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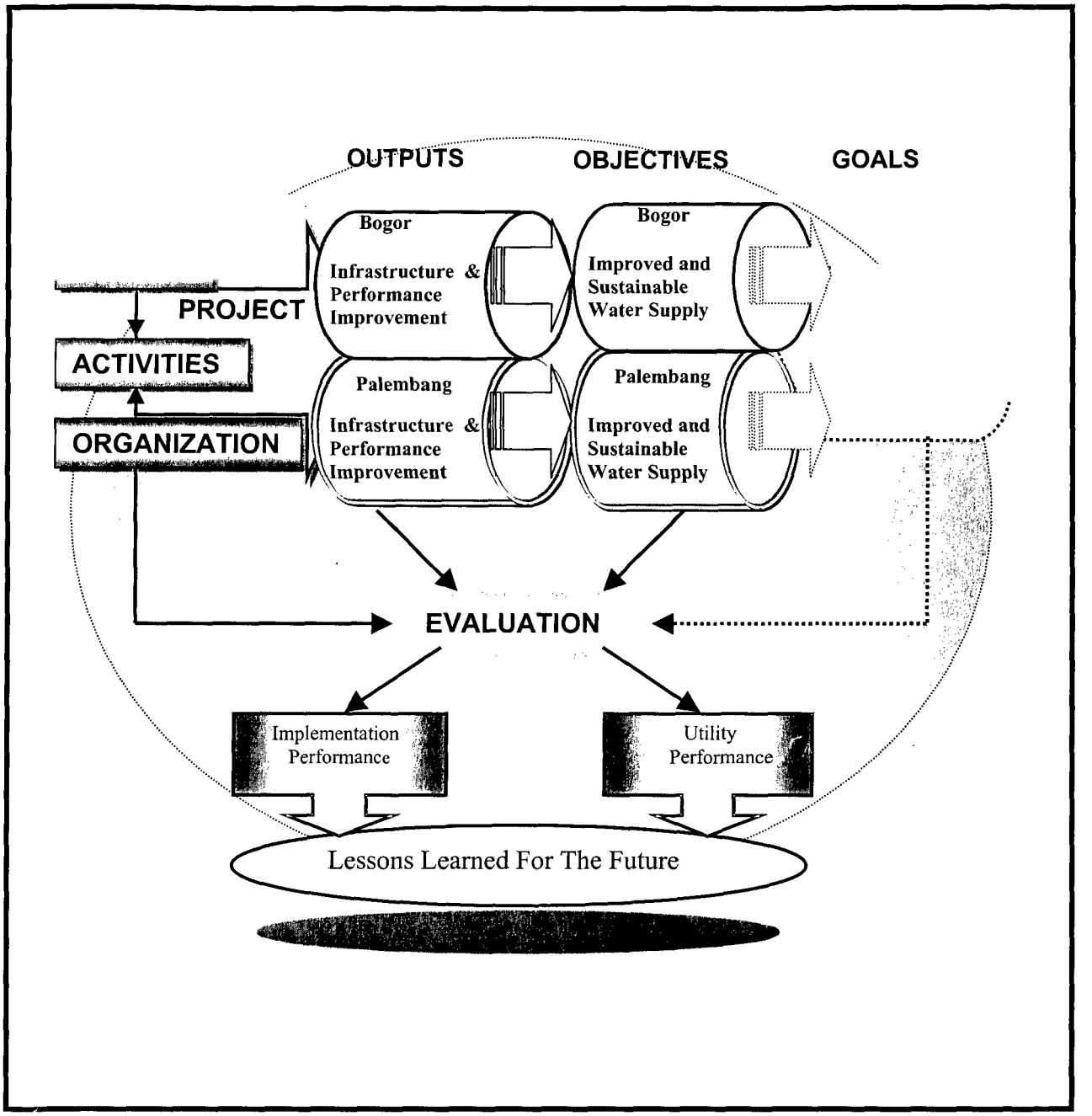

Evaluation of Water Supply Project Performance In PDAM Bogor and Palembang

Under Bogor and Palembang Urban Development Project

Lukman Hakim

M.Sc. Thesis SEE 096

March 2000

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EVALUATION OF WATER SUPPLY PROJECT PERFORMANCE IN PDAM BOGOR AND PALEMBANG
Under Bogor and Palembang Urban Development Project

Examination Committee:

By

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ABSTRACT

This study attempts to evaluate whether the right objectives and approaches have been followed in project design and implementation to achieve the operational and financial performance of water enterprises (PDAMs) in Kotamadya Bogor and Palembang. It is primarily based on findings of the various reports, observations, and interviews/discussions with some relevant persons, in order to enhance the feedback which is meant to improve design, implementation, and PDAMs' performances in the current and future development.

By using Logical Framework as a tool for structuring the project design, the study found that the design of the project tent to be better formulated in physical infrastructure development than institutional development. Since the institutional development did not specify its objectives, it failed to convert these into specific inputs, activities, and outputs.

There is the case where the inputs have not timely provided caused serious problems. PDAM Palembang has experienced delayed in co-financing arrangement with KfW. When the project was closed, the water supply system in Palembang was not operated as designed because of incomplete works and some critical facilities for efficient operation. The causing factors of those impeded performances were unrealistic targets of the additional capacity, over-optimistic of the implementation schedule, and institutional weaknesses.

The study also approved that utility performance was influenced by the project implementation. This conclusion can be seen in PDAM Bogor, which more realistic targets had generally obtained the project objectives. The other factors contributing to the success was because of PDAM Bogor strong committed on the project, deliverable outputs, and adequate financial and human resources. Although, in the end of the implementation, the project results did not have any substantial effects on the financial performances of the PDAMs.

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Delft, 31 December 1999

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Glossary

ADB	: Asian Development Bank
BANGDA	: Directorate of Urban Development, MOHA
BAPPEDA I	: Regional Development Planning Board
BAPPEDA II	: Local Development Planning Board
BAPPENAS	: National Development Planning Agency
BRP	: Block Renovation Program
DAC	: Development Assistance Committee
DGHS	: Directorate General for Human Settlement, MPW
DGR	: Directorate General for Road, MPW
DGWRD	: Directorate General for Water Resources Development, MPW
GOI	: Government of Indonesia
ICB	: International Competitive Bidding
IS	: International Shopping
IUIDP	: Integrated Urban Infrastructure Development Program
KfW	: Kreditanstalt fuer Wiedearufbau
Kotamadya	: Municipality
LCB	: Local Competitive Bidding
LIDAP	: Local Institutional Development Action Plan
MIS	: Management Information System
MM	: Man-month
MOF	: Ministry of Finance
MOHA	: Ministry of Home Affair
MPW	: Ministry of Public Works
MRP	: Meter Replacement Program
O & M	: Operation and Maintenance
PBME	: Project Benefit Monitoring and Evaluation
PCM	: Project Cycle Management
PDAM	: Local Water Supply Enterprise
PIU	: Project Implementation Unit
PMU	: Project Management Unit
POMMS	: Performance-Oriented Maintenance Management System
PPMS	: Project Performance Management System
PUOD	: Dir. General for Public Administration and Regional Autonomy, MOHA
REPELITA	: Five Years Development Plan
RIAP	: Revenue Improvement Action Plan
ROE	: Return on Equity
ROFA	: Return of Net Fixed Asset
SLA	: Sub Loan Agreement
SPI	: Staff Productivity Index
TKPP	: Coordination Team for Urban Development
UFW	: Unaccounted for Water
WHO	: World Health Organization
WTP	: Water Treatment Plant

CHAPTER ONE
INTRODUCTION

1.1 Background

During 1980's, rapid population growth had been coupled by uncontrolled urbanization and led to acute shortages of safe water in many cities of Indonesia. Water has become an extremely valuable commodity in the urban areas. It has been in limited supply, and increasing pressure of the population's growth have increased the demand for water. Water is now a scarce resources and will become crucial in the future.

Indonesia's population was 206,3 million in 1998 (WHO,1998) in which the urban population is projected to grow to over 75 million by the year 2000. This continuous additions to the urban population has been putting great pressure on urban infrastructure and services including water. By the year 2000, Government of Indonesia (GOI) set the target of providing safe water that will supply 90 percent of urban populations through piped and non-piped systems. Of the 90 percent, 60 percent will be through piped systems and 30 percent through individual means. Data on August 1999 indicated that piped water was made available to only 50 percent of the urban population. If we assumed that the individual target was achieved, the safe water coverage is only 80 percent. The realization is still below the global water supply coverage in 1994, which the urban areas coverage was 82 percent (WHO,1998). Even though the target was not achieved, there is still an impressive performance in view of the additional population served during 1994-1999 is about 10 million persons. (see Table 1-1)

Table 1.1: Urban Population Served with Piped Water (million persons)

	Indonesia						Global
	1990	1991	1992	1993	1994	1999*)	1994**)
Urban Population	53	56	60	63	64	72	1,594
Urban population served by piped water	19	21	23	25	26	36	1,315
Proportion Served (%)	36	37	38	40	40	50	82

Sources : 1990-1994: Directorate General Human Settlements (DGHS), Repelita V Data
*) : PDAM Performance Improvement Program, DGHS (August 1999)
**) : Piped and non Piped Water, The World Health Report 1998 (WHO)

Faced with large deficiencies in urban infrastructure service during the economic crisis, Government of Indonesia building some strategies that are emphasized in strengthening the urban infrastructure. The Government has taken important strides toward reducing the urban infrastructure deficits and establishing a basis to improve the infrastructure management. This core strategy emphasizes performance oriented and commitment to the principle of decentralization and autonomy.

1.2 Institutional Framework for Urban Development

Because of the complexity of urban development activities, several ministries at the national level are involved in this issues. For that matter, an agency called National Development Planning Agency (Bappenas) is being given responsibility for general formulation of urban and regional policies and strategies. The Ministry of Home Affairs (MOHA), through its Directorate General for Public Administration and Regional Autonomy (PUOD), is responsible to assist local governments in providing guidance of urban development in the three area: local institutional development for managing urban development, local revenue improvement and urban development finance. The Ministry of Public Works (MPW) is responsible for oversight of most infrastructures. Within MPW, the Directorate General for Human Settlement (DGHS) is responsible for oversight for city and regional planning, water supply, urban drainage, sanitation and sewerage, solid waste management, housing, kampung improvement program and the market infrastructure improvement program. Also within MPW, the Directorate General for Road (DGR) is responsible for oversight of urban roads and bridges and Directorate General for Water Resources Development (DGWRD) is responsible for oversight of urban flood control and bulk water supply. These agencies are represented in the Coordination Team for Urban Development (TKPP), chaired by Bappenas. (see Appendix 1)

Under the decentralization policy, the role of Central Government is shifting from being directly responsible for constructing urban infrastructure toward assisting provincial and local government to construct urban infrastructure, and providing related institutional development support. Provincial government is being assigned to be responsible to assist local government agencies in managing investment, institutional, financial and operational development. All of these functions are exercised through a Regional Development Planning Board (Bappeda I) which integrates national, provincial and local planning and budgeting, and plays a key role in the appraisal process.

At local level, the municipal public works office is responsible in establishing infrastructure, from planning, implementing of physical works until maintaining of the infrastructures. Every Local government has Bappeda (Local Development Planning Board), Secretariats and water enterprise called PDAM. The latter is a semi-autonomous enterprise under the authority of the local government. Many local governments also have Dinas Kebersihan, which responsible in providing solid waste management services, and Dinas Pasar, responsible in providing market service.

Despite its formal organizational structure, coordination among urban sectors is a challenge for Indonesia. The framework of local participation in decision-making processes has been established, and actively promoted, although in experience so far still has been limited. The size and diversity of the country, the rapid growth of urbanization, the number of agencies concerned and inadequate institutional capabilities at the local level make the task of urban development complex and inefficient.

In May 1999, the Government issued Law No. 22 /1999 concerning Local Government Administration and Law No. 25/1999 concerning Central-Local Fiscal Balance. The laws that will significantly change in the relation between central and local governments. Law 22/1999 replaces Law 5/1974 concerning Local Government Administrations and Law No. 5/1979 concerning Village Administration. The latter was the first major government commitment to the principle of decentralization with the express intent of devolving many functions of government to the local level. This new law, which essentially deals with administrative decentralizations, introduces tremendous changes in central-local government relations:

- Local Government are now autonomous and no longer report hierarchically to provinces;
- Head of local Government is now directly responsible to the local parliament, not to the Central Government of the Province Government;
- The Ministries in central level are no longer allowed to maintain independent de-concentrated offices (Kantor Wilayah) in the provinces for purposes of executing project/programs.

The objectives of Central-Local Finance Balance Law are to provide financial resources and preserve a balance between central, provincial, and local equity. Because often conflicting objectives between national equity and local autonomy occurs.

1.3 Integrated Urban Infrastructure Development Program

Urban sector policies in Indonesia have been growing over two decades. The emerging policy has emphasized in achieving efficiency of urban development through integrated planning and implementing critical urban infrastructure. GOI has taken important strides toward reducing urban infrastructure deficits and establishing a basis for improved infrastructure management. The resulting approach, Integrated Urban Infrastructure Development Program (IUIDP), embraces the concept of decentralization, and in that context a bottom-up planning process based on assessment by local government of their own needs for infrastructure and services. The policy of IUIDP usually covers the following sub sectors: water supply, urban road, wastewater, solid waste management, drainage and flood control, urban housing and land management, kampung improvement and market infrastructure improvement.

The policy priorities for urban development in Indonesia are mainly focused (Tim Koordinasi,1987) on : (a) strengthening local governments role as leading actor in developing, operating and maintaining local services on a sustainable manner over the long-term basis; (b) improving planning and programming urban infrastructure investments; (c) mobilizing and optimizing local resources; (d) implementing a coordinated financial system for the development and administration of local services; and (e) encouraging community as well as private company to participate in development process.

Although achievements under the IUIDP policy have been considered, several areas need sustained effort. A greater issue concerns the decentralization and what this requires on the institutional and financial frameworks (Appraisal,1991). The local governments are still institutional weak, it needs to be strengthen through IUIDP and other programs. The institutional weakness is one of the most important obstacles that constrain the effort to achieve efficient provision of infrastructures in Indonesia (DGHS,1997).

On the financial terms, the lack of availability of local resources and commitments in generating additional resources, make a big constraint that can reduce the ability of local governments to undertake major developmental works. In case of PDAM, lack of equity and inability to service debts are constraint factors (DGHS,1999). To improve cost recovery and establish appropriate user charges, the tariff policy, financial management and accounting system of PDAM needs to be changed (The World Bank,1995).

1.4 General Condition of Water Supply Sector in Indonesia

1.4.1 Water Supply Sector Performance

The Government has invested increasingly in urban water supply for over the past two decades, primarily in the construction of new facilities but with rather less emphasis on the development of effective operation, maintenance and management systems. It has been estimated that there is 50 percent piped water supply coverage in urban areas or 19 percent of the Indonesia's population. There are currently some 307 PDAMs with total production capacity 92,100 liter/second that are served by about 4 million connections. Unaccounted for water is reported 33 percent. The target of UFW in Year 2000 is 25 percent in large cities (population more than 1 millions) and 30 percent in medium and small cities.

Regarding the financial performance there are only 50 PDAMs operate on a profit, and are able to contribute to new capital expenditure. 167 PDAMs operate on profit but only able to cover O & M and replacement costs (depreciation) but not new capital expenditure. 90 PDAMs are not able to cover O & M costs. Table 1-2 shows the PDAMs' performance.

Table 1.2: PDAMs Performance Indicators (August 1999)

PDAM PERFORMANCE	
Operational Indicators	Financial Indicators
Number of PDAM = 307 PDAM Production Capacity = 92,100 l/s House Connections = 4 millions Unaccounted for Water = 33 % Urban Population Coverage = 50 % Total Population Coverage = 19 %	❑ 50 PDAMs : operate on profit, and are able to contribute to new capital expenditure; ❑ 167 PDAMs: operate at a profit, but only able to cover O&M and replacement costs (depreciation); ❑ 90 PDAMs : operate on loss.

Source : PDAM Performance Improvement Program DGHS, August 1999

The operational performance of some PDAMs are also characterized by intermittent supply, severe water quality variation and low supply pressure (DGHS,1998). This supply backlog is due to a range of levels of service, and the problem is increased by institutional and technical performances that generates high volumes of unaccounted for water. The enterprises that poor financial performance caused by tariff levels are insufficient to cover their operating costs and debt service (DGHS,1999). In addition, the inefficient of an efficient system of billing and collection further troubled the financial performance condition of most enterprises.

1.4.2 Autonomy and Management Issues

PDAMs demand for a fine management structure which promote higher levels of accountability and transparency, focused on improving the quantity and quality of water supply and related services for customers throughout Indonesia. Since a large of households is waiting to be connected, while large investment required. PDAMs need sufficient capability to attract and manage scare resources..

To build a sustained increase in water supply investment, the structure of PDAMs need to be addressed. An improved performance requires some mechanisms to convert the current form of "semi-autonomy" into corporate autonomy. (The World Bank,1995).

Presently, there is range area in operational and financial viability of PDAMs where is beyond their own control, such as:

- Tariff rate structure are prescribed in general terms by national law and policy and are approved by politically appointed boards and officials;
- Tariff structures are needed to pursue both social and commercial goals. Achieving suitable balance among different objectives is troublesome;

- Payment of "contribution" to local government. The contribution is 55 % of their profits to local government. However, some or all of this contribution is often returned to PDAMs as equity;
- Organizational frameworks are very complicated. They include a large number of local, provincial, and national ministries and legislative bodies in which functional responsibilities are often unclear and frequently overlap.

Under the present condition, PDAM are managed by a Board of Directors, which reports to a Board of Supervisors. Both Boards are appointed by the Head of Local Government. The chairman of Supervisors Board is Head of Local Government with members composed by representative of local officials. In the current condition, the regulation no. 7/1998 concerning about Management of PDAM, stated that Board of Directors is suggested to be a non-government employee. Regarding Supervisors Board, a professional person or consumer representative is allowed to be a member of Supervisor Board .

The characteristics of the water supply utility in Indonesia are summarized in Table 1-3 and the organization of PDAM is presented in Appendix 2.

Table 1.3: The Characteristics of Water Enterprise (PDAM)

❑ Ownership of Assets	❑ Local Government
❑ Board of Directors	❑ Civil servant or non-civil servant, appointed by Head of Local Government.
❑ Composition of Supervisor Board	❑ Head of Local Government is chairman with member composed of representative of local officials and/or a professional
❑ Tariff Setting	❑ Tariffs rate structure in general terms by national law. Proposed by PDAM and Approved by Board of Supervisors
❑ Dividends	❑ 55 % of their operating profits to local government
❑ Provision of Annual Reports and Accounts	❑ By Government auditors
❑ National Agencies are involved	❑ Ministry of Public Works for technical aspects, Ministry of Home Affairs for enterprises regulation, Ministry of Health for the water quality standard, Ministry of Minerals for water resources.

Source: primarily data

1.5 The Economic Crisis in Indonesia

The trend of integrated urban development program was obstructed by the Asian financial crisis in mid of July 1997. The crisis had a major impact on Indonesia, with the Indonesia's currency (rupiah) depreciating more than 70 percent against the US dollar and inflation was rise by almost 75 percent in the period of July 1997 to December 1998. Factors responsible for this crisis are private foreign debt, weaknesses in supervising and regulating banking system (ADB,1999) and governance problems to manage the economy. Political uncertainty that was increasing social and political tensions undermined confidence in the rupiah.

The Indonesia's economic indicators present in Table 1-4, shown the economic condition in Indonesia during the crisis (1997-1998) and before the crisis (1996).

Table 1.4 : The Indonesia's economic Indicators

Economic Indicator	1996	1997	1998
GDP growth (percent per annum)	7.6	4.9	-13.7
Inflation Rate (percent per annum)	7.9	6.6	64.7
Balance of Payment on Current account (percentage of GDP)	-3.4	-1.4	4.5

Source : Asian Development Bank (1999)

Indonesia's economic crisis began to worsen sharply in February when the government proposed to establish a currency board, but eventually this abandoned the idea by strong pressures from various countries and institutions. On 21 May President Soeharto resigned and BJ Habibie assumed the presidency; however, this thing did a little bit to remedy the markets.

Indonesia is battling its worst recession in 35 years. The real GDP contracted by 13,7 percent along the year 1998, sharply contrast to the 7.6 percent growth rate in 1996. The severe economic contraction has substantially increased poverty incidence. House holds compensated for declining real income. Inflation measured change by 64.7 percent by the end of 1998. The rise in prices was felt in every category, from food to chemical, from material to equipment. The monetary authority tightened its monetary policy to stabilize both the rupiah and inflation rate. Tight liquidity and high exchange rate depreciation left many corporate entities into technically bankrupt, as well as some water supply enterprises that unable to increase the water tariff to cover its increasing operating cost.

