyzed due to the lack of sufficient data for rational judgment.

1. Urban Road

The effect of a road project can be directly measured with the Average Annual Daily Traffic (AADT) as an effect indicator. Margomulyo and Mastrip Streets are completed among the four streets under the Project, and the AADT only of "Before/After" project is available at the Mastrip street. The recorded AADT below shows a remarkable traffic increase attained after the Project. The Mastrip improvement works include widening, overlaying, drainage and median construction and installation of lights and traffic signs.

Table 2：Change in AADT after the Project

(Numbers of vehicles)

Year / Street	1993	2005	Rate of Change (%)
Mastrip	5,442	26,689	390

（Source: Bina Marga, Ministry of Public Works＞）

Mastrip Street with increased traffic after widening under the Project

Except those of Mastrip Street, no other statistical figures to enable direct comparison of the traffic volume at "before" and "after" of the Project were

available. However, the traffic counting survey was conducted instead on selected urban roads in Surabaya by the Transportation Department of Surabaya City in August 2005. The said survey involves Mastrip and Kenjeran[7] Streets. No survey was conducted for MERR and Margomulyo Streets.

Table 3: Result of Traffic Counting

Vehicle Type / Street	Private Car	Public Vehicle	Pick-up	Motor Cycle	Mini Truck	Truck	Others	Total
Mastrip	35	13	17	270	4	33	16	388
Kenjeran	137	14	48	464	7	11	55	736

The figures show "average every-ten-minute traffic" for both directions.

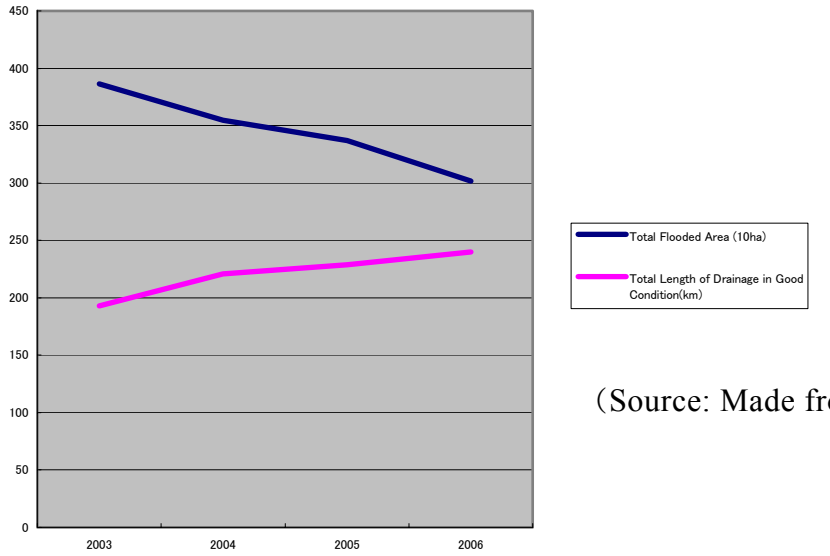
Due to the lack of data, it is not possible to compare "before" and "after" traffic conditions in order to confirm the project effect, but the result of this survey at least indicates that the improved two streets under the Project were absorbing ample volume of urban road traffic.

2. Drainage

The expected function of drainage is flood control. Performance indicators that directly indicate drainage projects are records on flood disaster, but that kind of record has not been kept in any relevant agencies systematically, and it hinders direct examination of the performance of the drainage sub-sector. However, the following line graph which illustrates inverse correlation between the annual size of area flooded and total length of urban drainages since 2003 leads to a reasonable presumption that the improved drainage facilities under the Project is benefiting to alleviate flood disasters in the city of Surabaya.

[7] Kenjeran Street has completed except a bottleneck spot causing significant traffic congestion occupied by a household who is rejecting relocation.

Figure 3：Inverse Correlation between Flooded Area and Drainage Development



（Source: Made from BAPPEKO Records）

Water Gate of Improved Kubong Agung Canal

3. Solid Waste

The number of garbage trucks from the time before the Project to the Ex-post evaluation is as follow.