1.6 Content of the Report

The report consists of seven chapters. The first chapter examines the existing situation of urban infrastructure management in Indonesia, institutional frameworks, the policy in urban development, general condition of water supply sector, and impacts of the economic crisis to the Indonesia's economy.

The second chapter talks about research objectives, rationale and methodology and the third chapter present theory and concept of project performance evaluation. The purpose of this chapter is to develop a basis concept, a tool and a set of performance indicators for evaluation. The argument is that this performance indicators might be useful in assessing the performance of PDAMs and any project implementation.

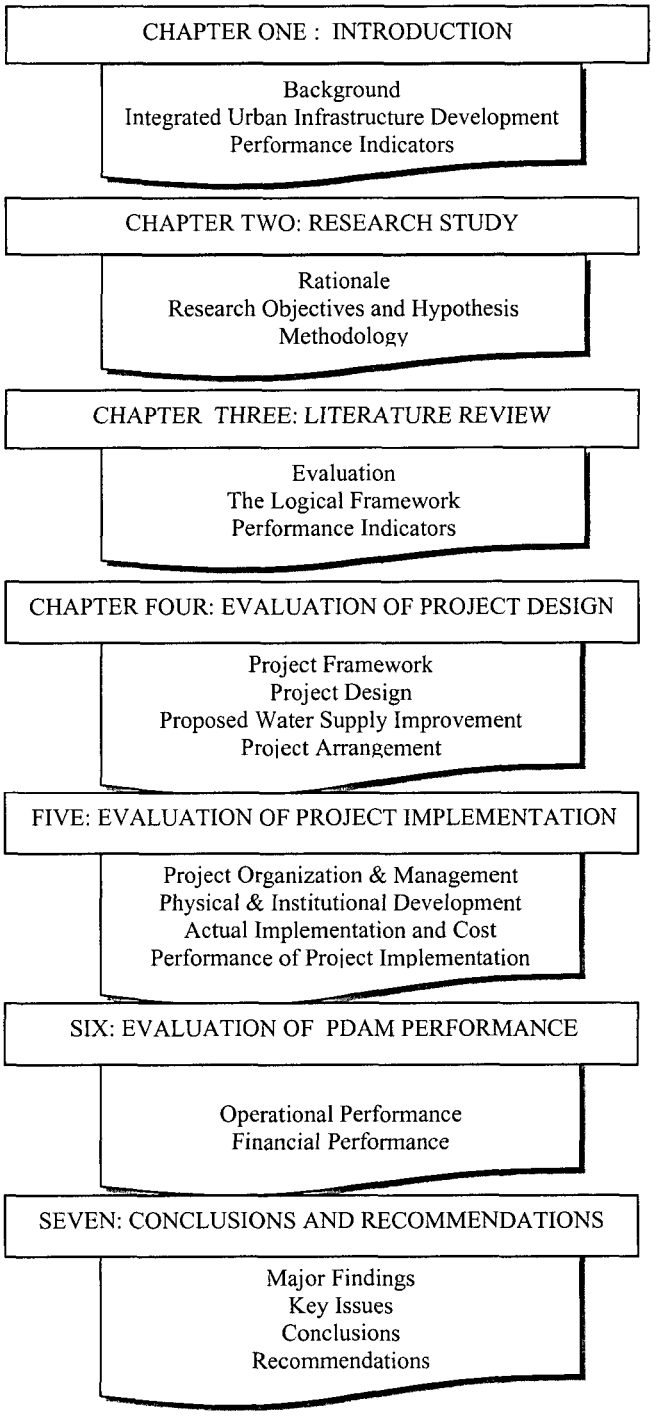
Chapter fourth evaluates Bogor and Palembang Urban Development Project that is consists of objectives and scope of works, project cost and implementation arrangement. It also defines the project frameworks to give a clearly objectives and outputs and also to establish the linkages between project design, project implementation and project evaluation.

The fifth and the sixth chapter describe and analyze the project implementation and the utility performance which are focused on operational and financial performance of PDAMs. Sustainability issues also examine to know early signs of potential impact and sustainability results to produce benefits.

The seventh chapter overlooks at key issues as lessons learned for the similar project in the future. It also stated the conclusions and recommendations.

The figure 1-A is presented structure of the report.

Figure 1-A: The Structure of Report



CHAPTER TWO
RESEARCH STUDY

2.1 Rationale

Data from the World Bank (1997) indicated that performance in the water and sanitation sector has declined sharply, with regard the percentage satisfactory project falling from around 80 percent in 1993 to 40 percent in 1997. This evidence is supported by Asian Development Bank 1998 Annual Report (ADB,1999). It presented that more than three-fourths of water supply and sanitation project between 1967 and 1989 failed to comply with their commitment to achieve financial performance satisfaction. These were caused by many aspects such as:

- the achievement of institutional and cost recovery objectives had been slow and difficult;
- substantial delays in project implementation were caused by inadequate project preparation;
- over-optimistic water demand and UFW projections; and
- underestimated production costs led to the inability of the water enterprises to fulfill their financial covenants and servicing debt.

Regarding the inadequate project preparation, the Ueropean Commission found that aid projects in the seventies and eighties had highlighted confused and unrealistic objectives, inadequate attentions, poor monitoring and weak sustainability prospects. (Kijne, 1995).

2.2 Research Objectives and Hypothesis

The main objective of this study is to verify whether the right objectives and approaches have been followed in project design and implementation to achieve improved operational and financial performances of water enterprises (PDAMs).

The study will be based on the following hypothesis:

> A project that does not or insufficiently specify its objectives and/or fails to convert these into specific inputs, activities and output, will not achieve the desired result.

This study mainly focused to answer to these following questions :

- Were the project objectives well-formulated?
- To what extent has the project objectives been reached?
- What were the major factors influencing the achievement or non-achievement of the objectives?
- Were the activities in line with project design?
- In case of deviations, what are the determinant factors?
- What progress has been made in attaining the outputs within inputs?
- What are the reasons behind the outputs attainment?
- Have the project results affected the operational and financial performances of the PDAMs?
- What have been lessons learned to similar project in the future?

To answer those questions, may need to do a case study in order to provide pictures of what had happened over time and what might be learned from the experience that could be applied as lessons learn to other projects.

2.3 The Case Study

Bogor and Palembang Urban Development Project financed by Asian Development Bank (ADB) was formulated in 1991 based on IUIDP approach. The Project covered the urban areas of Bogor and Palembang, which in 1991 had population 265,000 and 1,182,000 respectively. Both two cities are lack of various basic infrastructure facilities, especially after a rapid expanding urban fringes. Infrastructure services covered under the projects are: water supply, urban roads, wastewater and sanitation, solid waste management, drainage, and kampung improvement. The project became effective in 1992 and was closed on 31 September 1999 or 2 years behind scheduled.

The project is relevant to do a case study, because of the following reasons:

- The project was prepared under the early stage of IUIDP concept;
- The project covers two urban areas, which the initial conditions are different;
- The complexity of the project is regard to the preparation, implementation and financing arrangement;
- In the term of investment, water supply is the main sector of the project;
- The project implementation was have problems and delayed for 2 years;

- The implementation schedule of the project fits with the schedule of field works;
- The project's locations are reachable.

Regarding of water supply component, the project was covered by a broad spectrum of activities, including supply of additional treated water, identification and reduction of water losses and other activities to improve operational performance of PDAMs. Based on the water supply feasibility report in 1991, the UFW was identified at 35 percent in Kotamadya Bogor and 45 percent in Palembang. The UFW both Bogor and Palembang more than 30 percent are unacceptably high, compare with the national's target of 25 percent. In addition, regarding the financial indicators Bogor with working ratio 0.4 and net earnings 1,74 billion rupiah (0.9 million US $) in 1991, that relatively considered healthy. In contrast, Palembang with working ratio 0.6 and net earnings minus 1,45 billion rupiah (- 0.7 million US $), that considered to have serious problems due to poor of operational and financial performances.

2.3.1 Bogor Profile

The city of Bogor is situated in West Java Province, approximately 60 kilometers south of Jakarta that are connected by toll-road. Although only 45 minute by automobile from Jakarta, the average temperatures and humidity in Bogor area are typically several degrees lower than those in the Capital, providing a more comfortable environment. This might be expected to encourage commuter who works in Jakarta to live in Bogor.

The elevation of Bogor ranges from 250 to 350 meters above sea level, generally sloping downward to the north at a relatively steep grade. The city is somewhat hilly with many abrupt changes in elevation. Geology condition is characteristically volcanic in nature. In general , the basement rock slopes gently toward Bogor from Salak and Pangrango mountains. The basement rock is overlain by alluvium. This condition, combined with high rainfall in the region, provides an abundant supply of groundwater at relatively shallow depth.

Two rivers flow across the study area from South to North. The Cisadane river forms a natural administrative boundary on the west-side of the city. The Ciliwung river runs approximately through the city center, and parallel to its long axis. These two rivers function as the main drainage channels of the urban area. They are relatively steep with rocky bottoms, resulting in turbulent flow which thoroughly aerates the water at all stages of passage through the city. In addition to overland runoff, the Cisadane river is supplied by many springs in the southwest of Bogor.

From 1981 through 1991, annual growth rate was 2.9 percent Total population of kotamadya (municipality) Bogor in 1991 was 264,602 inhabitants. The highest population density occur in old settled parts of kotamadya Bogor, particularly in areas along the Ciliwung and Cisadane river in the southern of the city.

2.3.2 Palembang Profile

The city of Palembang is the capital of South Sumatera Province and is situated on the Musi River, approximately 100 km upstream from the river mouth. It is a very old city and an important port, handling principally oil and gas products, timber, coal, rubber, and other commodities. The Musi river is a tidal river with a discharge ranging from 1,000 M3/second in dry season to over 3,000 M3/second during wet season.

The major part of the city is on the northern bank, where it extends for about 6 km to the north and for 10 km along the river bank. A single bridge connects north and south Palembang. The city is flat and generally lies between elevations of 5 – 10 meters above sea level. Large parts of the city outskirts are flooded during the wet season by local rainfall, by flood flows in the Musi river, and by high tides.

Since the city's establishment, the development of Palembang has been strongly influenced by the presence of the river and by the constructed road networks. Facility of movement and access has obviously been a driving force. Other influences have been the extensive flooding areas which have constructed development, and the establishment of large industries such as Pertamina (the national oil company) and Pusri (fertilize industry) which have developed their own housing areas.

From 1982 to 1991 the overall population increased from about 849,000 to 1,181,000, at an average rate of increase of about 1 percent per year. The most recent available data shows family size ranging from 4.17 to 5.50, with an overall average of about 5.39. Within the city center the average stood at 5.77.

The climate of Palembang is warm and humid with temperature range of 22-33 Celsius degree and humidity ranging generally between 74 – 89 %. During the wet season, the rainfall of over 400 mm has been recorded. The yearly average is approximately 210 mm. Almost half of the total urban areas are subject to seasonal or regular flooding.

2.4 Methodology

To use the case study method, means to associate with multiple data sources: such as project documents, archives, physical information, observations, and interviews with relevant persons. The case study involve with what methodologists call "thick descriptions" (Morra, 1999). Analysis of case study data generally extensive (Yin,1989). This technique involves developing the reliability of the findings through multiple data sources within its characteristics.

Application of the methodology begins with the listing of all the initial water supply conditions in the project area, the reason of the project and the objectives to be achieved. The next step is to make evaluation criteria as an evaluation instrument (Danida,1999). Prior to and during field work the instruments are used to collect data and generate

findings. Much of the information collected is in the form of raw data (inputs, activities, outputs or results), time-series, and interviews/discussions with relevant persons.

The analytical part of the evaluation is the one that transforms the detail pieces of information into conclusions at a more aggregate level by using a Logical Framework approach.The project can be analyzed by formulating the elements of the project (inputs, activities, outputs and objectives) and placing them in a hierarchy of cause-effect relationships. Figure 2-A presents a conceptual framework of the project evaluation.

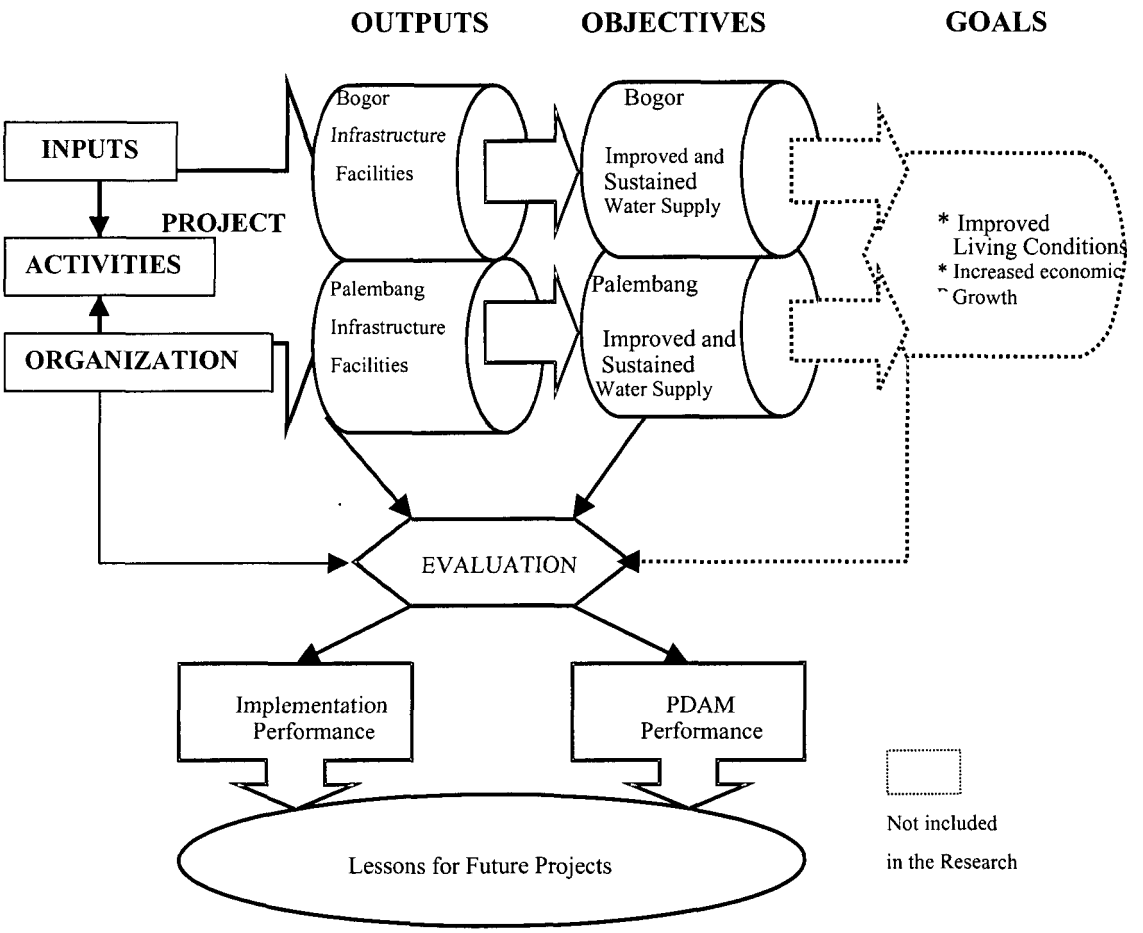


Figure 2-A : The Conceptual framework of the Project Evaluation Based on Logical Frameworks

The data will be gathered through three data gathering methods that are review of documents, interrogatory and observation. This methodology obtains data at several points prior to the project and after its implementation (time-series design). The comparisons between the actual and projected estimates permit the identification of the results from the project.

In summary, the methodology of this research consists of :

1) Literature Study :
   - Formulation of an evaluation design and methodology by using the logical framework;
   - Determination of measurements and indicators
   - Study of project documents

2) Data Gathering

- *Review of Documents*: involve the use of data gathered by others in the form of statistics, and data produced by the process of preparation (feasibility and appraisal report); implementation (project reports); monitoring and evaluation (Bank's mission, and Project Completion Report) and other written documents;

- *Interview and Discussion*: include interviewing and discussing with those concerned in the project such as Project Manager, Director of PDAM, Member of Board of Directors and other stakeholders.

- *Observation* : collecting data on physical condition as supplementary form of information gathering. Direct observation will produce deeper insights than interviews, especially useful for exploration of physical conditions of the project

The outline of data collection is presented in Appendix 2.

3) Data Analysis and Interpretation

   The evaluation will be focused on the key elements of the project, which are inputs, activities, outputs and results. By using the logical frameworks permits to identify the performance of those elements and to analyze the actual performance with the original target.

   The measurable indicators in a water supply project will be used to judge whether the performances are attained according to criteria of project success or failure. The validity of the findings will be analyzed from agreement among types of outputs or results by using tabulations or charts of event frequencies and time series orderings.

   Finally makes use of these to draw the overall conclusion at objective level, linked to the evaluation criteria in the hypothesis.

2.5 Expected Results

Expected results from evaluation water supply performance in Bogor and Palembang under Bogor and Palembang Urban Development Project, financed by Asian Development Bank and partly by KfW are:

1) Verification of project formulation and design, whether it is specific, measurable, achievable, realistic, and time-bounded
2) Evaluation of project implementation performance; including examining the project organization and management, the physical infrastructure development, the project implementation and institutional support, and overall the project implementation performance.
3) Evaluation of utility's performance :

- Operational performance, which are consist of:
  - Water production: treatment and production capacity;
  - Water distribution: service coverage and service connection;
  - Unaccounted for water;
  - Staff productivity index.

- Financial performance, which are:
  - Efficiency indicators: working ratio, operating ratio, account receivable per collection period;
  - Leverage indicators: debt service coverage and debt equity ratio;
  - Liquidity indicator: current ratio; and
  - Profitability indicator: return on net fixed asset and return on equity.

4) Early signed of potential impact and sustainability of the project results and therefore, lessons learned from the case studies could be considered as valuable inputs for other projects.

CHAPTER THREE
LITERATURE REVIEW

3.1 Evaluation

3.1.1 Trends

Great performance orientation in public infrastructure management is a favorite issue, but there was very little attention has been given to manage these public services in a results-oriented manner. Global trends and changes in the development agenda have radically adjusted the implementation of project; from supply-oriented to demand-oriented, from output-oriented to performance-oriented. Evaluation becomes a critical factor in the future characterized by competition for scarce resources and demands from stakeholders.

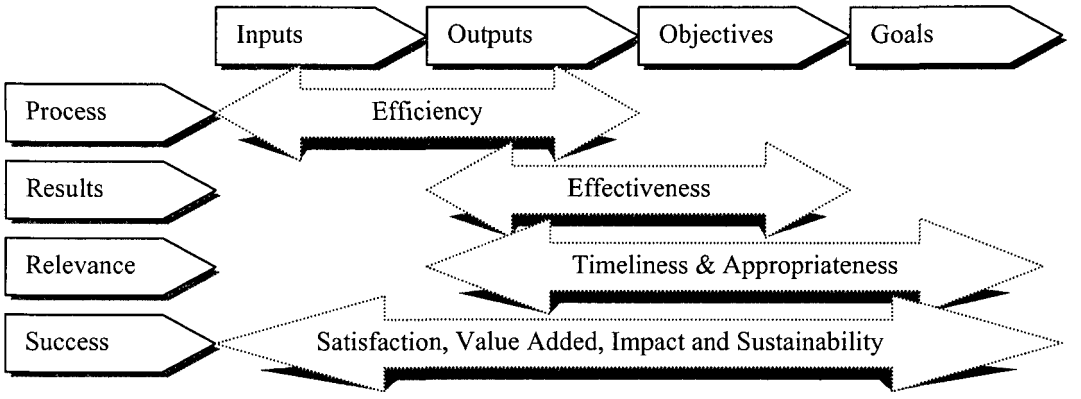
Project evaluation has been allocated almost exclusively to monitoring project implementation, and very little attention has been given to monitoring project operation and maintaining or assessing project sustainability or to evaluating whether the project has produced its intended results (Bamberger,1989). This has lead to contradictory situation in which substantial resources are invested to ensure that project is properly implemented but very little attention has been paid to evaluating whether the project continues to operate or whether they actually produce the results they were designed to achieve.