Table 4: Trend of Number of Garbage Trucks

Particulars		Number of Trucks
1. Before SUDP		66
2. Procured under SUDP (1994~1995)		43
3. Procured with Own Budget (1995~2006)		66
4. Disposed (1994~2006)		39
5. Operating in 2006		136
Conditions of Trucks Procured under SUDP	Good Condition	42
	Under Repair	1

The number of waste depots newly constructed under the Project is as follows.

Table 5: Newly Constructed Waste Depots

Kind of Depot	Number
1. Solid Waste Depot	9
2. Temporary Disposal Site	19

Those equipments and facilities created 1,120 m^3 /day or 34,000 m^3 /month incremental collection/processing capacity of the City of Surabaya (population: 2.7 million). This capacity serves about 461,000 or more citizens, which is 98% achievement of the Project target.

A garbage truck in daily garbage collection work in Surabaya

4. Water Supply

The Water Supply Sub-sector of the Project deals with strengthening of transmission and distribution of drinking water, and realized the capacity as follows.

Table 6: Realized Water Supply Capacity and Facilities

(1) Combined new reservoir capacity	13,000m3
(2) Additional Working Pump Capacity	5,600 liter/sec.
(3) Additional Stand-by Pump Capacity	1,550 liter/sec.
(4) Primary Mains	31,955 m
(5) Secondary Mains	68,070 m
(6) Tertiary Mains	226,688 m
(7) New House Connection	60,000 households

(Source: PCR, updated in the field study)

Putat Gede Pump Station

Wonocolo Pump Station has not been operational because of the failure of the original water intake plan from the Umbulan Spring. However it is expected to start operation in 2009 when the construction of Karangpirang 3 Water Treatment Plant has been completed. The water supply capacity of Karanpirang 3 will be 2,000 liter/sec (700 liter/sec for Wonocolo, and the rest is for Putat Gede Pump Station) which is enough to attain full operation of the Wonocolo together with the supply from the existing Karangpirang 2 Water Treatment Plant.

The targeted water supply areas under the Project are the Zone 4 and 5 which are located in the western part of Surabaya (cf. **Figure 1**). The following two tables present the comparison of the number of industrial and domestic connections and domestic water use volume in the region between the years before and after the Project. The remarkable increase in both indicators illustrates that the Project is significantly contributing to the rapid development and economic expansion of the Western Area. Privileged water rates with 50% discount are applied to low-income households. On the contrary, the affluent customers have to bear higher charges under the cross-subsidy scheme.

Table 7: Increase in Industrial Connections in Western Surabaya

Customer Category		Number of Customers	
Tariff Code	Category	1998	2005
32a & 32c	Small Enterprise	4,516	4,692
33	Small Industry	-	157
43	Large Enterprise	-	6,310
44	Large Industry	-	44
	Total	4,516	11,203

(Source: PDAM)

Table 8: Increase in Household Connections & Water Use in Western Area

Customer Category		Number of Customers	
Tariff Code	Category	1998	2005
21	Meager Household	2,884	62,533
31	Modest Household	3,308	47,020
42	Medium Household	80	23,802
41	Large/Luxurious Household	138	14,565
	Total	6,410	147,920

Customer Category		Water Use (m^3/month)	
Tariff Code	Category	1998	2005
21	Meager Household	97,198	2,111,082
31	Modest Household	131,629	1,458,722
42	Medium Household	55,326	747,678
41	Large/Luxurious Household	4,052	606,787
	Total	Total	4,924,269

(Source: PDAM)

2.4 Impact

2.4.1 Results of Beneficiary Survey

1. Urban Road

A beneficiary survey was conducted for Margomulyo and Mastrip Streets which have been already completed in the Project, interviewing drivers and business entities that are inherently affected by road traffic. The number of respondents in each category is as follows.