The context of performance refers to different aspects in different cases, UNDP (1996) specify that performance has different dimension related to processes (transformation of inputs into outputs), results (transformation of outputs into outcomes), relevance (responsiveness to the needs of beneficiaries and situation), and success (achievement). Figure 3-A pretenses the some dimensions of performance.

In Indonesia, the government has undertaken the development of project implementation monitoring methodologies within framework of several previous urban and water supply projects. These efforts began in 1985 with initial attempts to develop a "Performance-Oriented Maintenance Management System" (POMMS) under Second East Java Urban Development Project (1997) which would operate the inventory of local infrastructure and periodic conditions surveys. In water supply sector, a parallel effort was mounted through the establishment of a water supply program called "Program Monitoring and

Development Unit" (PMDU) to monitor the implementation of projects and evaluate the progress of PDAMs toward operational, financial and institutional sustainability.

Figure 3-A : Some Dimensions of Performance



Source : Adapted from UNDP, Evaluation Finding (1996)

Recognizing the multiple dimensions of performance, the performance of a project will be found in the networks of inputs, activities, outputs and results (intended and unintended results, intermediate and end results) that are most important from the perspectives of the project's key stakeholders (Mayne,1998). Often performance will be found in comparisons between actual levels and projected target level of inputs, activities, outputs, or results. Performance should be defined broadly enough to capture the key dimensions of performance.

3.1.2 Concepts

"Evaluation is the process of determining the merit, worth, and value of things." These words by Scriven (1991) capture the basic, natural meaning of the term of evaluation. Evaluation is the process of distinguishing the worthwhile from the worthless, the precious from the useless. This definition of evaluation is controversial. The term evaluation has attracted so many different meaning that it may call a *semantic magnet* (Mayne, 1998). It is easy to agree with the very first sentence in *Evaluation Research* (Weiss,1972): " Evaluation is an elastic word that stretches to cover judgments of many kinds."

OECD, through its Development Assistance Committee (DAC), has recommended the definition quoted below for its member countries: "An evaluation is an assessment, as systematic and objective as possible, of on-going or completed aid activities, their design, implementation and results. The aim is to determine the relevance and fulfillment of objectives, developmental efficiency, effectiveness, impact and sustainability."

A critical analysis of sustainability factors may lead to adjustments to the project objectives, results, activities and inputs. One of the tools to analysis those elements are a

logical framework method. The logical framework is a set of related concepts that describes in a systematic way the important aspects of the project (European Commission,1993).

With regard to project evaluation, the logical framework facilitates project evaluation by focusing attention on project elements: goals, objectives, outputs, activities and inputs, linked each others by monitoring mechanisms and risks/assumptions.

The figure 3-B shows the framework facilitates the linkages various project activities in a project cycle.

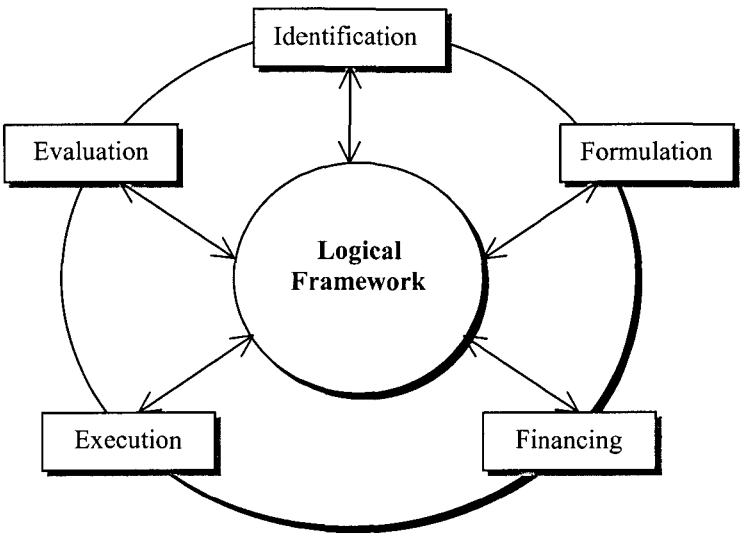


Figure 3-B: The linkages between Logical Framework and Project Cycle

Essentially, evaluation is a periodic assessment, which provides the basis for corrective actions to improve project design, its implementation and the quality of outputs. Evaluation helps to assess the relevance of project objectives on sustainable basis; efficiency in the delivery of inputs; and effectiveness in the production of planned outputs and in fulfilling the project objectives. UNDP (1996) defines the evaluation is a time-bound exercise that attempts to assess systematically and objectively the *relevance, performance* and *success*. Unlike monitoring, which must be undertaken for all programs and projects, evaluations are carried out more selectively for practical reasons.

3.1.3 Focus

The focus of evaluation can be viewed in different perspectives; the operational, tactical and strategic perspectives (Danida,1998). The operational perspective is the narrowest; it is concerned whether the outputs have been produced in a project of fund and have been disbursed as planned (efficiency). The tactical perspective is concerned about the next step in the sequence from the inputs to the achievement of objectives (effectiveness). The

widest perspective is the strategic perspective; it takes into account not only the satisfaction of customers but also its impact on other groups in society. The strategic perspective will also consider the relevance of outputs compare to the goals. Finally, the sustainability or the long-term effects will have to be taken into account.

The DAC defined the five interrelated dimension of program and project that must be assessed as the substantive focus of the evaluation (see Box 3.1): relevance, effectiveness, efficiency, impact and sustainability. Actually, it is not entirely new, but only to give more attention on the shift from output-oriented to result-oriented. Therefore, the five criteria of evaluation should be assessed in an integrated manner in order to have sound basis for making recommendations and drawing lessons learned from experience to improve program or project quality (ADB,1996).

Box 3.1 : Definitions of Criteria for Evaluating Development Assistance
Development Assistance Committee

Relevance

- The extent to which the aid activity is consistent with the priorities and policies of the target group, recipient and donor

Effectiveness

- A measure of the extent to which an aid program attains its objectives. Effectiveness measures the extent to which the activity achieves its purpose, or whether this can be expected to happen on the basis of the outputs

Efficiency

- An economic terms which means that aid uses the least costly resources to achieve the results. In other words, aid can get the most results for its economic contributions. Efficiency measures the outputs -qualitative and quantitative – in relation to inputs. This generally required comparing alternative approaches to achieving the same outputs, to see whether the most efficient process has been used.?

Impact

- A term indicating whether the project has had an effect on its surroundings in term of technical, economic and socio-cultural, institutional and environmental factors. Evaluation should consider 1) *direct effects,* the immediate costs and benefit of both the contribution to and the results of a project without taking into consideration their effects on the economy; 2) *indirect effects*, the cost and benefit which are unleashed by the contributions to a project and by its results; 3) *multiplier effects*, a special indirect effect which deals with the increase in the use of the economy's capacity, by the aid program generating a rise in demand.

Sustainability

- The extent to which the objectives of an aid activity continue after the project assistance is over; the extent to which the group affected by the aid wants to and can take charge of themselves to continue accomplishing its objectives. Sustainability is concerned with measuring whether an activity or an impact likely to continue after donor funding has been withdrawn. Project need to be environmentally as well as financially sustainable.

Source: DAC Principles for the evaluation of development assistance

3.1.4 Types

The term of evaluation is used for every kind of projects from a simple to a very elaborate evaluation research project. It is therefore necessary to define those types of evaluation. Evaluations may be classified by actor, timing and purpose (Imboden,1978). In term of time, evaluation is designed at the very beginning of the project. In the assessment of the performance of the project activity, different evaluation moments can be distinguished (Kuyvenhoven,1988): before implementation (appraisal); during implementation (monitoring or mid-term evaluation); immediate after completion (terminal evaluation); and some time after completion (ex-post evaluation).

Unfortunately, the corresponding term as given between brackets, which are commonly used, are not consistently in the literature or Donor Agency. For example, Asian Development Bank called its report Project Completion Report for immediate after completion and Project Performance Audit Report for evaluation ex-port evaluation.

figure 3-C shows the types of evaluation in different moments.

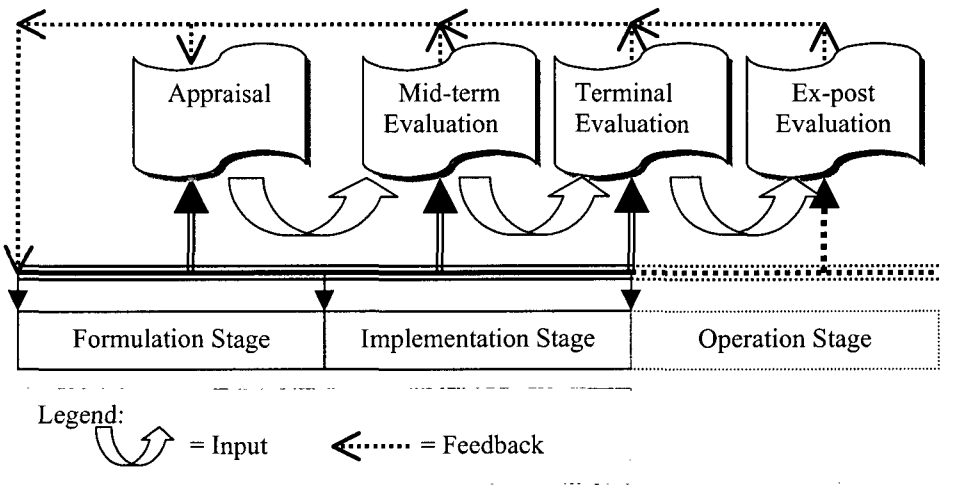


Figure 3-C: Types of Evaluation in Different Moments

During implementation stage, project financed by ADB has to perform its project benefit monitoring and evaluation (PBME) (ADB,1992). The PBME is concerned by identifying the benefits expected to be derived from a project, monitoring the chances of achieving such benefits during implementation, an evaluating the extent and impact of benefits received upon project completion and use (ADB,1986). Project financed by The Word Bank has to perform its monitoring and evaluation (Monev). The purpose of these PBME and Monev are more or less the same.

Performance evaluation is mainly done in the terminal and ex-post evaluation. Terminal evaluation primarily focused on relevance; performance (effectiveness, efficiency and timeliness); lessons learned about project design, implementation and management; early

signs of potential impact and sustainability of results; and recommendations for follow-up activities. Ex-post evaluation conducted two years or more after completion of project.

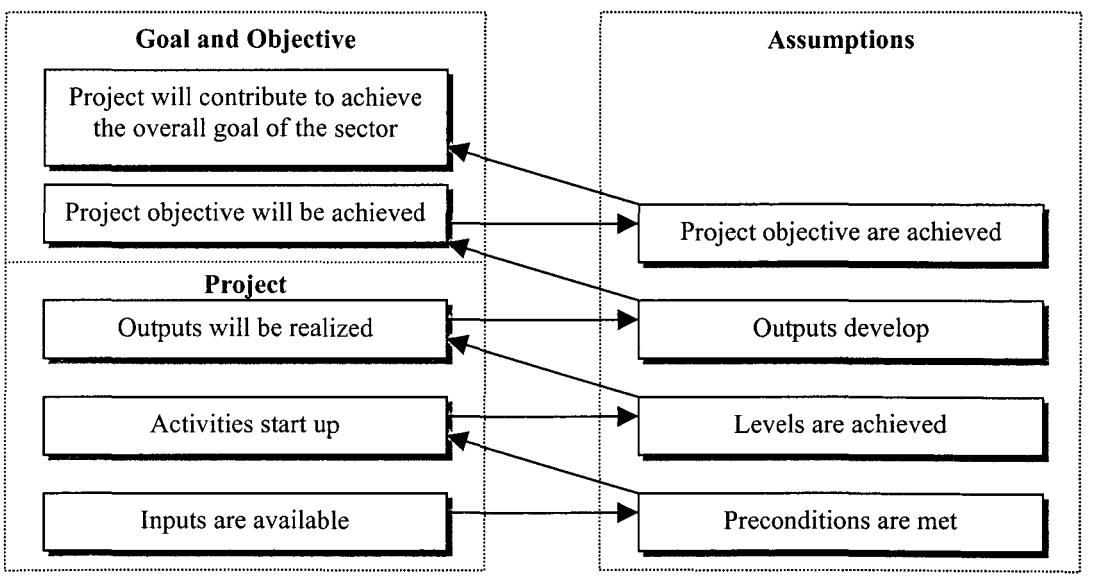
3.1.5 Tools

The Logical Framework is used as a tool for the project design and evaluation. It is widely utilized by various international agencies (e.g. the World Bank, ADB, OECF, OECD, etc) and becomes the main element, for example in Project Cycle Management (PCM) (Kijne,1995) and Project Performance Management System (PPMS) (ADB,1999). In project evaluation, the framework describes the goal, objectives, expected outputs, inputs and activities, key risks and assumptions and project costs in the specific format or matrix.

An evaluation looks at the progress that is being made by the project or program relative to its objectives. In the past, assessment of performance tended to focus on the delivery and transformation of inputs into outputs, with limited reference to immediate and long-term development results. At the moment, the evaluation framework, more importance is given to results. As a result the logical framework becomes an important tool in the project evaluation.

The main concept underlying the logical framework is the concept of cause-and-effect (blokland,1998): if certain inputs are provided and activities carried out (cause) then a set of project outputs will be realized (effect); if the outputs are produced (cause) then the project will achieve certain project objectives (effect); and if these objective are achieved (cause) then the project will contribute to achieve the overall goal (effect). The figure 3-D shows the hierarchy of project objectives and the link to the logical framework.

Figure 3-D: Hierarchy of Project Objective and the Link to Logical Frameworks



Source: Adapted from Blokland (1998) & the European Commission (1993)

3.2 Performance Indicators

3.2.1 Needs

Performance indicators are the hearts of performance evaluation system (Cook,1995). They define the data collected to measure progress and enable actual results achieved over time, from early stage of implementation to the end the project cycle, compared with planned results (Valadez,1994). Therefore, indicators need to be structured. Indicators are usually quantitative measures but may also be qualitative observations (USAID,1996). They define how performance will be measured along a scale or dimension, without specifying a particular level of achievement.

Indicators are critical component in a results-oriented evaluation framework (UNDP,1999). Generally, they are signs that show changes in certain conditions or results from specific interventions. They provide evidence of the progress of project activities in the attainment of development objectives (UNDP,1996). The World Bank (1996) stated that indicators provide the quantitative and qualitative detail to a set of objectives. They are statements about the situation that exist when an objective is reached. Simply put, performance indicators are measured to describe how well a program achieve its objectives (Gow,1988).

Both quantitative and qualitative indicators are selected based on the nature of particular aspect of the project. Using the logical framework approach to provide efficient structured indicators by assuming a hierarchy of objectives, is important. Indicators concerning the project objectives tend to be qualitative that those applicable to; *inputs, activities, outputs, outcomes and impact*, which have more quantitatively measurement components (UNDP,1997).

Input indicators are quantified and time-bound statements of resources are provided. Information of these indicators comes from management records. *Activities* indicators are process indicators that measure what happens during implementation. Usually, they are tabulated as a set of contracted completions or milestone events taken from the activity plan. *Output* indicators show the immediate physical and financial outputs of the project. *Impact* indicators refer to medium or long-term development changes (The World Bank,1996). Measuring development changes, which involves people's adaptability to a changing environment, requires some qualitative assessment of attitudes and behaviors (Sant,1989).

In general, performance indicators must be arranged into various stage of the project cycle. At the formulation stage, indicators must be established to help to clarify the logical framework of project. During implementation stage, the indicators selected should be as part of the monitoring process to measure progress, including the identification of potential problems. Finally, the indicators should be part of performance evaluations to assess results, including beneficiary satisfaction with the results.

3.2.2 Water Supply Sector

Selecting appropriate and useful performance indicators for the water supply sector is fairly straightforward process, but requires careful judgment. Indicator can be used as a valuable tool to evaluate water enterprise's operations and investments. But using sets of indicators should be interpreted with prudence, because it seldom can fully capture all the characteristics and problems of an enterprise. Naturally, water enterprises have different cultural and economic constraints. It follows that indicators should not be used in a rigid prescriptive fashion, and judgment is required to interpret them or to set acceptable or desirable targets (Yepes,1996).

Once the appropriate indicators have been chosen, the specific levels to be achieved need to be set (benchmarking). Most indicators in water supply sector seem obvious and simple to implement. In practice, a concerted and sustained effort is needed to reach the high levels of effectiveness and efficiency associated with those enterprises. Performance indicators in the water sector can be useful in assessing the performance of water enterprise by enabling benchmarking comparisons to be made between different enterprise under different organization arrangements. However, performance measurement was and very often still is biased towards accounting and physical parameters, internally focussed, and set in a historical perspective (Blokland,1998).

Performance indicator for water enterprises mainly categorized into 3 indicators that are operational, financial, and institutional indicators. Operational indicators refer to technical, operational conditions and level of services; financial indicators verify the financial status of the enterprise; and institutional indicators show technical and personnel performance levels (objective indicators) and perception of organization procedures and capabilities (subjective indicators). Blokland (1998) distinguished performance indicators in the water sector into 5 groups, excluding institutional indicators. It means that the operational and financial indicators are defined in more specific matter (shown in Box 3.2).

Box 3.2: Performance Indicators in The Water Sector

1) *Water Balance and Resources Indicator*: These indicators refer to water abstraction, water supplied, water metered and billed, per capita consumption, etc.;
2) *Physical Indicators*: these indicators refer to capacities of the physical infrastructure, such as abstraction capacity, treatment capacity, storage capacity, distribution capacity, pipe length per capita, etc.;
3) *Operational Indicators*: these indicators are concerned with operation and maintenance. They include such indicators as pipe inspection frequency, water samples tested, meter replacement, physical losses, pipe failure, etc.;
4) *Levels of Service*: these are indicators that signify the service provided to the water using customer. The indicators include supply coverage, pressure, continuity, water quality test failures, customer complaints, etc.; and
5) *Financial Indicators*: these indicators signify the financial status of the utility. Parameters can be distinguished in several categories, such as efficiency, leverage, liquidity, profitability and operations. Indicators include operating ratio, debt equity ratio, current ratio, return on equity, unit operation cost.

Source: Blokland, *Lecture Notes* (1998)

3.2.2.1 Operational Indicators

Operational indicators are the representative of the operational activities of water enterprises. The operational activities consist broader aspects than water production, distribution, consumption, unaccounted for water and personnel.

The operational indicators are compressed and developed mostly by Blokland (1998), Yepes (1996), and WASH Field Report No. 376 (1992). The concept of a comprehensive and current inventory of indicators from broader literatures, but probably not realistic to be applied as relevance aspects of water enterprises in Indonesia due to the efficiency in collecting.

1) Water Production Indicators
   - Intake Capacity [m3/day]: maximum daily hydraulic water capacity, with the existing assets, independently from current availability of water resources;
   - Treatment Capacity [m3/day]: maximum daily capacity of the treatment plant, with the existing assets;
   - Production Capacity [m3/day]: maximum daily treated water production capacity of the treatment plant;
   - Idle Capacity [m3/day]: the different between the treatment capacity and the production capacity due the certain reasons;
2) Water Distribution Indicators
   - Distribution Capacity [m3/day]: maximum daily delivery capacity of the distribution system;
   - Service Coverage [%]: the ratio between population served by utility to total population in the service area ;
   - Number of Connections [%]: number of connections served by utility
3) Water Consumption Indicators
   - Unit Consumption [liters per capita per day, lpcd]: average daily consumption per person served;
   - Distribution of Water Consumption: distribution of water consumption as a function of the number of connections;
     - Domestic Consumption [%]: total metered consumption for domestic use to total metered consumption;
     - Non Domestic Consumption [%]: total metered consumption for non domestic (commercial, industrial, public and other) use to total metered consumption.
4) Unaccounted for Water Indicator
   - Unaccounted for Water [%]: the different between the metered of water production to the distribution systems and the water sold, divided by the metered of water production to distribution system.
5) Personnel Indicator
   - Number of Staff [No.]: number of staff in the enterprise.

3.2.2.2 Financial Indicators

The indicators are adapted based on Blokland (1998), Yepes (1996), WASH Technical Report No. 53 (1990), and Amerasinghe (1990). They can be distinguished into five major types of financial indicators that measure efficiency, leverage, liquidity and profitability, and operational performance. Those indicators define the overall fiscal condition of an enterprise. Because the indicators are based on data obtained from financial statements, they are subject to the limitations of these statements, especially those resulting from variations in accounting methods (WASH,1990).

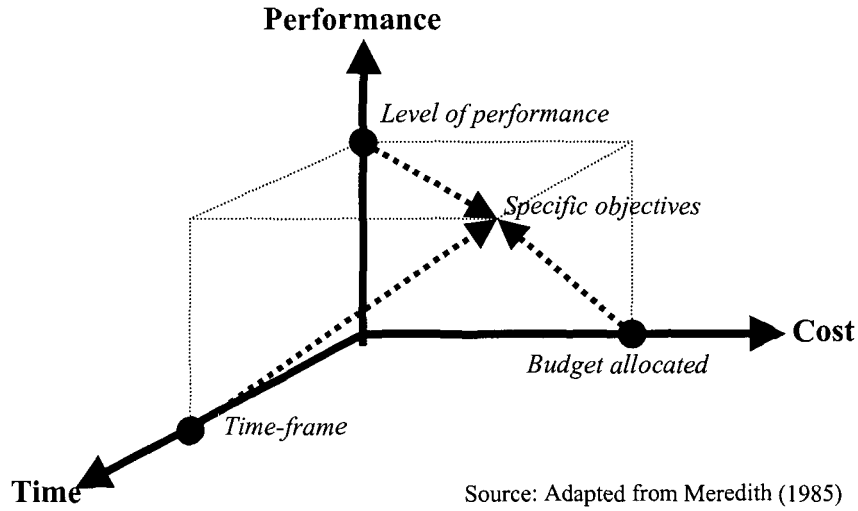
1) Efficiency Indicators
   Financial efficiency indicators measure the degree of success of an enterprise in achieving organizational targets at minimum cost (Nickson,1996).
   - Working Ratio [-]: the ratio of operating costs to operating revenues. Operating costs in this ratio exclude depreciation and interest payment (but no debt service payments);
   - Operating Ratio [-]: the ratio of operating costs to operating revenues. In this case, operating costs include all the expenses together with depreciation and interest costs (but no debt service payments);
   - Accounts Receivable/Collection Period [Months equivalent]: the ratio between the year-end accounts receivable and operating revenues, multiplied by 12;
   - Billing Efficiency [%]: the ratio of the yearly amount actually paid by the customers to the yearly amount of sale x 100.
2) Leverage Indicators
   The capability of an enterprise to meet fixed interest and principal payment in the future on its own equity contribution. They are also a basis for the project analyst to estimate what financing an enterprise will need and suitability of term (Ameresinghe,1985).
   - Debt-Service Ratio [-]: the ratio is calculated by dividing net income (before depreciation and interest) by total debt service;
   - Debt-Equity Ratio [-]: the ratio of total liabilities (current and non-current) to the sum of total liabilities and total shareholders' equity.
3) Liquidity Indicator
   From the standpoint of the credit agency, the liquidity indicator is an indication of the margin that the enterprise has for its current assets to withdraw in value before it faces difficulty in meeting its current obligations.
   - Current Ratio [-]: the ratio is the current assets divided by the current liabilities.
4) Profitability Indicators
   It measures the enterprise's ability to manage the level of costs in using asset to generate earnings.
   - Return on Net Fixed Assets [%]: the ratio between net operating income and net fixed assets;
   - Return on Equity [%]: the relationship between net income (net income after interest payment) and equity (total assets minus liabilities).

5) Operational Ratios
   - Personnel Costs [%]: personnel costs is expressed as a ratio to total operating costs (excluded depreciation and debt service);
   - Staff Productivity Index [staff/1000 connections]: the ratio between the number of staff (full time equivalent) and the number of connections.
   - Unit Operational Cost [Rp/m3]: the ratio of operational costs to the total water production.

3.2.3 Implementation Indicators

A project can be defined as:
" a set of investments and other planned activities aimed at specific objectives within a pre-determined time-frame and budget" (Magnen,1991), or as " a planned undertaking which is a set of interrelated and coordinated activities designed to achieve certain specific objectives within a given budget and period of time" (UN ACC,1984).

From two definitions above, concluded three primary element of project : time, cost and the specific objectives. Efficiency in the economic terms means that a project achieved in the least cost and the fastest time. Performance is related to the levels of service that is required to achieve the specific objectives of the project. The complexities of project require careful coordination and control in terms of timing, precedence, cost, and performance (Meredith,1985). (See Figure 3-E).



Source: Adapted from Meredith (1985)

Figure 3-E : Key Elements of Project Implementation

Evaluation of project implementation mainly focuses on controlling the time, costs and technical and managerial aspects, which is to ensure that the project is completed just on time as planned and within the budget, and that the result meets levels of performance requirements.

To accommodate the three dimension of project implementation, a performance implementation ratio will be used. The performance implementation ratio develops from a project *critical ratio* (Meredith,1985) which is a tool to look some deviation in a project activity in term of cost and time variances at the certain physical status. Usually the ratio is used for an activity, but it may be useful to calculate a set of a performance ratio as a tool to identify overall performance of implementation. The Performance Implementation Ratio is:

$$\frac{(\text{Cost Estimate})}{(\text{Actual Cost})} \times \frac{(\text{Actual Output})}{(\text{Target Output})} \times \frac{(\text{Scheduled Completed})}{(\text{Actual Completed})}$$

If the ratio is exactly equal to one, then the project activity is probably on target. If the ratio differs from one, then the activity may need to be investigated. The ratio does not measure precisely what has happen in project activity, but it only shows how much possible variance caused in the project activity.

The current system of assessing project implementation performance in ADB and the World Bank is essentially based on physical and financial progress which are contained in three project areas: implementation schedule, project costs, and compliance with loan covenants.

In Handbook on Management of Project Implementation published by ADB (1986) described the three elements of project performance: the implementation schedule concerns about comparison between original implementation schedule and actual performance, which indicate areas of delay, length of delay, causes of delay and remedial action taken. Project cost includes (a) comparison between cost estimates made during appraisal and actual costs including factors that contributed to any significant overruns and under-runs; (b) loan utilization: disbursement and financing arrangement. The compliance with loan covenants mainly focused on to what extent the borrower compliance with loan covenants and the reasons for non-compliance or delays in compliance and the remedial action taken.

3.3 Conclusion

3.3.1 Evaluation

The evaluation can be viewed in the three perspectives: operational , tactical and strategic perspectives. The operational perspective: it is concerned whether the outputs have been produced in a project of fund and have been disbursed as planned (efficiency). The tactical perspective: it is concerned about the next step in the sequence from the inputs to the achievement of objectives (effectiveness). The strategic perspective: it takes into

account not only the satisfaction of customers but also its impact on other groups in society (sustainability)

Evaluation is a part of the integral project cycle. Evaluation is become little value if a project does not have clearly defined its objectives and indicators. Indicators are critical in creating link between inputs-outputs and objectives. It must be arranged into various stage of the project cycle. At the formulation stage, indicators must be established to help to clarify the logical framework of project. During implementation stage, the indicators selected should be as part of the monitoring process to measure progress, including the identification of potential problems. Finally, the indicators should be part of performance evaluations to assess project results.

3.3.2 The Logical Framework

The logical framework approach provides an efficient structure by setting a hierarchy of project objectives (goal, purpose, outputs, activities and inputs) for which indicators are required. It is started with input indicators which are quantified and time-bounded in utilizing resources. Activities indicators measure what was happening during project implementation. Output indicators show the immediate physical and financial outputs of the project.

The basic format of a project framework is the five project elements: goal, purpose, outputs, activities and inputs. Each one linked to another in a cause-effect relationship. These five elements are described as follows:

- The goal: the project begin with identifying the overall sector or area goal to be targeted by the project;
- The purpose or immediate objective (*why* the project is being done): describes the immediate output or direct impact of the project;
- Project outputs (*what* the project will deliver): the tangible and measurable results, produced by managing properly the project components;
- Activities (*how* the project is carried out): each project output will be achieved through a series or cluster of activities; and
- Inputs: the time and physical resources needed to produce outputs. These inputs usually comprise budgeted costs needed for the purchase and supply of materials, the costs for consulting services, etc.
- Project target: The project targets essentially quantify the results, benefits or impacts expected from the project and thus make them measurable or at least tangible (ADB,1999). These performance indicators are referred to as the project's operational targets.

- Project Monitoring Mechanisms: it provides feedback on project progress at all levels of the design summary with measurable indicators. This includes progress in completion of activities, achievement of outputs and purposes.

- Risks and Assumptions: risks and assumptions are a set of statements about external and uncertain factors which may affect each level in the design summary.

Table 3.1 shows a design summary of project framework with some indicators and indicatives of risks / assumptions.

Table 3.1 : Design Summary of Project Framework

Project Summary	Project Target	Project Monitoring mechanisms *(Indicators)*	Risks/ Assumptions *(Indicative)*
Goal ▲		*Achieving the goal* *Sustainable development*	***Assumptions:*** *Timely availability of Fund* *Timely in procurement and construction* *Normal inflation* *A stable political situation* *Regular adjustment of tariff*
Purpose ▲		*Achieving the immediate objectives* *Compliance with the covenants*	
Outputs ▲		*Achievement of outputs, performance of outputs*	
Activities ◄	Inputs	*Completion of activities (procurement, constructions, and service, etc.) , organization, contracts, disbursement, Cost Overrun/ under-run, time overrun and implementation indicator.*	***Risks:*** *Fund not timely available* *Delays in procurement* *Funds not timely disbursed* *Inflation, economic crisis* *Political instability.* *Tariff not regularly adjusted*

3.3.3 Selected Indicators

The ratios and indicators described below are standard to analyze water supply sector and project. Principally, selected indicators are the most easily get from the fields. As the indicators become more specific, the evaluation can also be used effectively during data collection to obtain more accurate and detail information about the enterprise's operation and project. Box 3.3.1, 3.3.2 and 3.3.3 present the lists of key indicators that can be used to produce a generalized overview of the performance of a project activity and water utility. The key indicators are a generic set of indicator, which data are easy to be collected and some data are readily available.

Box 3.3.1: Implementation Indicators

1. Performance Implementation Ratio:

$$\frac{\text{(Cost Estimate)}}{\text{(Actual Cost)}} \times \frac{\text{(Actual Output)}}{\text{(Target Output)}} \times \frac{\text{(Scheduled Completed)}}{\text{(Actual Completed)}}$$

2. Compliance with Covenants (Objectives)

Box 3.3.2: Operational Indicators

1) Treatment Capacity : maximum daily capacity of the treatment plant, with the existing assets.

2) Production Capacity: maximum daily treated water production capacity of the treatment plant.

3) Service Coverage : $\frac{\text{total population served by utility}}{\text{Total population in the service area}}$

4) Number of Connection : number of connections served by utility

5) Unaccounted for Water =
$$\frac{\text{water delivered to distribution system} - \text{water sold}}{\text{water delivered to distribution system}} \times 100\ \%$$

6) Staff Productivity Index = $\frac{\text{number of staff}}{\text{connections x 1/1000}}$

Box 3.3.3 : Financial Indicators

1) Efficiency indicators

- Working Ratio = $\frac{\text{operating cost (excluding depreciation \& others cost)}}{\text{operating revenue}}$
- Operating Ratio = $\frac{\text{operating cost (including depreciation \& others cost)}}{\text{operating revenue}}$
- Account Receivable/Collection Period = $\frac{\text{account receivable}}{\text{operating revenues}} \times 12$

2) *Leverage:* Debt Service Ratio = $\frac{\text{net incomes}}{\text{total debt service}}$

Debt Equity Ratio = $\frac{\text{total liabilities}}{\text{Total liabilities + total equity}}$

3) *Liquidity:* Current Ratio = $\frac{\text{current assets}}{\text{current liabilities}}$

4) *Profitability:* Return of net Fixed Assets = $\frac{\text{net incomes}}{\text{net fixed assets}}$

Return on Equity = $\frac{\text{net incomes}}{\text{total equity}}$

CHAPTER FOUR
EVALUATION OF THE PROJECT DESIGN

4.1 Water Supply Situation

4.1.1 Kotamadya Bogor

The existing piped water supply system in Bogor was developed in 1918 with development of Kota Batu Spring along construction of associated transmission and distribution mains. System extensions were implemented in 1967 and 1975 through both local financing and the Australian Colombo Plan Program. These developments included the Tangkil and Bantar Kambing Spring intakes, two Cipaku reservoirs, transmission mains and expension of the distribution pipe network of Bogor to a total length of some 130 kilometers.

PDAM Kotamadya (Municipallity) Bogor is responsible to handle the supply, management, operation and maintenance of water for kotamadya Bogor that was covered 2,268 hectars. The potential water service area includes the entire urban area. In 1991, population served by the piped water system was about 20 percent of the total population's Bogor area.

The water sources consist of springs and surface water with totals capacity of 530 liter/second (see Table 4.1). Kota Batu and Bantar Kambing springs are located at about 5 km to the west and southwest of Bogor, while Tangkil Spring is located 15 km south of Bogor. Generally the condition of those springs is still properly good. There is only one treatment plant is used surface water from Cisadane River, namely Cipaku treatment plant with capacity of 120 liter/second. This treatment plant has been used since March 1988.

There are three gravity water transmission systems to distribute water from the springs to the city. Water from Tangkil and Bantar Kambing springs flows to the Cipaku reservoir, whereas water from Kota Batu goes directly to the distribution network in the north pressure zone. Water from the Cisadane river is pumped to the Cipaku treatment plant, and then goes to the 9000 m3 Cipaku reservoir.

Table 4-1 : Systems and Types of Transmission Mains PDAM Bogor

Source	Capacity (l/s)	System	Diameter (mm)	Length (m)
Kota Batu Spring	70	Gravity	225-250	5,000
Bantar Kambing Spring	160	Gravity	275-300	5,000
Tangkil Spring	170	Gravity	300-525	14,600
Cisadane River	130	Pumping	150-400	495

Source : PDAM Kotamadya Bogor

The water from these four sources is treated prior to consumption. Water from the Kota Batu, Bantar Kambing and Tangkil springs are disinfected with chlorine to render it safe for human consumption. Hypochlorite is used at Kota Batu, and chorine gas is utilized at the other springs. The Cisadane river is treated with conventional treatment plant, using rapid sand filtration.

The basic distribution system presently covers about 80 percent of the effective are of kotamadya Bogor. The system is classified by two main networks, dependent upon the area of construction :

1) Old Networks (built in 1918-1930) which serves low-lying northerly areas of the city and is supplied directly from Kota Batu Spring. The main network also provides water through a few interconnections.
2) Main Network (built in 1971-1973) which serves two pressure-zones; the southern pressure-zone (higher elevation) and the northern zone (lower evaluation).

The length of basic distribution network mains is about 148 km of piping with 22,370 connections. The distribution system is supported by three reservoirs, two units of 2,000 m3 rectangular reservoirs from Bantar Kambing spring and one unit of 9,000 m3 circular reservoir from Tangkil spring and the Cipaku treatment plant.

Unaccounted for water has been on the rise in the PDAM system over the last decade. In 1977 the unaccounted for water was some 16 percent, but by 1987 the UFW was increased to more than 30 percent and continue to about 35 percent in 1991.

4.1.2 Kotamadya Palembang

Palembang piped water supply system was developed in Kelurahan 3 Ilir in 1929 with a 100 l/s treatment plant and was some expanded to 830 l/s during 1950 until 1981. From 1978 to 1982, Rambutan treatment plant was built with total capacity of 720 l/s, together with expanded distribution systems.

PDAM Palembang, called PDAM Tirta Musi, is operated and maintained public water supply that is semi-autonomous water enterprises which respond to Palembang's local

government. The PDAM is responsible for all aspects of water supply, including new construction, operation, maintenance, and collection of revenues.

With total capacity of 1,550 l/s and unaccounted for water about 45 percent in 1991, PDAM Palembang has about 58,000 connections that serves 36 percent of the population within urban areas. In addition, more than 5 percent of total population receive water from water vendors.

The Musi River is the main source of raw water of PDAM Tirta Musi. The 3 Ilir and Rambutan treatment plants both utilize one common intake, located at Karang Anyar, upstream of the developed urban area, where the raw water is relatively free of industrial pollution but is subject to considerable pollution from human wastes. The capacity of the two existing intake is 1,700 l/s which matches the combined capacity of the two existing treatment plants.

The raw water from the Musi river is treated at both the 3 Ilir and Rambutan plants by coagulation and flocculation, sedimentation, filtration (rapid sand), and disinfection. The treated water is stored into two storage facilities before distributed. The two storage facilities that are 3 Ilir reservoir which storage capacity of 13,000 M3 at the old treatment plant and 12,000 M3 at Rambutan treatment plant.

The two treatment plans are connected through 600 mm transmission main which passes the commercial areas of the city. There are 300 mm pipelines carrying water from the 3 Ilir plant to a connection with 6 km of 500 mm pipelines for transmission and distribution in Seberang Ulu. The distribution system is supported by 5 booster pumps to serve the northern service areas. There is no regulating storage in the distribution system.

PDAM Kotamadya Palembang was one of the poor enterprises in Indonesia. There were certain problems:

- Due to power and equipment failures, and some other interruptions, PDAM fail to utilize its installed capacity of 1,550 l/s, into only produce 1,470 l/s;

- Produce intermittent supplies and low-pressure for almost all service areas. Only 60 percent of consumers receive water for about 8 hour or less and 40 percent receive water for less than 4 hour per day;

- Unaccounted for water in some areas is more than 50 percent, caused by physical leakage and administrative losses such as illegal connections and inaccurate meter reading;

- The poor level of service of PDAM responded some consumers to not paying their bill. The uncollected revenues make PDAM's account receivable to be 40 percent from the operating revenues.

4.2 Objective and Scope

The primary objective of the project was to improve the living conditions of the urban areas and minimize barriers to increasing productivity and economic expansion through provision and improvement of urban infrastructure and services. The project also aimed to enhance the institutional financial capabilities of the participating agencies, and to increase local resource mobilization through implementation of Local Institutional Development Action Plan (LIDAP) and Revenue Improvement Action Plan (RIAP).

Infrastructure services covered under the project are: water supply, urban roads, wastewater and sanitation, solid waste management, drainage and kampung improvement. The scope of works each component are presented in Box 4.1

Box 4.1: Scope of Works of Bogor and Palembang Urban Development Project

- Water supply component: covered additional capacity of treated water, identification and reduction of water losses and extending service to new areas that have not been yet served by piped water.
- Urban road component involves mainly improve to existing roads including pavement, resurfacing, road widening and road drainage. New roads also built to divert through traffic from congested areas.
- Wastewater and sanitation component has two sub-components in each urban area: a pilot project for sewerage; and expansion of low-cost sanitation facilities in areas where no such on site facilities exit.
- Solid waste management is provided basic storage, collection, transfer, transport and disposal facilities so that service coverage can be expanded significantly.
- Drainage component principally is provided for drainage facilities in areas where existing drainage is either inadequate or non existent and where flooding is a regular occurrence.
- Kampung improvement includes improvement to basic kampung infrastructure (public water taps, footpaths, drainage and public sanitation facilities) in the selected areas that have poor environmental and infrastructure condition.
- Project Implementation and Institutional Support, includes administrative and consulting services to support: institutional strengthening of the local governments and PDAMs, including review and implementation of RIAPs and LIDAPs; project management and implementation; and staff training.

Source: The Appraisal Report

The integrated urban infrastructure development concept is applied to achieve an integrated planning and programming of city-wide infrastructure investments, instead of preparing separate sectoral projects. The idea of integrated approach is to accelerate urban infrastructure investment, promote decentralized decision-making, and enhance institutional and financial capacity of local government (Tim Koordinasi,1987). This idea would be applied by PDAM in providing and managing urban infrastructure development.

The objectives of water supply component are basically:

1) To add treatment capacity of 400 l/s in PDAM Bogor and 1200 l/s in PDAM Palembang by March 1997;
2) To implement a water loss reduction program and reduce non-revenue water to 29 percent by 31 December 1995 in Kotamadya Bogor and by 31 December 1996 in Kotamadya Palembang;
3) To improve operational and maintenance of PDAM in accordance with sound administrative, financial, engineering, environment, urban development and public utility.

Looking to those objectives, expanding of treatment capacity of 400 l/s and reducing about 5 percent of UFW of PDAM Bogor could be valued as achievable targets/objectives. On the other hand, the target to expanding capacity of 1200 l/s and reducing 16 percent of UFW in PDAM Palembang seems to be unrealistic, with respect to the recent net loss of Rp1.5 billion, a debt coverage ratio of minus 0.9 in 1991.

While the objectives 1st and 2nd are absolutely measurable, the 3rd objective seems too general. It is aimed to change the capacity of PDAM organization in undertaking key tasks through systems introduced by the project. But actually, it still can be measured by using performance indicators, which have been ignored in the project design. The indicators for evaluating operation and maintenance of PDAM must be created in order to measure the improvement capacity of PDAM organization.