	Number of Respondents
Driver	34
Business Entity	16
Commercial	6
Service	8
Manufacturing	2
Total	50

Interview with a public mini-bus driver on Mastrip Street about the traffic conditions before and after the Project

(1) Questions to All the Respondents and their Replies

a. Major traffic constraints before the Project

Type of Constraint	%
Narrow passage	32%
Rough road condition	28%
Time loss by congestion	24%
Frequent closure by flood	8%
Two-way traffic in one lane	6%
Disturbance by illegal structures on roadsides	1%
Muddy road condition	1%
Total	100%

b. Inconvenience by traffic congestion

Type of Inconvenience	%
Time loss	32%
Cost loss	15%
Mental stress	15%
Physical damage on vehicle	12%
Business loss by delay	10%
Difficulty in passengers' boarding and alighting	10%
Others	6%
Total	100%

c. Improvement in traffic condition after Project

Extent of Improvement	%
Yes, very much	46%
Yes, to some extent	22%
No, not so much	0%
No, not at all	0%
No answer	32%
Total	100%

d. Type of inconveniences improved after Project

Type of Improvement	% (among those who answered "Yes")
Reduction in traveling time	27%
More comfortable driving	26%
Reduction in driving cost	22%
Reduction in vehicular Accident	19%
Others	6%
Total	100%

84% of the total respondents used to be annoyed with inconveniences by time loss and other troubles caused by unfavorable road conditions, and 68% respondents declare improvement after the Project.

(2) Questions to Business Entities and their Replies

a. Business operations most affected by road traffic in general[8]

Type of Business Operations	%
Delivery	42%
Sales	23%
Purchase	15%
Others	8%
No Answer	12%
Total	100%

[8] This question is to ask what sorts of operational activities are most affected by unfavorable traffic conditions in general irrespective of the Project for the business entity concerned.

b. Types of operation having incurred most significant loss by bad traffic conditions before Project

Type of Business Operations	%
Delivery	52%
Purchase	17%
Sales	9%
Others	9%
No Answer	13%
Total	100%

c. Removal or alleviation of above losses after Project

Extent of Improvement	%
Yes, very much	44%
Yes, to some extent	26%
No, not so much	0%
No, not at all	0%
No answer	30%
Total	100%

"Delivery," "Sales" and "Purchase" are affected by road traffic conditions in order of the significance. In general, the most trouble in "Delivery" activity used to be prevailing before the project. 70% of the respondents recognize improvement after the Project.

2. Water Supply

A beneficiary survey was conducted in the water supply zones 4 and 5, the Project area, interviewing household and business water users, newly connected and on-going subscribers of PDAM respectively. The number of respondents in each category is summarized as follows. It should be noted that the development works under the Project deals with transmission and distribution facilities after the water plant, therefore questions were focused on the stable water supply and other inquiries on the quantitative aspect.

	Number of Respondents
Household	
On-going Subscriber	25
New Connection	10
Institution	
On-going Subscriber	10
New Connection	5
Total	50

(1) Questions to the Respondents and their Replies

a. Former Water Sources of New Connectors

Water Source	% of Respondents (New Connections)
Well	67%
River	7%
Rainfall	0%
Others	26%
Total	100%

b. Improvement in Water Supply Suspension after the Project (for On-going Subscribers)

Extent of Improvement	% of Respondents (Subscribers)
Yes, very much	29%
Yes, to some extent	31%
No, not so much	23%
No, not at all	17%
Total	100%

c. Improvement in Water Pressure after the Project (for On-going Subscribers)

Extent of Improvement	% of Respondents (Subscribers)
Yes, very much	20%
Yes, to some extent	37%
No, not so much	34%
No, not at all	9%
Total	100%

d. Increase in Volume of Water Supply after the Project (for On-going Subscribers)

Extent of Improvement	% of Respondents (Subscribers)
Yes, very much	20%
Yes, to some extent	40%
No, not so much	34%
No, not at all	6%
Total	100%

As shown in question b,c, and d, improvement in water supply which is

recognized by on-going PDAM subscribers is not as remarkable as by newly connected customers. This result is due to that the Project mainly serves for service expansion rather than improvement of existing facilities.

e. Increase in Volume of Water Availability[9] after Connection

Extent of Increase	% of Respondents (New Connections)
Yes, very much	33%
Yes, to some extent	40%
No, not so much	27%
No, not at all	0%
Total	100%

f. Change in Water Use

Extent of Change	% of Respondents (New Connections)
Yes, very much	30%
Yes, to some extent	60%
No, not so much	0%
No, not at all	10%
Total	100%

According to the replies from the household beneficiaries(question b, c, d), conspicuous change of domestic water use has occurred in "Cooking," "Drinking," "Washing" and "Bathing."