4.3 The Project Framework

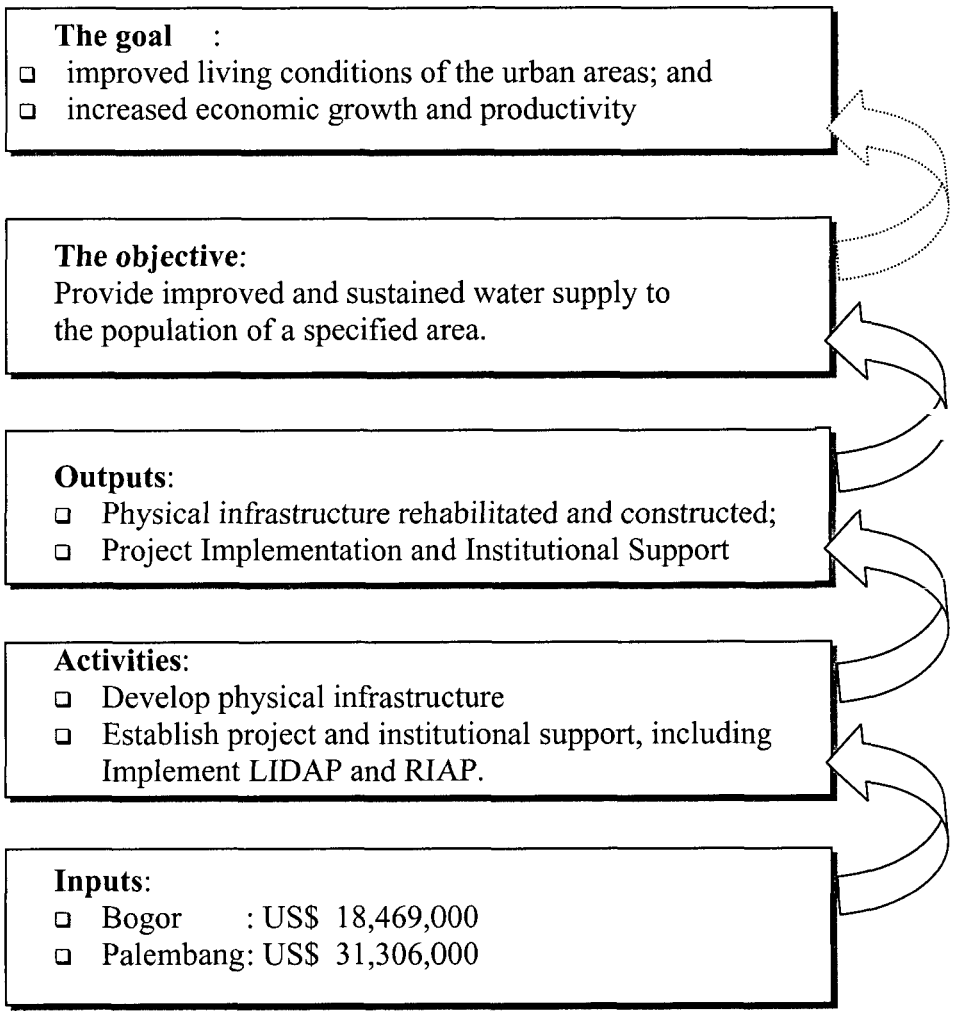
With regards to project framework, Imboden (1978) illustrated that project framework is used to identify the critical variables of a project and to show their interrelationships. It permits the identification of critical problems in project implementation and their important results. It attempts to present interrelationship between input, activity and output variables. ADB (1998) also notified that by identifying the relative importance of the variables to project results, the project framework establishes the linkages between project design, project implementation and project evaluation.

Referring to those ideas, the project framework should be initiated by identifying the key elements of the project, which are the goals, objectives, outputs, activities and inputs of

the project. Such elements must be interrelated one to another in a cause-effect relationship.

The evaluation results of the key elements of project design in Bogor and Palembang is presented in Figure 4-A, which is described as the intervention logic of the project:

Figure 4-A : Intervention Logic of The Project



Based on this evaluation, it can be seen that those five key elements have not been mentioned explicitly in the project design. Such elements tend to be implicitly reflected in a very general term, except pertaining to the physical infrastructure development. In physical infrastructure development, the activities are measurable, thus the outputs, the objectives and the goals can be specified in more detail, as shown by the Table 4.2.

Table 4-2: The Framework of Water Supply Sector Bogor and Palembang Urban Development Project

Design Summary	Project Targets	Project Monitoring Mechanisms	Risks / Assumptions
1. The Goals 1.1 improved living conditions 1.2 increased economic growth and productivity	❑ reduced water-related diseases among target population areas ❑ increased economic development ❑ improved living conditions	❑ Ministry of Health report ❑ Bureau of Statistical Data report	❑ No natural disasters ❑ Sound macro-economic policies
2. Project Objective/Purpose Provide improved and sustained water supply to the population of a specified area	❑ **Bogor** : increase access to safe water supply to 34 % by March 1997 and reduce UFW of 29 % by December 1995; ❑ **Palembang**: increase access to safe water to 47 % by March 1997 and reduce UFW of 29 % by December 1996 ❑ Effective operational and maintenance in accordance with sound administrative, financial, engineering, environment, urban development and public utility.	❑ PDAM reports ❑ Progress reports	❑ ineffective operational and maintenance;
3. Outputs 3.1 Physical infrastructure rehabilitated and constructed	❑ **Bogor** 1. treatment plant 2 x 200 l/s by December 1993 2. off-take works including a raw water transmission main of about 6.0 km by November 1993 3. transmission mains 6.1 km by March 1995 4. storage 12000 m3 and distribution mains 139 km by June 1995 5. new connections about 9500 cons. by April 1997 6. introduction of a water loss reduction program	❑ PDAM reports ❑ Progress reports	❑ No delays in contracting contractors and delivery of materials

Design Summary	Project Targets	Project Monitoring Mechanisms	Risks / Assumptions
	❑ **Palembang** 1. Treatment plants 2 x 600 l/s by February 1995 2. Transmission mains 31.1 km by March 1995 3. Construction of three reservoirs, 2 new storage and distribution centers by July 1995 4. Construction of about 68,000 new connections and replacement 38,000 water meters 5. Introduction of a water loss reduction program		
3.2 Project Implementation and Institutional Support	❑ **Project Implementation & Institutional Support** 1. Project administration support for PMUs & PIUs 2. public education program 3. ~~Consulting services~~ ▪ project management and technical support ▪ enhancement of urban management capabilities ~~including application~~ of RIAP and LIDAP ▪ training of staff in project related activities, ~~including planning,~~ programming, implementing, operating, monitoring and evaluation	❑ Progress reports ❑ PDAM reports ❑ Monthly and yearly financial reports of water enterprise	❑ Proposed tariff increases approved by Government ❑ Institutional and Financial weaknesses

How do you monitor a public edu prog and training staff?

monitor for effectiveness

Design Summary	Project Targets	Project Monitoring Mechanisms	Risks / Assumptions
4. Activities 4.1 Develop physical infrastructure: Land acquisition, detail engineering, procurement, construction, supervision 4.2 Establish project and institutional support: project management and technical support, RIAP & LIDAP, and public campaign & training	**5. Inputs** ❑ **Bogor** 1. US$ 0.9 million for detail design and supervision 2. US$ 6.5 million for equipment and materials 3. US$ 4.2 million for civil works 4. US$ 2.6 million for contingencies 5. US$ 3.0 million for interest during construction ❑ **Palembang** 1. US$ 2.0 million for detail design & supervision 2. US$ 14.7 million for equipment and materials 3. US$ 7.3 million for civil works 4. US$ 4.8 million for contingencies 5. US$ 4.5 million for interest during construction ❑ **Project Implementation and Institutional Support** US$ 2.7 million for Project Implementation and Institutional Development	❑ Progress reports ❑ Review missions ❑ Special reports	❑ Loan awarded ❑ Government funds awarded ❑ Materials available on time; ❑ No delay in consultant services and civil works

Sources : Appraisal Report, Feasibility Studies, Project Reports and PDAM Reports

4.4 Design

4.4.1 Parameters

Works included in the project areas generally based on IUIDP and Repelita (Five Years Development Plan) V guidelines, with key criteria focused on aspects of functional utility, durability, affordability and maintainability of services. Where appropriate, standard design of the Ministry of Public Works has been adopted for various infrastructure components. These standards, developed over many years, provide a satisfactory level of service at reasonable cost. These standard also promote, to the extent possible, use of local materials, technologies and resources.

The basic design criteria for water supply sector are detail in Table 4-3 below:

Table 4-3: Design Criteria of Water Supply Sector

Item	Unit	Bogor	Palembang
House Connections	Persons served	5	7
Public Standpipes	Households served	40	20
Domestic Consumption	Liters/capita/day	141	135
Non Domestic Consumption	%	34	17
Unaccounted for Water	%	29	29
Demand Ratio: Max/Ave. Day	-	1.15	1.1
Flow Ratio: Peak/Ave. Hour	-	1.63	1.5
System Pressure:			
❑ Maximum Static	meter	60	40
❑ Minimum Residual	meter	10	12.5
Treatment Process	conventional	conventional	conventional
Pipeline Materials	∅ > 500 mm steel ∅ < 500 mm PVC		
Reservoir Storage	% of average day consumption	20	15
Fire Hydrant Spacing	meter	1000	1000

Source: Appraisal Report

4.4.2 The Project

PDAM Bogor

The basic design of the water supply project in Kotamadya Bogor was the IWACO feasibility report in the 1987. The IWACO designed proposed water facilities which would be adequate to meet forecast demands through 2010 within Bogor urban area. During the project formulation in 1990-1991, a real demand survey was conducted in the

project area, which provided input regarding public water supply priorities and potential demand. Based on the real demand survey, Sinotech Engineering Consultants reviewed the long-term program into mid-term program. As a result, some reduction in the scope of works to determine the best scale of infrastructure development to be conducted under the project.

The approach of the project in achieving the objectives was generally straightforward, and technological soundness. The design was based on a least-cost approach in which the projected water demand in the area covered by the project was met through a least-cost engineering designed system (Appraisal,1991). Whereas the design mostly focused on expanding water supply systems, but miscalculated the increase in water pressure as a result of the project to have aggravated damages in the older parts of the distribution system.

PDAM Palembang

The project was simply designed to achieve the expanded water supply and reduced UFW to answer the potential water demand and high UFW in Kotamadya Palembang. Therefore, the focus of the project was mainly to increase water capacity and reduce unaccounted for water losses, but unfortunately very weak attention to the non-technical aspects such as institutional strengthening and financial improvement.

The project design had failed to identify all the main factors causing high UFW and prescribed remedial actions to address only the physical aspects of controlling water leakage. The UFW program mostly pointed on the service connections level through installation of distribution pipelines.

At appraisal, it was recognized that the design of the project needed to be confirmed by detail investigations, which were carried out at the beginning of implementation. These investigations showed that a number of design aspects were inappropriate and that major changes were required.

4.5 Proposed Water Supply Improvement Program

4.5.1 Infrastructure in Kotamadya Bogor

The water supply components that are stated in Loan Agreement consist of:

(a) Construction of one new off-take on the Cisadane river upstream from the existing off-take including a raw water transmission main of about 6.0 km;
(b) Construction of treatment facilities with an initial capacity of 2 x 200 l/s (34,600 m3/day) in Kelurahan Genteng;
(c) Expansion of transmission mains by construction of about 6.1 km of pipelines;
(d) Construction of one new 12,000 m3 reservoir;
(e) Construction of about 139 km of new mains and about 9,500 connection; and
(f) Introduction of a water loss reduction program.

Box 4.2 is summarized that the water supply components in Kotamadya Bogor under Bogor and Palembang Urban Development Project.

Box 4.2 : The Water Supply Components in Kotamadya Bogor

1)	Treatment Plant	: 400 l/s
2)	Raw Water Intakes	: 800 l/s
3)	Raw Water Transmission	: 6,0 km, ∅ = 700 mm
4)	Reservoir	: 12,000 m3
5)	Main Distribution	: 139 km, ∅ = 150 - 500 mm
6)	Service Connections	: 9,500 connections
7)	UFW Program	: 35 % to 29 % by 1995

Sources : Loan Agreement and Appraisal Report and PDAM Reports

4.5.2 Infrastructure in Kotamadya Palembang

In Loan Agreement is stated that components of water supply improvement in Palembang covers:

(a) Construction of 2 water supply treatment plants each with a capacity of 600 l/s;
(b) Construction of about 31.1 km of new transmission mains;
(c) Construction of three reservoirs, 2 new storage and distribution centers;
(d) Construction of about 68,000 new connections, provision of new water meters and replacement of 38,000 water meters; and
(e) Introduction of a water loss reduction program.

Concerning of UFW program, the program comprises two main activities that are Meter Replacement Program (MRP) and Block Renovation Program (BRP). The MRP involves a complete review of all the current meters in the system and a systematic program for repair and replacement. The program provides for 38,000 meter to be replaced, or about 60 percent of those currently installed. The BRP is a continuation of the existing Twinning program was managed by WLF of Holland. The BRP was made by the Twinning program to be accelerated to 4 times its normal rate. The areas are concentrated in Kecamatan Ilir, Seberang Ulu, Sako and Sukarame. Those areas have UFW more than 50 percent.

The scope and activities are mainly of general operation and maintenance: testing meters, reparing maters, finding and repairing leaks, relocating meters, and procuring materials and supplies for repairs and new connection. The focus of the project is mainly to reduce UFW through installation of secondary and tertiary distribution pipelines and replacement water meters at the block distribution and service connection level. Other

elements that may contribute to high UFW (such as illegal connections and inefficient billing and collection of water charge) are not specifically dealt with by the project.

Box 4.3 is summarized the scope of works water supply components in Palembang.

Box 4.3: The Water Supply Components in Kotamadya Palembang

1)	Raw Water Intakes	: 600 l/s in Ogan & 600 l/s in Karang Anyar
2)	Treatment Plants	: 600 l/s in Ogan & 600 l/s in Karang Anyar
3)	Reservoirs	: 6,000 m3 in Ogan & 6,000 m3 in Karang Anyar
4)	Transmission mains	: 31.1 km , ∅ (300 – 900) mm
5)	Distribution mains	: 120 km, ∅ (110 – 315) mm
6)	Distribution Center	: Reservoir 1,000 m3; Pumping Station 3,500 m3
7)	Service Connections	: 68,000 new connections
8)	UFW Program	: Meter replacement: 38,000 connections Block Renovation Program: 40 blocks

Sources : Loan Agreement, Appraisal Report, and PDAM Reports
Remark : 1-4 financed by KfW ; 5-8 financed by ADB

4.5.3 Project Implementation and Institutional Support

Institutional development and implementation support components that are stated in Loan Agreement consists of following components:

1) Project administration support:

   (a) Support for PMUs and PIUs;
   (b) Provision of incremental staff, office-related costs, vehicles and selected equipment; and
   (c) Introduction of a public education program.

2) Consulting services:

   (a) Project management and technical support to the level II Governments and Participating PDAMs in Project implementation;
   (b) Enhancement of urban management capabilities including support to each level II Government and each Participating PDAM in application of RIAP, LIDAP, and other action plans developed as a basis on which the level II Governments and Participating PDAMs can generate greater revenues for urban development, operations and maintenance functions, and support to strategic development and dynamic spatial planning;
   (c) Improvement of management systems and general management capability at senior level staff of the Level II Governments and Participating PDAMs;

(d) Training of staff of level II Governments and Participating PDAMs in Project related activities, including planning, programming, implementing, operating, monitoring and evaluation.

Consulting services and training activities are required to meet the needs for project implementation and management (project implementation advisors for PMUs and PIUs), and for improving financial, technical, and other urban management capabilities of local governments (institutional development support).

The main tasks of institutional development supports that are related to water supply sector are described as follows:

- Project implementation advisors (24 MM international & 36 MM domestic).
  Objective: to support and advise the PMU and PIUs on technical, financial and managerial issues.
  Outline terms of reference:
  1. Assist PMU in overall management and coordination of project planning and implementation;
  2. Supervise and assist respective PIUs to ensure that consistent standards of technical planning and design and preparation of tender documents.
  3. Assist PMU in maintenance of effective liaison with concerned Government agencies and the Bank and ensure timely preparation and consolidation of periodic reports and submissions.

- Local Institutional Development Action Plan (12 MM international & 24 MM domestic).
  Objective: to strengthen the capability of the local government and PDAM in the overall for urban management including general management and financial management of the city.
  Outline terms of reference:
  1. Identify strengths and weaknesses of the management and planning systems in operation and recommend measure to improve the general management capability at the senior levels in the organization;
  2. Establish priorities for strengthening urban management capacity; and undertake an analysis of the financial, human and physical resources available and set targets for the development of these resources;
  3. Review the systems operating for the integration of economic, financial, fiscal, environmental, social and physical planning and conduct an assessment of the organization and skills needs for the departments; and recommend measures to meet the needs;
  4. Design and propose implementation procedures for an internal management information system (MIS) in the municipality, integrating where desirable, the MIS in the PDAM;
  5. Work closely with the Directorate of Urban Development (Bangda) in the MOHA to ensure the approach and methodology applied in city management, and make recommendations for improvement to meet the policy objective of MOHA.

- Revenue Improvement Action Plan (12 MM international & 24 MM domestic).
  Objective: to strengthen the financial administration of the PDAM and to identify and implement measures to improve generation of local revenues to provide a solid financial basis for delivery of improved services and maintenance of the water supply.
  Outline terms of reference:
  1. Review and examine the PDAM tariff structure, financial policies and procedure, and financial management and control practices; identify constraints to efficient and effective financial management; assist in the development of an effective system of internal audit, monitoring and control of fixed assets, revenue collection and inventories for the PDAM;
  2. With guidance from the Director General of Regional Autonomy (PUOD), implement the provision of the relevant regulations for organization, tariff setting and accounting system.

- Training Coordinator (12 MM international for Bogor and Palembang & 12 MM domestic for each city).
  Objective: not specified.
  Outline terms of reference:
  1. Prepare course materials with the assistance of other technical and financial advisors for seminars, workshop and short training courses in a wide spectrum of topic;
  2. Review available materials and courses to avoid duplication; assess the needs for training in local government and PDAMs;
  3. Organize course and student participation; supervise and monitor the courses; and evaluate the courses and their impact.

None of those objectives are easily measured. Because the objectives do not provide for establishment of performance indicators against which achievements can be easily measured. In the case of LIDAP and RIAP, large tasks were to be established with limited resources. Moreover, working closely to the Ministry of Home Affair in central level, may reduce their attention to local circumstances and needs.

By reviewing the project documents related to the consulting services and interviewing with those concerned in the institutional development are found that the institutional development supports are a narrow range of technical project-oriented and insufficient investigation and consultation with a recipient agency. This leads to the project design with too general objectives, the absence of specific activities which are required to produce the objectives and inadequate resources to deliver the broad objectives.

What is your evaluation

4.6 Project Arrangement

4.6.1 Project Cost

The total project cost of the water supply component was estimated at US$ 53.3 million of which US$ 42.3 millions is loan, including interest during construction of US$ 7.5 million and loan to the central Government of US$ 5 million. The central Government loan is for institutional development and project implementation support. The total project was estimated on the basis of local expenditures that were based upon standard unit costs and detail at the preliminary engineering design. Physical contingencies had been estimated at 5 per cent for equipment and materials, and at 10 per cent for civil works and consulting services, while the annual price escalation had been estimated using standard ADB escalation factors for foreign exchange and local currency costs.

In addition, part of the cost of the Palembang water treatment plants and transmission mains are financed by Germany through Kreditanstalt fuer Wiedearufbau (KfW) in the amount of about DM 29,2 million in a parallel co-financing arrangement with Asian Development Bank (ADB).

The project funding arrangement is presented in Table 4-4, and detailed cost estimated of the project components is tabulated in Table 4-5.

Table 4-4: Project Funding Arrangement (in thousand US$)

Source / PDAM	External			Domestic			Total Project Cost
	SLA to PDAM		Central Gov.	Equity PDAM	Domestic Loan	Central Gov.	
	ADB Loan	KFW Loan					
Bogor	12,787	-	1,900	3,581	-	200	18,468
Palembang	10,618	13, 900	3,100	2,034	4,800	400	34,852
Total (US$*1000)	23,405	13,900	5,000	5,615	4,800	600	53,320

Source : Appraisal Report, Loan Agreement, and PDAM Reports

The loans have a term of 25 years, including grace period of 5 years. Regarding the water supply sector, the loan was relent by the Government to PDAMs under term of sub-loan agreements (SLA), which total US$ 37.3 million. The SLA rate of loans under the project was 10.5 percent. Although it was increased to 11.5 percent for the projects appraised from 31 March 1992 to 31 March 1994 according to a formula that was applied to all domestic urban development loans in Indonesia to promote uniformity and movement of the rate to the market rate. The foreign exchange risk will be borne by the Government.

Table 4-5: Cost Estimated of Project Component

Project Component	Base Cost (1991) In US$ 000	
	Bogor	Palembang
1) Pipe supply	3,500	7,771
2) Treatment plant		
❑ Civil works	1,360	3,213
❑ Equipment	2,520	5,200
3) Civil works: reservoir & distribution	2,310	2,190
4) Service connections:		
❑ Meters	295	1,503
❑ Constructions	551	1,876
5) O & M Equipment	197	250
Total base cost	10,733	22,003
Institutional Development	2,100	3,500
Contingencies	2,634	4,856
Interest During Construction	3,002	4,493
Total Project Cost	18,469	34,852

Sources : Appraisal Report, Loan Agreement & PDAM Reports

4.6.2 Procurement

The loan agreement between ADB and GOI no. 1111-INO which is financing part of the project cost of Bogor and Palembang Urban Development Project set outs the procurement procedures to be followed in the implementing of the project.

Civil contracts estimated to cost the equivalent of US$ 1,000,000 or more shall be awarded on the basis of international competitive bidding (ICB) and estimated to cost less than US$ 1,000,000 permitted to be awarded on the basis of local competitive bidding (LCB).

For supply contract estimated to cost the equivalent of US$ 500,000 or more shall be awarded on the basis of ICB, and international shopping (IS) for each supply contract estimated to cost less than US$ 500,000.

Table 4.6 is presented an indicative contract packages in water supply sector under Bogor and Palembang Urban Development Project.

Table 4.6: Indicative Contract Packages

Components	Bogor			Palembang		
	ICB	IS	LCB	ICB	IS	LCB
PDAM Bogor						
Pipe Supply	2	1	-	4	8	-
Treatment Plant:	2	-	1	4	-	-
Main Distribution	-	-	7	-	-	6
Service Connection	-	1	15	-	1	14
UFW program	-	1	-	-	1	-
Total	4	3	23	8	10	20

Source: Appraisal Report

What is your evaluation ???

4.6.3 Implementation

The larger the number of sub-sectors (water supply, urban road, solid waste management, wastewater and sanitation, drainage, kampung improvement program and market infrastructure improvement program) included in an integrated project, caused the greater risk of the project implementation (Field,1998). The institutional and financial consequence of integrating various sub-sectors into one project becomes complex (ADB,1998).

Execution and coordination arrangement for the project generally follows the IUIDP concept. At central level, TKPP that consists of Bappenas, Ministry of Public Works (MPW), Ministry of Finance (MoF) and Ministry of Home Affairs (MOHA) is provided policy coordination. Directorate General of Human Settlements (DGHS) within MPW as Executing Agency is responsible in the overall technical supervision and management of the project and MOHA is responsible for aspects on institutional development and financial management, including the implementation of LIDAP and RIAP.

Implementation arrangements at provincial and local levels are closely integrated with organizational arrangements at these levels. At provincial level, Bappeda I coordination with concerned agencies, takes responsibility for integrating the project with other projects and provides overall guidance and coordination to local government.

At the local level are parallel those at the provincial level, project coordination and guidance are provided by Bappeda II, and supported by Project Management Unit (PMU) that have responsible to manage, coordinate and supervise the urban infrastructure development. At the project level, Project Implementation Units (PIUs) are created within the local government and PDAM division to execute the project implementation.

Table 4.6 shows a general implementation arrangement concerning tasks (planning and programming, implementation, and monitoring and evaluation) at different levels (central government, provincial and local government, and project).

Table 4.6: Implementation Arrangement Matrix

Task / Level	Planning and Programming	Implementation	Monitoring & Evaluation
Central	Bappenas, MPW, MOHA & MoF (policy coordination)	MPW: management support MOHA: RIAP & LIDAP	MPW: General Monitoring & Evaluation
Provincial	Bappeda I (program coordination)		Public Works I/ Dinas I
Local	Bappeda II (project coordination)		Public Works II/ Dinas II & PDAM
Project	PMU: multi-sectors	PMU: project implementation supports	PMU: multi-sectors
	PIU: sector	PIU: infrastructure development	PIU: sector

Source: Loan Agreement, Appraisal Report & Primary Data

The figure of the implementation arrangement is presented in Appendix 3.

4.8 Conclusions

By using logical framework as a tool for structuring the project design, it can be concluded that:

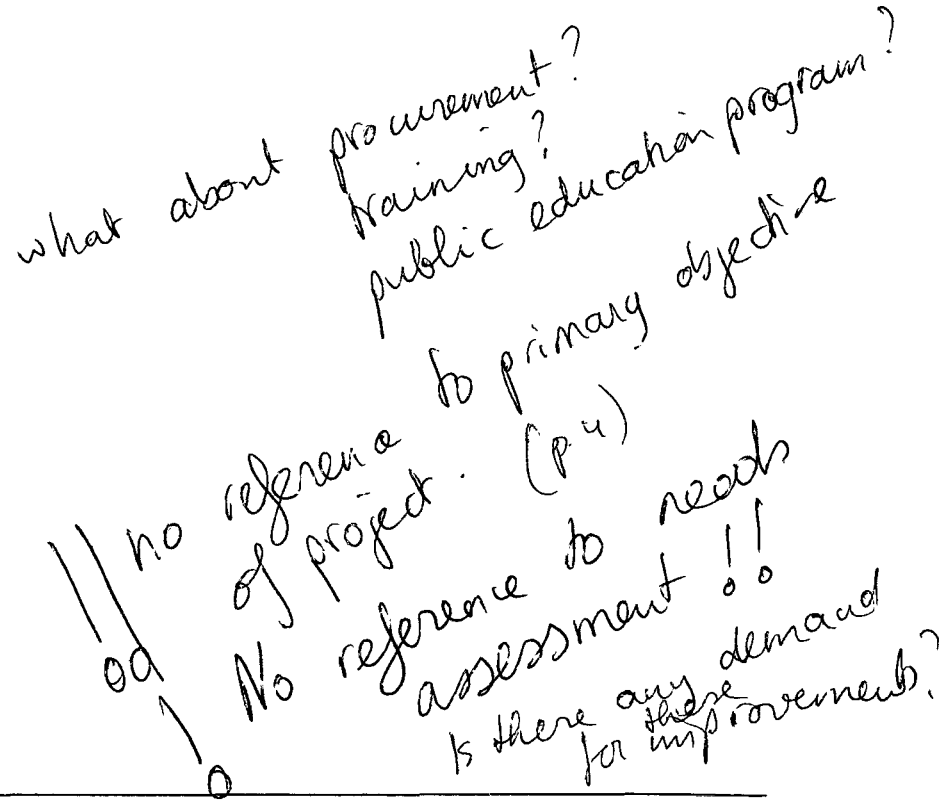
1. The physical infrastructure development was been clearly formulated, in which the specific quantitative targets and activities were appropriately being set, in order to meet the objectives. On the contrary, the project implementation and institutional development, an important component under IUIDP approach, were inadequately formulated, because it did not create the performance indicators, by which the achievements can easily be measured.

2. The institutional development supports provided by the project were inclined to be project-oriented, while the original objective of IUIDP is to strengthen the local government capacity including PDAM which should become the focus of the institutional development. Furthermore, since the institutional development, for example in the case of LIDAP and RIAP, tent to work closely to the Ministry of Home Affair in central level, it may reduce their attention to local circumstances and needs

3. The project design showed that the project was focused on expanding water supply and reducing UFW through physical infrastructure development. The design of reducing UFW program gave more attention on physical infrastructure activities such as meter replacement, pipe rehabilitation, and other routine activities. The non-physical losses that may contributed to high UFW, such as illegal connections, water theft, inefficient meter riding and uncollected water charge, did not specifically addressed by the project.

4. In term of achievable targets/objectives, it is found that PDAM Bogor has designated the targets/objectives more realistic than PDAM Palembang. PDAM Bogor determined the expanding of treatment capacity of 400 l/s and reducing about 5 percent of UFW of PDAM Bogor. On the other hand, with net loss of Rp1.5 billion, a debt coverage ratio of minus 0.9 in 1991, PDAM Palembang determined the target of expanding capacity of 1200 l/s and reducing 16 percent of UFW.

5. The project implementation organizations (PMUs & PIUs) are created in the local Governments as specific organization but not within the permanent organization of the local government to accommodate the complexity and integrity of the urban development project.



CHAPTER FIVE
EVALUATION OF PROJECT IMPLEMENTATION

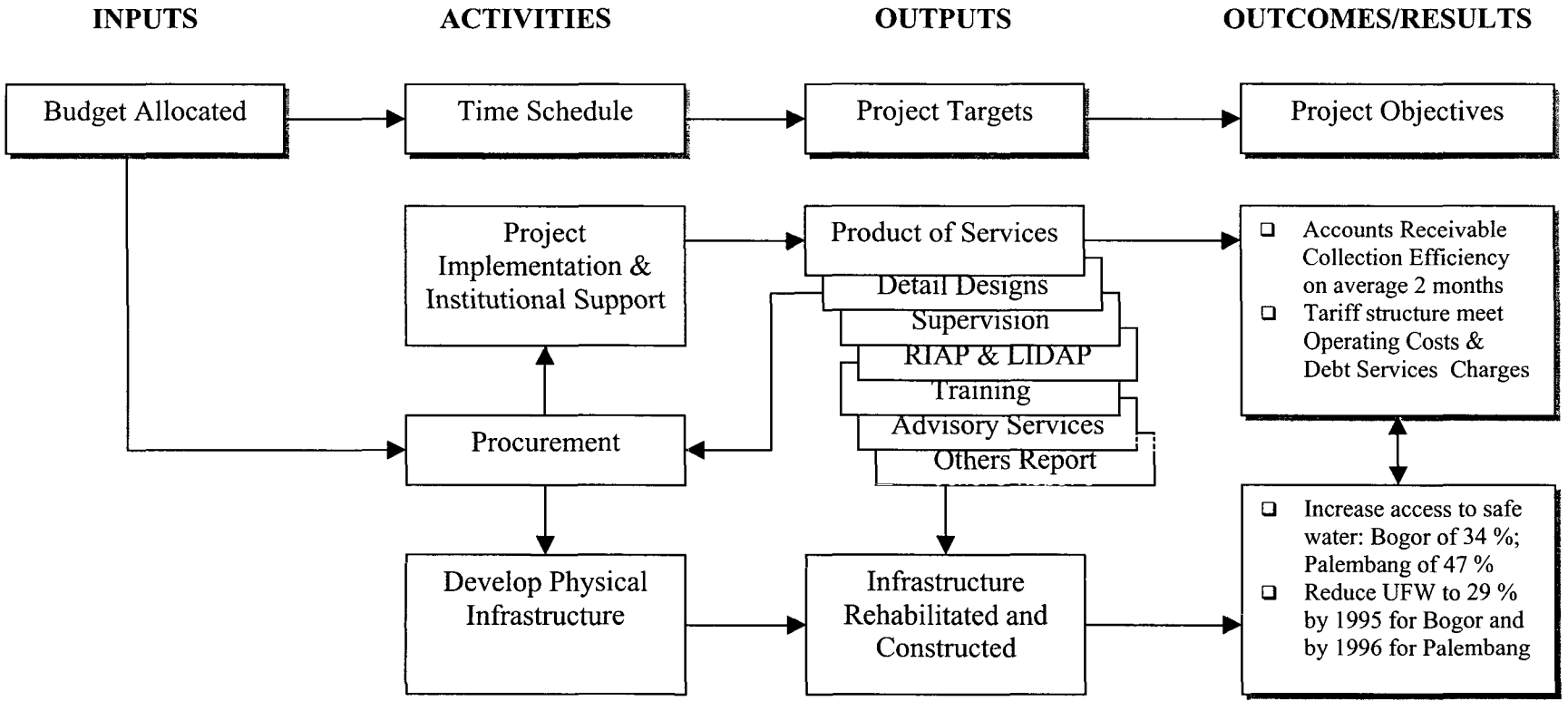
5.1 Defining Elements of Project Implementation

The analysis particularly focused on the deviations between the project plans and realization, and on the reasons for the deviations. Referring to the project framework elements: set of inputs, activities and outputs, used to achieve the project objective are monitored or evaluated by using quantitative and qualitative indicators. In other words, the basic objective of this study is to compare results at that point in time with the targets expected at the appraisal. Thus, the question is: what progress has been made compare to the project targets and time scheduled? To answer this question will be obtained by evaluating elements in the project frameworks.

Framework of the project shown in figure V-A has a set of elements consists of inputs, activities, and outputs. Each element has a target and timetable. The inputs of the project is amounting US$ 53.3 million of which US$ 40,2 million was allocated for infrastructure development (including an interest during construction); US$ 5.6 million for the project implementation and institutional development support; and US$ 7.5 million for contingencies. (see Table 4-2). The activities include (1) physical infrastructure development such as: land acquisition, detail engineering, procurement, construction, and rehabilitation; and (2) establish project implementation and institutional development such as: project management and technical support, implement RIAP and LIDAP, public campaign and training. The intended outputs comprise additional treated water, identified and reduced UFW to 29 % and extended service for new areas that have not been served with piped water (34 percent of the population in the urban areas of Bogor and 83 percent in Palembang).

Project design, procurement and implementation schedules are the critical elements that will effect the overall performance of project implementation. These elements are discussed and evaluated to measure efficiency of outputs, speed (implementation period), and actual cost. In addition, performance of institutional development and compliance with loan covenants are also included.

Figure V-A: Framework of Project Implementation



Project Implementation Indicators

❑ Actual Cost and Financing	Procurement Implementation Schedule	Design/Service Performance Infras. Rehab. & Constructed	Project Results
(Cost Overrun/Under-run)	(Time Overrun/Delay) (Implementation Performance)	(Outputs Achievement)	(Compliance with Covenants)

no systematic analysis what are the indicators

5.2 Project Organization and Management

Directorate General of Human Settlements (DGHS) within Ministry of Public Works was the Executing Agency of the project, while the municipality of Bogor and Palembang and their PDAMs were the Implementing Agencies. As the Executing Agency, DGHS provided overall management of the project and also coordinate the input of other central government agencies. Project Management Unit (PMUs) and Project Implementation Units in the two cities concerned were established to provide project management, technical support and coordination of implementation.

During project implementation, DGHS, MOHA, PMUs and PIUs carry out the following specific project implementation activities:

- DGHS, recruited consultants for: overall project management support, general training and project preparations;
- MOHA, recruited consultants for the institutional and financial capacities of the Local Governments and PDAMs;
- PMU, recruited consultants to the project implementation, technical training, and detailed design and supervision.;
- PIU, done construction management including pre-qualification; procurement of equipment, materials and civil works; contracts administrative, quality control; quantity measurement; and a sector project management.

Appendix 3 is presented the organization of PMU and PIU, and linked with consulting services in the project implementation and institutional support.

Technical division in the PIUs was not adequately staffed. The duties foreseen for this division were principally directed at providing an overview to the design and construction supervision standards of the project to ensure some degree of consistency. Actually, this duties were handled by consultants rather than through the action of the division. Project monitoring was conducted but inadequate action was taken to correct performance of contractors in the field or to follow up actions which were causing delay.

PMU had not been successful in integrating the institutional development. MOHA , the executing agencies for institutional development is structured to implement its own approaches. Design of institutional development was centralized in Jakarta, whereas the concept for the project is decentralized approach. Much of the consultant inputs were made without consultation with the institution concerned. Communications with PMU were neglected by MOHA and repeated attempts to improve these were not successful.

Because of institutional and financial reasons, the project components were implemented by PIUs individually, therefore PMUs' efforts on coordination and integration had become critical aspects to put sectoral implementation into integrated manner. This sectoral approach was not conducive to produce synergetic effects as planned in the

project formulation. Moreover PMUs and PIUs were created outside the permanent local government organization was not conducive to a smooth hand-over of infrastructure facilities from implementation stage to operation and maintenance stage.

Decentralization of the project implementation was generally lower than local governments and PDAMs expected, while interventions from Central Government relatively remained high.

5.3 Physical Infrastructure Development

5.3.1 Procurement

In the appraisal indicated the procurement contract packages for water supply components (see Table 5.1). The length of time taken to obtain approval of bids under ICB had caused some delays in the project implementation. Normally under LCB procedure it only took approximately 3-6 months. The fastest tender procedure of pipe supply contracts was under ICB procedure that took 15 months and the longest supply contracts was in Palembang that took 32 months.

Table 5.1: Indicative and Actual Procurement Contract Packages

Components	Number of Packages per Mode of Procurement								
	Appraisal			Actual			Increase or (decrease)		
	ICB	IS	LCB	ICB	IS	LCB	ICB	IS	LCB
PDAM Bogor									
Pipe Supply	2	1	-	2	5	-	0	4	-
Treatment Plant:	2	-	1	1	-	2	(1)	-	1
Main Distribution	-	-	7	-	1	6	-	1	(1)
Service Connection	-	1	15	-	1	22	-	0	7
UFW program	-	1	-	-	1	-	-	0	0
PDAM Palembang									
Pipe Supply	4	8	-	4	13	-	0	5	-
Treatment Plant:	4	-	-	4	-	-	0	-	-
Main Distribution	-	-	6	-	2	10	-	2	4
Service Connection	-	1	14	-	2	10	-	1	(4)
UFW program	-	1	-	-	1	-	-	0	-

Source: Appraisal and Project Reports

Regarding to 2 ICB contracts on the water treatment plant, PDAM Bogor had to modify its water treatment plant during the first year detail design. As a result, the total cost estimated for water treatment was reduced substantially from US$ 3.9 million to US$ 2.9 million. Because of cost estimated for the civil works of WTP was reduced to less than

US$ 1 million, the civil works was awarded based on LCB procedures. This actions effected very much to the speed of the project implementation.

Four pipe supply contracts for distribution and transmission in PDAM Palembang under ICB procedure were critical time of the project. Three packages of pipes supply for distribution and service connection had been delayed for about 2 years and the pipe supply for transmission mains had been delayed for almost 3 years.

The capacity of local staffs were unfamiliar with the long procedures for tender procedures and delays in the consultants arriving to the project meant that little attempt was made to undertake these procedures until the end of 1994.

In both PDAM, many difficulties were experienced in the procurement process connected with the award of the contracts. Procurement activities were delayed considerably in the project implementation that reflected administrative capacity weaknesses combined with non-transparency in the decision-making process in various stages of the project implementation.

5.3.2 Infrastructure Achievement

Table 5.2 presents the physical achievement of the project by components. During review of detail design some components had been changed, presented in a column of "revised". In the case the treatment plant of PDAM Bogor, during the loan negotiation, had changed its target from 200 l/s to 2 x 200 l/s without exceeding the budget and without changing any other components. In order to anticipate the expansion of Kotamadya Bogor.

PDAM Bogor has achieved the project objectives that increase access to safe water to 43 percent of the total population in the urban areas through expanding treatment capacity of 400 l/s in 1997 and constructing about 139 distribution pipes. Although service connections were behind schedule, about 13,000 new connections were provided compared with the 9,500 anticipated at appraisal.

The achievement of UFW program and additional capacity of PDAM Palembang was substantially low compared with the appraisal. Block renovation was only done 63 percent of the target. Service connections generally were 50 percent achieved or only about 41 percent envisaged at appraisal. Rehabilitation of the block renovation areas covered by the project were not sufficient to reach desired reduction of UFW to 29 % for the system as a whole.

why?!

but this does not say it is functioning!

Table 5.2: Comparison Target Physical Infrastructure with The Achievement

Component	Unit	Physical Infrastructure			Achieved (%)
		Target		Actual	
		Appraisal	Revised		
PDAM Bogor					
1. Pipe Supply	Km	151	145	145	100
2. Treatment Plants	L/s	200	400	400	100
3. Main Distributions	Km	139	139	139	100
4. Service Connections:					
▪ Water meters	No.	9500	12000	13000	108
▪ Construction	No.	9500	12000	13000	108
5. O & M Equipment	Unit	1	1	1	100
PDAM Palembang					
1. Pipe Supply	Km	182	151	110	73
2. Treatment Plants	L/s	1200	1200	1200	50
3. Main Distributions	Km	120	120	90	75
4. Service Connections:					
▪ Water meters	No.	68000	50000	28000	56
▪ New Connections	No.	30000	25000	11000	44
▪ Replacement	No.	38000	25000	13254	53
▪ Block Renovation	Block	40	40	25	63
5. O & M Equipment	Unit	1	1	1	100

but is it used?