Other positive impact was like "Greener living environment" and "Mentally healthier living" for household water users, and "Activated economic conditions" for business entities. Whereas, some negative impacts were reported, for instance, "Increase in living expenses with the increased expenditure for water use" and "Decrease in water saving mind." Former water source of the newly-connected customers is mostly the groundwater pumped with electric pumps (cf. Question a. above). For those water users, the change after the connection is only in water source and the available of water is unchanged (by turning on a tap, water is available). Those who answered "No, not so much" (27%) are former groundwater users with the use of electric pumps. and the availability of water among other newly connected customers who used to rely on other water sources is significant.

9 "Availability" means the extent of possibility to obtain required volume of water as the need arises.

(2) Other Impact

The following are the impacts of the Water Supply component of the Project identified by the PDAM Surabaya.

1. Improvement of people's health by facilitating easy access to clean piped water.

The following table shows the health statistic issued by the BPS (National Statistic Center) on number of cases of diseases in Surabaya.

Table 9: Water-borne or Related Diseases

No.	Description	Number of Cases 1998	2005
1	Acute infection of upper bronchial airways	360,736	345,168
2	Muscular system and connecting tissue disorders	177,959	106,825
3	Other upper bronchial disorders	143,616	88,571
4	Diarrhea	93,878	52,106
5	Skin infection	87,792	38,564
6	Gingivitis and periodontal disorders	72,881	46,206
7	Skin allergy	68,993	37,221
8	Dentoalveolar and Periapical disorders	68,861	32,454
9	Hypertension	59,902	25,501
10	Neurotic disorders	44,594	14,790
11	Mouth, saliva gland, and jaw disorders	36,872	15,499
12	Ashtma	28,463	11,778
13	Other eye/sight problems	26,221	12,507
14	Tonsilitis	25,727	16,109
15	Other intestinal disorders	18,876	4,194
16	Pneumonia	17,449	5,105
17	Refraction disorders	15,070	2,571
18	Pulmonary Tuberculosis	14,487	801
19	Skin disorders caused by Fungi	12,305	5,025
20	Accidents and Physical Trauma	11,824	no data
21	Dysentery	11,207	no data
22	Middle Ear Infections	10,772	no data
23	Dental Caries	10,624	no data
24	Other lower bronchial airways disorders	10,424	206,583
25	Other ailments	193,199	no data
26	Bronchitis		4,303
27	Pectic Ulcer		43,473
	Total	1,622,732	1,115,354

(Source: BPS <National Statistic Center>)

Not all the diseases listed in the table are directly affected by the domestic water use. However the table clearly indicates general health improvement of the citizens of Surabaya, which is benefited more or less by the people's clean water consumption improved partly by the Project.

2. Economic activation by stable water supply for industry. In particular, advent of new industries and commercial businesses in the western area of Surabaya is conspicuous after the Project started operation.

"Table 7: Increase in Industrial Connections in Western Surabaya"

statistically supports this fact.

3. As a result of water supply increase, housing in the western area of Surabaya has been activated, and the water demand is increasingly satisfied.

"Table 8: Increase in Household Connections & Water Use in Western Area" statistically supports this fact.

4. Domestic expenditure for water has decreased, because more people used to be purchasing water from tank lorry water vendors before the Project.

Statistical data which show trend of domestic expenditure with itemized expenses are not available, however, big increase of piped water consumption indicated in **"Table 8: Increase in Household Connections & Water Use in Western Area"** certainly contribute to water cost reduction switching payment from the costly tank lorry water to the PDAM tap water.

5. The activation of economy and house building in the eastern area of Surabaya has hiked the regional land price.

2.5 Sustainability (Rating: b)

1. Urban Road

(1) O&M (Operation and Management) System

Coupled with the slow land acquisition in urban road and water supply sub-sectors, the lack of proper administrative coordination among regional and national governments is often an issue for both implementation and operation of regional development programs. It is an aftereffect of the inharmonious decentralization widely developed after the change of the Soeharto regime without appropriate institutional capacity building of local governments and financial support. It is a matter of argument whether the new Balai system which revives central penetration into regional administration may serve to settle this confusion or on the contrary would add another factor of conflict by forcing superfluous administration. The effectiveness of Balai's operation affects the sustainability of the Project in future.

The Project Completion Report (PCR) in its Summary and Main Text reveals that the post construction management of all the roads under SUDP is not clearly determined. However, on the occasion of the Feedback Seminar on May 22, 2007 in Surabaya, the city, provincial and national government officials involved in

SUDP management reached agreement on the status of the urban roads and their O&M responsibility as follows.

- ✓ Margomulyo → Province
- ✓ Kejeran → City
- ✓ Mastrip→ Province
- ✓ MERR (Not explicitly confirmed, but should belong to and be treated as a national road due to its role of its connection to strategic traffic destination such as the Suramadu Bridge and Juanda International Airport.

(2) Technical and Financial Capacity

PCR (Urban Road Sub-sector) proposes the following staff requirement for the satisfactory O&M of the roads under SUDP, but uncertain demarcation of responsibility among the agencies did not enable proper judgment on the technical and financial capability on this sub-sector at the time of the Ex-post Evaluation.

Category of O&M Staff	Required Number
Manager	2
Engineer	4
Technician	6
Operator	10
Laborer	30

(Source: PCR)

(3) Actual Practice

Despite uncertain demarcation of responsibility on O&M among relevant agencies, road conditions were found well-maintained under informal arrangement in case of need.

2. Drainage

(1) O&M System

It is still under discussion after the Balai sytem has started how each agency, Balai Besar Brantas or Perum Jasa Tirta (PJT) I, should take responsibility for the management of water resources of Brantas River and drainages in the region. However, it is agreed in principle that the former takes charge of the operation and maintenance of the drainages under the Project.

(2) Technical Capacity

PCR (Drainage Sub-sector) presents necessary number of staff and its

sufficiency to conduct the satisfactory O&M works for the facilities developed under the Project.

	Number	Quantity	Quality
Manager	1	Sufficient	Sufficient
Engineer	2	Insufficient	Sufficient
Technician / Operator	10	Insufficient	Insufficient

(Source: PCR)

Sufficient number of staff is not assigned, especially both the quantity and quality of the field technicians and operators do not fulfill the requirement. Effort should be made to improve this weakness.

3. Solid Waste

(1) O&M System

Operation and maintenance of the facilities and equipment constructed or procured is consistently conducted by the Cleaning and Gardening Department (Dinas Kebersihan dan Pertamanan) of Surabaya City from the implementation phase.

(2) Technical Capability

PCR (Solid Waste Sub-sector) presents necessary number of staff and its sufficiency to conduct the satisfactory O&M works for the facilities developed under the Project.

Professional Category of O&M Staff	Number	Quantity	Quality
Middle-level Manager (Head of Sub-departments)	2	Sufficient	Sufficient
Lower-level Manager / Supervisor (Head of Section)	6	Sufficient	Sufficient
Staff	266	Sufficient	Insufficient

Number of staff is sufficient but qualification and skill of the operational level staff is not[10]. It is necessary to raise capability in general through staff training and other devices.

[10] According to PCR and hearing from the Cleaning and Gardening Department (Dinas Kebersihan dan Pertamanan) of Surabaya City.

(3) Financial Capability

O&M budget is not sufficient. The allocated budget in 2004 was Rp. 37,436 million vis-à-vis the needed amount Rp. 49,537 million. Though the Cleaning and Gardening Department of Surabaya City is of the opinion that the O&M budget is not sufficient, well-maintained equipment operating in the field tells that at least the necessary fund is secured for minimum maintenance works. However, heavy maintenance involving costly replacement of equipment seems difficult to be well funded.

(4) Actual Practice

Despite some extent of technical and financial constraints as mentioned above, the field survey of the Ex-post Evaluation observed that equipment provided under the Project was well maintained and working in a good condition.