Source: Appraisal and Project Reports

5.4 Project Implementation and Institutional Support

In general terms, the project implementation and institutional support plays an important role in the project activities. The consultants were required in starting activities in the project implementation such as: design work, pre-qualification, and tender documents. Tender activities for the project implementation and institutional supports through ICB were done by Central Government.

One of five ICB packages done by DGHS, was the study on urban development strategy and formulation of follow-up urban development project in Kotamadya Bogor, but this study was cancelled due to policy matters. Two contracts on project implementation advisors were critical event in the project implementation. The advisory teams mobilized in October 1994, 18 months behind schedule. The delays of advisory teams that were consists of procurement specialists, had effected the process of other procurement activities, especially under ICB procedures.

At the beginning of the project, the roles of institutional development were not specified. Consultant services and training were not integrated into institutional strengthening. The institutional development was scheduled to take place at the same time with infrastructure investments, but in the realization, it was implemented afterwards. As result, physical infrastructure were constructed or rehabilitated before institutional development was improved.

Evaluation of the project implementation and institutional support was difficult to measure without any comprehensive data and measurable indicators. Overall performance of the project implementation indicates that performance of consultants were partly satisfactory. The unsatisfactory parts were mainly in the institutional supports as stated in the aide memoire of the project review mission in October 1999 (see Box 5.1). The project implementation supports were relatively satisfactory.

The reasons for the unsatisfactory included:

(1) lack of clearly stated objectives, the objectives in the institutional supports were too wide, unworkable and un-measurable outcomes;
(2) lack of focus on institutional development, there was no focus in identifying institutional weaknesses and setting up priority to address the weaknesses;
(3) lack of cultural sensitivity, the consultants did not fit in to the organization culture because of limited capacity and adaptability; and
(4) lack of local circumstances and needs, tasks and targets of consulting services were prepared by Central Government.

Box 5.1: Aide Memoire of the Project Review Mission in October 1999

PUOD and BANGDA of Ministry of Home Affairs (MOHA) were expected to administer institutional strengthening components, such as Revenue Improvement Action Plan (RIAP) and Local Development Action Plan (LIDAP), respectively. Upon discussing with both MOHA and local governments, the Mission found that BANGDA involved very little in administering LIDAP, and transferred the role to PUOD. The RIAP and LIDAP were implemented in 1996/1997, with limited benefits. The mission was informed that (a) the concept of annual updating has never took place; (b) local governments viewed that these plans were prepared by central government without reflecting local circumstances and needs; and (c) MOHA also considered these plans are outdated under the recent efforts of decentralization.

Source: Aide Memoire of the Project Review Mission, 25-29 October 1999

5.3 Implementation Schedule

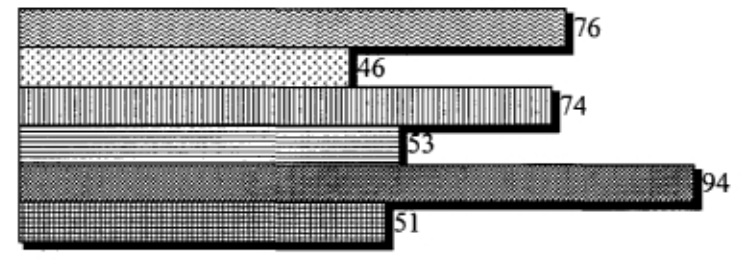
The implementation stage was the longest activity in the project cycle. It was also the critical activity when the project was exposed to a number of problems that were unanticipated during the project preparation or were addressed inadequately.

The project was scheduled to start on July 1992 and was expected to be complete by September 1997. Implementation was delayed substantially and the project was closed on 30 September 1999 with three extensions. Significant delays that took place at the beginning of the project, were when the appointing process of consultants and the KfW's loan for Palembang were postponed. At the time of the project was closed, Kotamadya Palembang was still not fully completed.

The actual implementation in PDAM Bogor took 74 months compared to the scheduled time of 53 months. The 74 months was only two months faster than the actual average of implementation period on the water and sanitation sector financed by ADB during 1968-1994 (see Chart 5-A).

PDAM Palembang consumed 94 months for the project implementation. The time taken for the review design, the approval of KfW loan, and the procurement of equipment and materials were longer than expected. The 94 months of implementation period could result in deferred project benefits and a possible decline of operational and financial performance of the PDAM.

Chart 5-A: Implementation Period of The Project (months)



Palembang: Schedule
Bogor: Schedule
Watsan Average: Schedule
Palembang: Actual
Bogor: Actual
Watsan Average: Actual

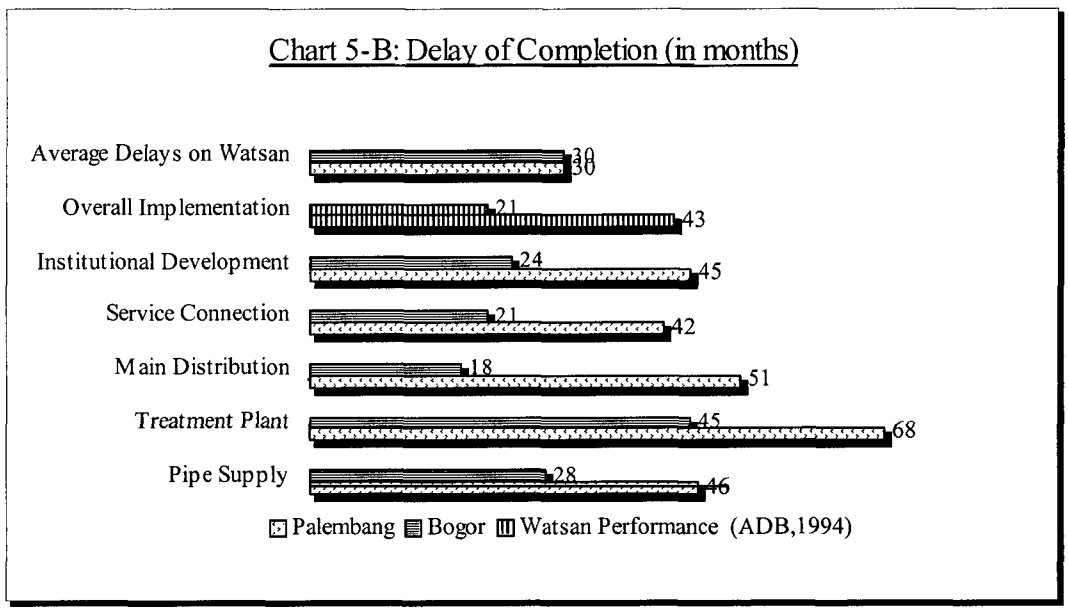
In the case of PDAM Palembang, the project was implemented with many delays, 43 months against the planned, but some components remained incomplete. Until September 1999: the UFW program was only about 60 percent complete; main distributions and transmissions only partially complete; the installation of electrical and mechanical parts

of the pumping stations were still lacking; and treatment plants have not yet been completed.

The implementation delays of PDAM Bogor were mainly because of consultants were fielded in August 1993 or one year behind schedule. This delay had caused all other project components in PDAM Bogor to be postponed. Procurement of pipes, for example, was much behind schedules. The treatment plant, vital project facilities, was constructed in January 1994 or 19 months delay compared to the appraisal. The distribution networks, another key element of the project infrastructure, was 18 months behind schedule. Service connections and UFW program were much slower than expected.

so why is this analysis not related to Cog. Frame-work.

As comparison, the water and sanitation sector of 81 projects financed by ADB during 1968-1994, had average delay about 30 months (ADB,1994). The longest delays approximately about 45 months or 120 percent late from the schedule, compared with PDAM Palembang about 43 months or 84 percent longer than the original schedule (see Chart 5-B).



In summary, the project fell behind schedule since the appointing process of engineering consultants. The delays of 12-24 months in the recruitment of consultants had caused delays in the overall project components. Moreover SLA approval, budgeting system, tender procedures, contractors / supplier and consultants performance were also the cause of delays in the project implementation.

The detail of the project implementation is presented in Appendix 4.

5.6 Actual Cost

The actual cost of the project was US$ 37.8 million compared to the base cost estimate of US$ 32.8 million. The 15 percent cost overruns were caused by the equipment and materials that used in foreign currencies. It was largely as a consequence of the long implementation period and inflation. On account of inflation, Kotamadya Palembang were suffered since the equipment and materials of their water treatment plants jumped 80 percent up its original cost (estimated in 1991). The cost over-runs of 80 percent or US$ 4.2 million due to the effects of high inflation and uncertainty of exchange rate during the financial crisis in 1997 and 1998.

The incomplete UFW program in Palembang, the project cost of the UFW, such as blocks renovation, water meters and pipes replacement, was cost under-runs about US$ 2 million. By contrast, pipe supply even only 73 percent compared to the appraisal, the cost of pipe supply was increased US$ 1.3 million or 26 percent of the base cost. In comparison, PDAM Bogor with 8 percent beyond the target of service connections, incurred cost under-run 12 percent, although pipe supply had cost overruns 40 percent of the base costs. (See table 5.3)

Table 5.3: Comparison Base Cost with Actual Cost of The Project Components

Components	Base Cost (US$ 000)		Actual Cost (US$ 000)		Cost Overrun or (Cost Under-run)	
	Bogor	Palembang	Bogor	Palembang	Bogor	Palembang
Pipe Supply	3500	7771	4935	9039	1435	1268
Treatment Plant:						
❑ Civil Works	1360	3213	1538	3617	178	404
❑ Equipment	2520	5200	1346	9400	(1174)	4200
Main Distribution	2310	2190	2448	3040	138	850
Service Connections:						
❑ Meters	295	1503	743	763	(117)	(740)
❑ Constructions	551	1876	565	519	14	(1357)
O & M Equipment	197	250	197	116	92	(134)
Sub total	10733	22003	11299	26494	566	4491
Institutional Support	2100	3500	1510	2382	(590)	(1118)
Total	12833	25503	12809	28876	(24)	3373

Sources: Appraisal and Project Reports

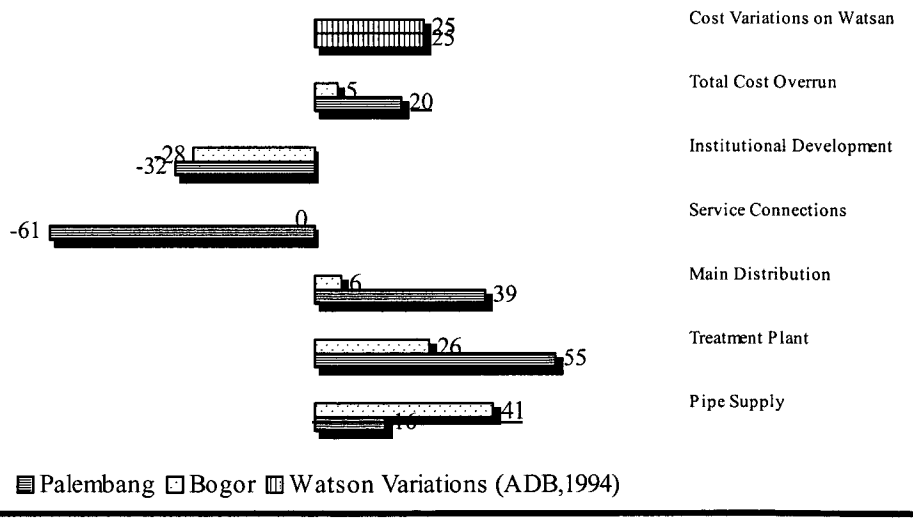
The cost overrun of civil works was averaging 13 percent from the base cost estimated, almost the same with the estimated physical contingencies of 10 percent for civil works. The cost overruns may also be caused by inflation, increasing exchange rate of local currency against foreign currency and some changes in the design and scope of the project. For instance, PDAM Bogor increased the capacity of treatment plant from 200 l/s to 400 l/s (during the negotiation) with only incurred cost overruns of 13 percent. In comparison with PDAM Palembang, without any substantial changes on WTP construction but with substantial delays, its cost overrun was 11 percent against estimated base cost at the appraisal.

The total project costs of PDAM Bogor was US$ 11.3 million. It was US$ 0.6 million beyond the estimated base cost or only increased 5.6 percent compared to budget allocated for contingencies amounting US$ 2.6 million or 24 percent. However, PDAM Palembang with incomplete infrastructure, had cost overruns US$ 4.5 million or 20 percent higher than the estimated base cost amounting US$ 22 million.

Project implementation and institutional support was cost under-run about US$ 1.7 million or 30 percent below budgeted. The reasons why of the institutional support were less than the budget, may caused: (1) cancellation of the follow-up study for urban development in Kotamadya Bogor; (2) foreign expenditures were lower than estimated cost because some changes in the man-months allocated from the international to the local consultants (3) over-estimation, especially estimated costs of local consulting services.

Comparing these results with cost variations on the water and sanitation sector: the cost variations of 31 projects, only 7 projects had cost under-run. The 24 projects recorded cost overruns greater than 25 percent (ADB,1994). Both PDAM Bogor (cost overrun of 5%) and Palembang (cost overrun 20%) were below the average cost overrun in the water and sanitation sector financed by ADB.

Chart 5-C: Cost Overrun or Underrun (%)



so what are the implications for the log frame work use?

The Chart 5-C shows that cost under-run only occurred in the service connections of PDAM Palembang caused by reducing the target of service connections (cost under-run 61 percent) and the project implementation and institutional support (cost under-run of 30 percent). The treatment plants activity in Palembang with cost overrun of 55 percent was the highest level of cost overrun compared to the other activities. Service connections in Bogor were exactly match with the base cost, while the achievement were 8 percent beyond the target.

5.7 Implementation Comparison Between PDAM Bogor and Palembang

Project implementation performance is mainly measured in term of cost, time and progress of project achievement (Meredith,1985). The primary aims for these actions are to be able to identify the performance of implementation and trend of the project results. Comparing two project with different conditions is not easy. The aggregate performance consists of schedule and cost variance at the certain physical status with difference characteristic components (Field,1998). In terms of project financed by Donor Agencies, compliance with loan covenants also includes in the evaluation.

5.7.1 Performance Ratio of the Project Implementation

It may be useful to calculate a set of a performance ratio to identify general level of performance and comparing each others to show general pictures of the project implementation performance. By using formula of performance ratio that comparing cost, physical infrastructure achievement and cost variations (see Chapter III).

Chart 5-D: Performance Ratios of The Project Implementation

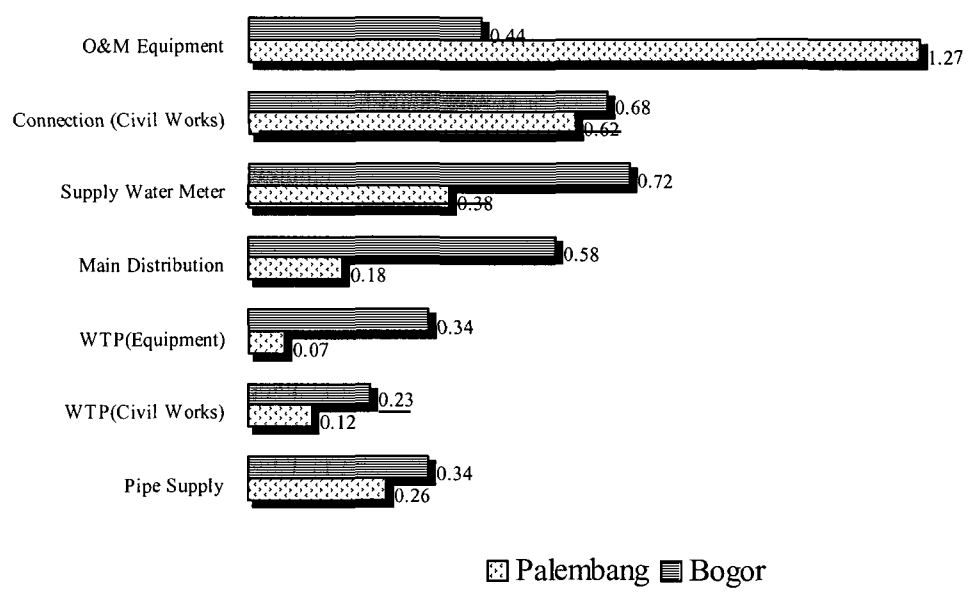


Chart 5-D shows that both PDAM did not meet the implementation target almost in all components. But PDAM Bogor showed worthy performance in the distribution system and services connections, but the water treatment plant and pipe supply components with performance ratio less than 0.5 were considered to be relatively weak performance because of delays of 45 months. These caused reducing the potential revenue for PDAM, and the matters that possibly affecting the effectiveness of the project investment.

PDAM Palembang's ratio only leads in procurement of operation and maintenance equipment with performance ratio of 1.3. The other components were less than 0.4 accept construction of services connections with the ratio of 0.6. The unexpected results, were performed by PDAM Palembang for the categories of equipment and materials such as pipe supply, pump, mechanical and electrical of water treatment plants.

According to those performance ratios, it seems that the implementation performance of PDAM Bogor was much better than PDAM Palembang in the three aspects of implementation.

5.7.2 Compliance with Loan Covenants

The loan covenants for Bogor and Palembang Urban Development Project were composed by broad aspects: financial, implementation, operational and institutional. The examination primarily focused on loan covenants that are related with water supply sector and extent the borrower compliance or non- compliance or delays with the loan covenants.

PDAM Bogor

In general, the PDAM complied to the major covenants. However, there were some exceptions:

1. Water Tariff Increase: the covenant that obliged the tariff structure and rate regularly to meet the operating costs and debt services charges, was partly complied. PDAM Bogor had increased its water tariff in 1993 and 1996, except for 1999 because the economic crisis. Financial data in 1998 showed that the return of net fixed assets was zero, it means that PDAM Bogor was only covering all of its operation and maintenance costs and replacement costs (depreciation), but not able to contribute its new capital expenditure;

2. Unaccounted for Water: after the project completion, the level of UFW increased to from 28 percent during 1992-1997 to 32 percent in 1998. The high water pressure in the old distribution pipes appears to be the cause of the high UFW;

3. Idle Capacity: capacity under-utilization was large because of slow realization of service connections because limitation on the distribution system and low piped water demand in the service areas. The demand for piped water was weakened by the economic crisis and the existence of alternative supplies from natural sources.

The table 5.4 is tabulated some loan covenants and the performances at the time of project closing date.

but your procure-ment performance was good!

Table 5.4: Target and Achievement of Institutional Development

Institutional Development	
Target	Performance
Loan Agreement, schedule 6 para. 9 (v): The Borrower shall cause each of PDAMs to: (a) Improve accounts receivable collection efficiency to an average of two months by 31 December 1995;	(a) PDAM Bogor: complied with; PDAM Palembang was not complied with: the accounts receivable collection efficiency of six months in 1995 and had increased to an average of ten months in 1998.
(b) Reduce non-revenue water to 29 percent by 31 December 1995 in Kotamadya Bogor and by 31 December 1996 in the Kotamadya Palembang	(b) PDAM Bogor: complied with; PDAM Palembang was not complied with: UFW was 40 percent in 1996 and remain the same in 1998.
Loan Agreement, schedule 6 para. 9 (vi): (c) The borrower shall cause each PDAMs to review their revenue collection as specified in the LIDAPs;	(c) PDAM Bogor complied with and PDAM Palembang not complied with.
(d) Revise their tariff structure and rate regularly in order to meet operating costs and debt service charges.	(d) PDAM Bogor complied with delay and PDAM Palembang was not complied with.

PDAM Palembang

Compliance with loan covenants was not fully satisfactory. Although most of the covenants were complied after some delays. The financial and operational performance of PDAM Palembang could not yet complied to the covenants, because of the significant delays in KfW co-finance arrangement.

The key covenants that was not complied are described below:

1. Inadequate Maintenance of Facilities: there were insufficient financial resources to undertake effective maintenance of project facilities. O&M activities of completed blocks are very limited resulting a rapid deterioration of rehabilitated facilities (PDAM Report,1998). As a result of insufficient budget and technical resources for O&M, incidences of leakage reports that have increased significantly to about 45 percent, during August-September 1999;

2. Accounts Receivable Collection: loan covenants stated that account receivable collection efficiency to an average two months by 31 December 1995 did not achieve. The collection efficiency an average ten months in 1998. Annual deficits peaked in 1997, partially because of increased operational costs and accounts receivable;

3. Unaccounted for Water: the UFW level relatively remained high. The level of UFW actually reduced to about 40 percent in 1998. The covenants that required UFW to be 29 percent upon completion of the project appear to be an unrealistic requirement.