4. Water Supply

(1) O&M System

Operation and maintenance of the facilities developed under the Project is consistently conducted by the PDAM from the implementation phase. The Distribution Maintenance Departments are organized for each eastern and western zone taking charge of respective O&M tasks.

(2) Technical Capability

PCR (Water Supply Sub-sector) indicates that the number of "Technicians," 120 people, is insufficient for appropriate O&M works compared to the estimated requirement, 150 people, whereas the other categories of O&M staff; namely, "Manager (head of Section)," "Supervisor" and "Office Staff" were sufficient considering their academic and training backgrounds. However the number of Technicians was increased up to 200 people and situation was improved at the time of the Ex-post Evaluation in December 2006.

Maintenance of the newly installed facilities is considered adequate. O&M manuals are prepared and used in Putat Gede and Wonocolo Pump Stations. Although the latter has not been operated yet, the facilities are kept well-maintained and ready for its operation start at any time.

(3) Financial Capability

Rational O&M cost estimation has not been practiced, but 5% of the asset value is allocated as an O&M budget on a lump sum basis, which is considered enough.

The percentage allocation has been increased from 3% at the time of PCR in 2004 reflecting PDAM's favorable financial performance.

3. Feedback

3.1 Lessons Learned

1. The Project implementation was significantly hindered by the land acquisition in the urban road and water supply sub-sectors, some of which is still uncompleted even at the time of the new loan closing date in March 2004 after the three-year extension from the original date in March 2001 (part of them had not been finished yet at the time of Ex-post Evaluation). Such failure was caused, to a considerable extent, twofold by economic crisis and consequent large-scale and frequent administrative changes during the project implementation (cf. Figure 2: Causal Relationship among Factors of Implementation Delay), which had been unforeseen at the time of the project appraisal. However, if sound preparation in project formation, especially for land acquisition and administrative coordination for project implementation had been in place, this unexpected project risk would have been avoided or minimized.

3.2 Recommendations

1. Article No. 14 of the Government Regulation No. 2/2006 "Procedure for Implementing Loan and/or Grants and Allocation of Foreign Loan and/or Grants" clearly stipulates in its elucidation six criteria, including the issues of land acquisition, to be fulfilled in advance of starting negotiation with prospective donors concerned. Sound project preparation abiding by this regulation should be strictly made especially for projects involving land acquisition issues.

2. As the Project Completion Report (PCR) uneasily stated, the post construction management of all the roads under SUDP had not been clearly determined until the Feedback Seminar of SUDP held in Surabaya on May 22, 2007. In that seminar, agreement was reached among the participants of the city, provincial and national governments involved on the O&M of the urban roads and drainage under SUDP as described in **"Section 2.5 Sustainability."** That agreement should be authorized and duly implemented with appropriate financial arrangement.

3. For the two uncompleted items in the urban road and water supply sectors; namely, (1) Kenjeran Street and (2) Connection to East Side Ring Main (Installation of pipe), continued efforts should be further enforced to expedite the

process of project completion.

4. Permanent statistics of flood disaster in Surabaya City were found to be non-recorded in a systematic manner. Scientific research and routine data collection should be started immediately and accurately for appropriate development planning as well as the effective evaluation of the drainage sector.

Comparison of Original and Actual Scope

Items	Plan	Performance
1. Output	(Urban Road) 1. Construction of Eastern Middle Ring Road Stage I (MERR I) <4,415 m> 2. Improvement of Jalan Kenjeran Stage I & II <4,850m> 3. Improvement of Jalan Banyu Urip Stage I & II <5,870 m > 4. Improvement of Jalan Margomulyo Second Carriageway <3,250 m > 5. Construction of Eastern Middle Ring Road Stage II (MERR II) & Bridge <10,850 m > Total length: Construction 15,265 m Improvement 10,720 m (Drainage) 1. Improvement of Perbatasan River - Design flood: 5-year flood - Channel improvement: 14.3 km - Construction of retarding pond: 21 ha (2 nos.) 2. Improvement of Kebonagung Canal - Design storm: 5-year flood - Channel improvement: 12.5 km - Construction of retarding pond: 28 ha (1 no.)	(Urban Road) 1. Improvement of Jalan Kenjeran Stage I & II <7,590 m> 2. Improvement of Jalan Margomulyo Second Carriageway <1,700 m> 3. Improvement of Jalan Margomulyo Additional Work <200 m> 4. Improvement of Jalan Margomulyo III <3,254 m> 5. Construction of Eastern Middle Ring Road Stage (MERR) IIA & IIB <5,100 m> 6. Improvement of Jalan Mastrip I <3,209 m> Total length: Construction 2,850 m (Excluding uncompleted MERR IIA 2,250 m) Improvement 15,843 m (Excluding uncompleted Jl. Kenjelan Stage IB 1,810 m). (Drainage) 1. Improvement of Perbatasan River - Design flood: less than 5-year flood - Channel improvement: 14.3 km 2. Improvement of Kebonagung Canal - Design storm: less than 5-year flood - Channel improvement: 6.0 km - Excavation of channel bed: 6.4 km 3. Morokrembangan Boezem

	Total canal length: 26.8 km Total pond area: 28 ha (Solid Waste) 1. Procurement of Equipment (1) Truck: 21 units (2) Hand Cart: 350 units (3) Container: 146 units (4) Waste Bin: 525 units 2. Equipment for Landfill (1) New Bulldozer: 2 units (2) Rotary Screen: 1 unit (3) Bulldozer Overhaul: 4 units (4) Landfill Compactor Overhaul: 2 units (Water Supply) 1. Transmission / Primary / Secondary Water Supply and Distribution Pipelines (1) Wonocolo – Putat Gede (2) Putat Gede – Demak (3) Banyu Urip – Tandes 2. Secondary Distribution (steel pipe) – Zones 4 + 5 (Totally 301 km)	Improvement - Design storm: 5-year flood - Total area of pond: 80.7 ha (2 nos.) 4. Remaining critical works of Kedurus River Improvement (Kedurus River) - Design flood: 20-year flood - Channel improvement: 2.7 km (Kebonagung Canal) - Design storm: less than 5-year flood - Replacement of structures: 1 Weir (irrigation), 3 road bridges Total canal length: 29.4 km Total pond area: 80.7 ha Structure replacement: 1 Weir (irrigation), 3 road bridges (Solid Waste) 1. Procurement of Equipment (1) Truck: 43 units (2) Hand Cart: 280 units (3) Container: 219 units (4) Bulldozer: 2 units (5) Excavator: 1 unit 2. Supply & Spare-parts for Repair (1) Bulldozer: 4 units (2) Land Compactors: 2 units (Water Supply) 1. Transmission / Primary / Secondary Water Supply and Distribution Pipelines (1) Wonocolo – Putat Gede (2) Putat Gede – Demak (3) Banyu Urip – Tandes 2. Secondary Distribution (steel pipe) – Zones 4 + 5 (Totally 415 km) 3. Pipe Materials for Reservoir

	3. Pipe Materials for Reservoir Sites 4. Secondary Tertiary Distribution Mains – Zones 4 + 5 5. House Connections – Zones 4 + 5 6. Wonocolo Pump Station 7. Putat Gede Installations	Sites 4. Secondary Tertiary Distribution Mains – Zones 4 + 5 5. House Connections – Zones 4 + 5 6. Wonocolo Pump Station 7. Putat Gede Installations 8. Takeover of the uncompleted IBRD portion <(1) Pipe installation connecting Wonocolo Pump Station to existing East Side Ring Main (ESRM) (Package 6.2 I)> <(2) Connection of missing portion of ESRM near Galaxy Mall toward Jl. Kenjeran (Package 6.2 J)> (3) Connection of missing portion of ESRM, Wadung Asli - Rungkut
2. Period	Feb. 1993 ~ Mar. 2001 (97 months)	Feb. 1993 ~ Mar. 2004 (133 months)
3. Cost Foreign Currency Local Currency Total (Yen loan amount) Exchange Rate	 4,959 million yen 10,643 million yen 15,602 million yen (11,251 million yen) Rp. 1 = 0.064 yen (as of 1992)	 Breakdown is unavailable among foreign and local currency portions. 13,196 million yen (10,894 million yen) Rp. 1 = 0.017 yen (Simple average during 1994 ~ 2004)