5.8 Conclusions

1. The project implementation was delayed substantially, thus the project was closed on 30 September 1999 with three extensions. Significant delays at the beginning of the project were due to delays in the engagement and appointment of consultants and in the approval KfW's loan. At the time of the project was closed, Kotamadya Palembang was still not fully completed.

2. In PDAM Palembang, the water supply system was not operating as designed because incomplete works and the PDAM's financial difficulties. Causing factor of those impended performance were unrealistic target of the additional capacity and UFW program, over-optimistic of the implementation schedule, particularly confined loan arrangement with KfW and institutional shortcomings.

3. In both PDAMs, many difficulties were experienced in the procurement process related to the contracts award. Procurement activities were considerably delayed in the project implementation. Such condition, reflected administrative capacity weaknesses in combination with non-transparency in the decision-making processes in the various stages of the project implementation.

4. Procurements delays in pipe supply, equipment and materials were the main components that have contributed the cost overrun, besides some changing in the design and scope of works.

5. The project design had failed to address all the main factors that caused high UFW, since it only prescribed remedial actions for the physical aspects of controlling water leakage. In the Palembang case, the UFW program through physical infrastructure rehabilitation was not fully successful. The continuous high level of losses may indicate that the basic cause of the problem had not been addressed yet by the project.

6. Overall performance of the project implementation indicated that the performance of the consultants was partly successful. Moreover, the delays of selection and engagement of consultants were surely delays all of the sub-sequent physical activities.

7. The RIAP and LIDAP were implemented, with limited benefits. The activities were prepared by central government without reflecting local circumstances and needs. As a result, the institutional development supports have failed to improve the institutional capacity of the PDAMs.

8. The reasons for the unsuccessful part were included: lack of clearly stated objectives; lack on focused institutional development; and lack cultural sensitivity.

9. Because institutional and financial reasons, the project components were implemented by PIUs individually, therefore PMUs' efforts in coordination and integration had become critical aspects in placing sectoral implementation towards integrated manner. This sectoral approach was not conducive to produce synergetic effects (ADB,1997) as planned in the project formulation.

10. PMUs and PIUs that were created outside the permanent local government structure were not conducive to a smooth hand-over of infrastructure facilities from implementation stage to operation and maintenance stage.

11. Decentralization in the project implementation was generally lower than what local governments and PDAMs had expected, while interventions of Central Government were relatively remained high.

Table 5.5 is summarized the project achievement with the major factors that influenced the achievement or non-achievement.

Table 5-5: The Project Achievements and The Major Remarks/Reasons

Project Targets	Project Achievements	Remarks/Reasons
Objectives		
❑ Bogor : increase access to safe water supply to 34 % by March 1997 and reduce UFW of 29 % by December 1995;	❑ the service coverage was 34.7 % in 1997 and increased to 37 % in 1998; UFW was 26.4 % in 1995 and increased to 32.1 % in 1998.	❑ The higher water pressures in the old distribution lines appear to be the cause of the increasing of UFW.
❑ Palembang: increase access to safe water to 47 % by March 1997 and reduce UFW of 29 % by December 1996	❑ The service coverage was 38.6 % in 1997 and declined to 38.4 % in 1998; UFW was 42.2 % in 1996 and reduced to 39.7 % in 1998.	❑ Treatment plants financed by KfW was not completed yet due to the loan approval which had been delayed for almost 4 years because of PDAM's financial conditions. The high UFW caused by incomplete works in distribution systems (73%) and the block renovation program (63%).
❑ Effective operational and maintenance in accordance with sound administrative, financial, engineering, environment, urban development and public utility.	❑ PDAM Bogor was partly successful. The unsuccessful was proved by: ROFA was almost zero and idle capacity was 0.7 million M3/month.	❑ Operating costs increased almost double from 1996 to 1997 and increased 10 % in 1998 due to operating the new assets provided by the project and Indonesia's economic crisis; Operating revenues only increased 7-9 % caused by new connections.
	❑ PDAM Palembang was unsuccessful.	❑ There were insufficient financial resources in undertaking effective maintenance of project facilities. PDAM had been operated at loss condition. Account receivable was 84 % of the operating revenues in 1998.
Outputs ❑ Bogor 1. treatment plant 2 x 200 l/s by December 1993 2. in-take works including a raw water transmission main of about 6.0 km by Nov 1993 3. transmission mains 6.1 km by March 1995 4. storage 12000 m3 & distribut. 139 km (June 95) 5. new connections about 9500 cons. by April 1997 6. introduction of a water loss reduction program	❑ Bogor 1. WTP: 2 x 200 l/s completed in August 1997 2. Raw water: 5.5 km completed in July 1997 3. Transmission: 6.1 km completed in July 97 4. Storage: 12000 m3; Distribution: 139 km completed in September 1998 5. Connections: 13000 no. connected , Dec 98 6. Extensive use of Geographical information system.	❑ Bogor Bogor generally obtained the target with delays. The delays of 21 months were mainly because of the delays of consultants mobilizations, procurement under ICB procedure, and budget administration (SLA). These delays had reduced the potential revenues for PDAM, and possibly affected the effectiveness of the investment under the project in immediate term.

Project Targets	Project Achievements	Remarks/Reasons
Outputs		
❑ Palembang 1. Treatment plants 2 x 600 l/s by February 1995 2. Transmission mains 31.1 km by March 1995 3. Construction of three reservoirs, 2 new storage and distribution centers by July 1995 4. Construction of about 68,000 new connections and replacement 38,000 water meters 5. Introduction of a water loss reduction program	❑ Palembang 1. WTP: 2 x 600 l/s, 50 % completed in Sep 99 2. Transmission: 11 km,35% completed Sep 99 3. Reservoir: 1 completed; 2 under construction (45%). Two booster pumps: partly completed (pumps was not installed) in September 1999 4. Connection: 11,000 new con. & 13,254 water meter replacement in September 1999. 5. Hardware and software provided but not fully operated	❑ Palembang The water supply system was not operating as designed because of incomplete works and PDAM's financial difficulties. To reduce operating costs, PDAM operated the system for a limited number of hours in almost all of the services areas. Causing factor of those impended performance were unrealistic targets of the additional capacity and UFW program, over-optimistic of the implementation schedule, particularly confined loan arrangement with KfW and institutional shortcomings.
❑ Project Implementation & Institutional Support 1. Project administration support for PMUs & PIUs 2. public education program 3. Consulting services ▪ project management and technical support ▪ enhancement of urban management capabilities including application of RIAP and LIDAP ▪ training of staff in project related activities, including planning, programming, implementing, operating, monitoring and evaluation	1. Project support: (Oct 1994 – Oct 1996): PMU & PIUs management advisers 2. Public education: Bogor (Dec 1995 – Aug 1996); Palembang: - (combined in DED & Supervision) 3. Consulting services (Feb 1993 – Sep 1999) ▪ DED & supervision ▪ LIDAP and RIAP ▪ Training : overseas training (management & comparative studies), domestic training (technical and project administration)	Overall performance of the project implementation indicated that the performance of the consultants was partly successful. Moreover, the delays of selection and engagement of consultants were surely delays all of the sub-sequent activities. Training programs were mainly implemented in the term of project administration and technical training and O&M of the project facilities.

Project Targets	Project Achievements	Remarks/Reasons
Inputs		
❑ **Bogor**		
1. US$ 0.9 million for detail design & supervision 2. US$ 6.5 million for equipment and materials 3. US$ 4.2 million for civil works 4. US$ 2.6 million for contingencies 5. US$ 3.0 million for interest during construction	1. DED and Supervision US$ 0.7 million 2. Equipment and materials US$ 6.9 million 3. Civil works US$ 4.4 million 4. Contingencies US$ 0.6 million 5. Interest during construction: NA	❑ Pipe supply, which cost overrun about 40 %,was the main component that has contributed the cost overrun in PDAM Bogor. The implementation delays and changes in the design and scopes may also contribute the cost overrun.
❑ **Palembang**		
1. US$ 2.0 million for detail design & supervision 2. US$ 14.7 million for equipment and materials 3. US$ 7.3 million for civil works 4. US$ 4.8 million for contingencies 5. US$ 4.5 million for interest during construction	1. DED and Supervision US$ 1.5 million 2. Equipment and materials US$ 20.1 million 3. Civil works US$ 6.4 million 4. Contingencies US$ 4.5 million 5. Interest during construction: NA	❑ Procurement of equipment and materials were delayed for about 2-4 years; some equipment and materials (transmission pipe and WTP Equipment) were tendered during the high inflation rate (1997-1998) so that contracts had the high cost overrun (about 80 %).
❑ **Project Implementation and Institutional Support**		
▪ US$ 2.7 million for Project Implementation and Institutional Development	▪ Project Implementation and Institutional development : Bogor US$ 0.8 million Palembang US$ 0.9 million	Project implementation and institutional support cost under-run of 30 %. It may cause by: (a) cancellation of the follow-up study for urban development in Bogor; (b) foreign expenditures was lower than estimated cost because some changes in the man-month allocation from international to the domestic consultants; (c) over-estimated costs for local consulting services.

CHAPTER SIX
EVALUATION OF THE PDAMS' PERFORMANCE

6.1 Operational Performance

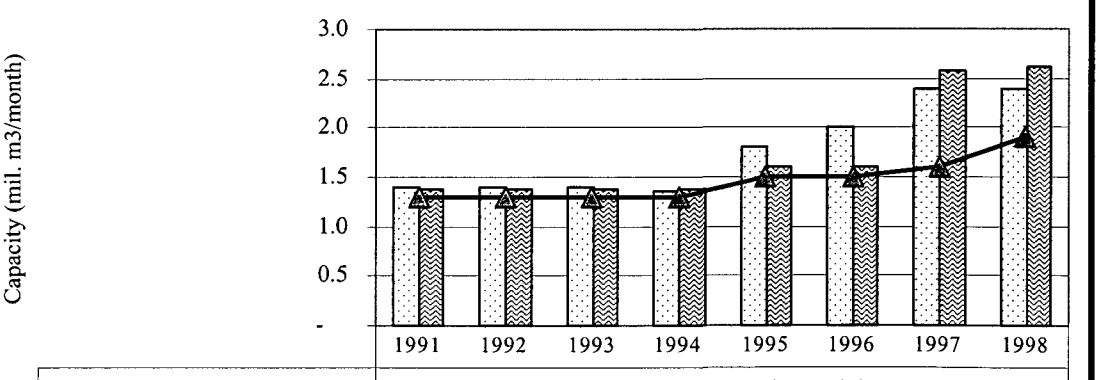
The operational indicators are used to measure the operational performances of the water utilities (PDAMs) as a result of the project, including: treatment and production capacity; service coverage and services connection; and unaccounted for water. Staff productivity index also will observe to see general picture of operational performance of the PDAMs. These indicators are pointed as basic parameters during the project formulation to calculate feasibility of the project and workability of the water supply system. Success or failure to achieve those indicators will effect to overall performance of the utilities.

6.1.1 PDAM Bogor

Treatment and Production Capacity

As a result of water supply expansion program, the water treatment plant expanded its production by about 1.2 million m3/month, which was larger than the appraisal estimations of 1.0 million m3/month. PDAM Bogor is currently producing 1.9 million m3/month or about 0.7 million m3/month below the treatment capacity of 2.6 million m3/month. The figure 6-A shows the capacity achievement of PDAM Bogor.

Chart 6-A: Treatment and Production Capacity



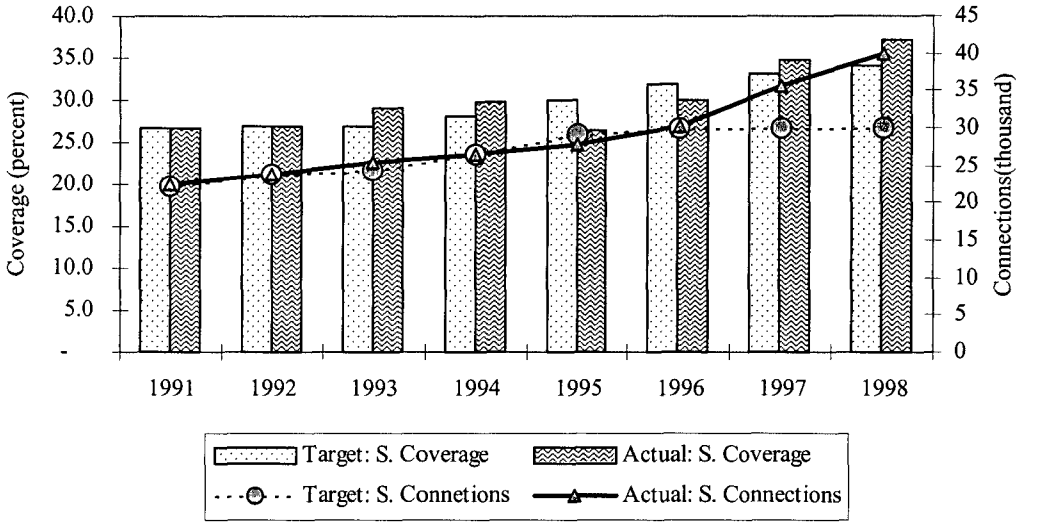
	1991	1992	1993	1994	1995	1996	1997	1998
Target: Treatment Capacity	1.4	1.4	1.4	1.4	1.8	2.0	2.4	2.4
Actual: Treat. Capacity	1.4	1.4	1.4	1.4	1.6	1.6	2.6	2.6
Production Capacity	1.3	1.3	1.3	1.3	1.5	1.5	1.6	1.9

During Loan Negotiation a treatment capacity of the PDAM had been expanded from 200 l/s to 2 x 200 l/s to anticipate the expansion of Kotamadya Bogor. These adjustments, however, were not supported by additional distribution systems, but the piped water services were extended essentially as planned. As the result, the idle capacity still remained higher.

Service Coverage and Service Connection - this contradicts V.3

Target population that would be served by piped water was originally targeted to 75 percent of the total population in the service areas or 34 percent of the total population in urban areas. The service coverage achievement in 1998 was 37 percent of the total population in urban areas, 3 percent higher than estimated in the appraisal. New service connections in the urban area had increased markedly, from about 26,500 in 1994 to 40,000 in 1998. About 13,000 new service connections had been provided compared with the 9,500 anticipated at appraisal. The population that directly served by piped water was about 252,000 or 10 percent beyond the projected population. The chart 6-B is showing the service coverage and number of connections provided under the project.

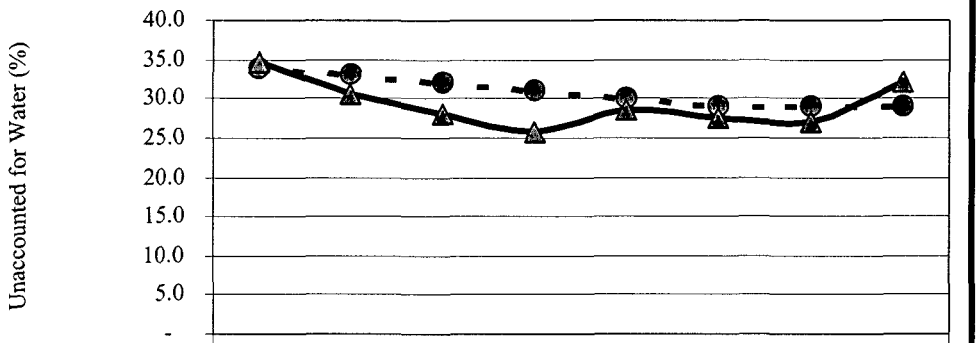
Chart 6-B: Service Coverage & Service Connection



Unaccounted for Water

The main objective stated at appraisal was to reduce the UFW to 29 percent in 1995. The yearly achievement of UFW on a system-wide base are shown in Chart 6-C. Annual average UFW had showed a downward trend since 1991 and reached a point of about 26 percent in 1994. The level of UFW was increased dramatically to 32 percent in 1998 upon completion of the project. The high water pressure in the old distribution lines, where some of pipes age are more than 60 years old, appear to be the cause of the high UFW. The average UFW during 7 years of implementation was 28.5 percent. Compare to 29 percent of the target, this condition indicate that the target to reduce UFW was generally achieved.

Chart 6-C: Unaccounted for Water



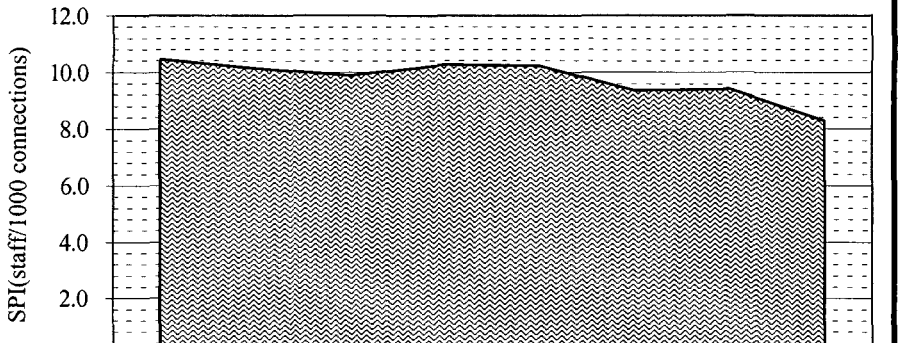
	1991	1992	1993	1994	1995	1996	1997	1998
Target	34.0	33.0	32.0	31.0	30.0	29.0	29.0	29.0
Actual	34.6	30.5	28.0	25.8	28.5	27.5	27.0	32.1

Staff Productivity Index

Showed by one yardstick of operational efficiency, the number of employees per 1,000 connections is called Staff Productivity Index (SPI). Water enterprises in developed countries typically have levels of about 5 (Wash,1992) because of high labor costs and the availability of expensive labor-saving equipment. The SPI in some African countries, that only provide water services is extremely high (over 30). On the other hand, the four sewerage utilities in Korea have SPI under 2 (Yepes,1996).

Bogor with 8.3 staff per 1,000 connections was considerably adequate regarding to the MOHA Degree No. 690.900-327/1994 that SPI should be less than 10, even there is still a room for improvement. The Chart 6-D shows SPI trend of PDAM Kotamadya Bogor that SPI had decreased smoothly from10.5 in 1991 to 8.3 in 1998.

Chart 6-D: Staff Productivity Index



	1991	1992	1993	1994	1995	1996	1997	1998
SPI	10.5	10.1	9.9	10.3	10.2	9.3	9.4	8.3

6.1.2 PDAM Palembang

Treatment Capacity and Production Capacity

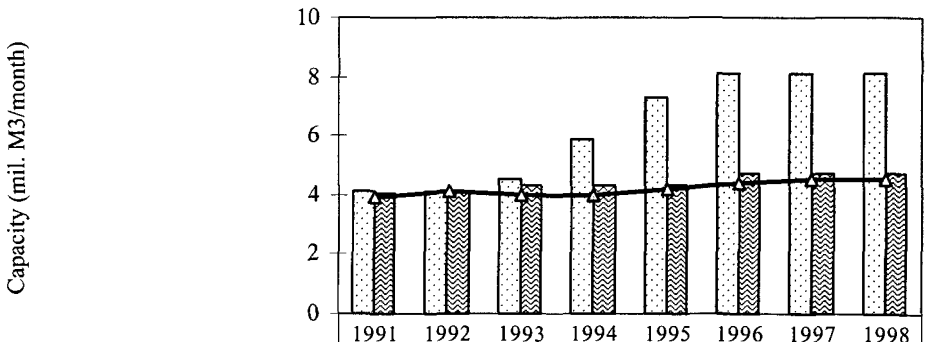
Based on the appraisal report, the initial treatment capacity of PDAM Palembang should be 4.0 million m3/month. Actually, the capacity was only operated 3.9 million m3/month in 1991, this thing occurred as a result of power and equipment failures. The target of additional treatment capacity which was 3.1 million m3/month, had not accomplished until the ADB's loan closing date. The delays of the treatment plans construction were caused by the delays of KfW's loan approval. PDAM Palembang had failed to meet the loan conditions, especially PDAM's debt coverage ratio. But after long negotiation, the KfW's loan was approved in 1995 and the Sub-loan Agreement became effective on March 1996. The physical progress of the two treatments plants and the other facilities ,that is financed by KfW, has been less than 50 percent on September 1999.

The additional capacities of 0.2 million m3/month (in 1993) and 0.4 million m3/month (in 1996) were financed by PDAM and Central Government budgets to respond the demand-supply gap. Unfortunately, those effort did not give very much improvement, water was still supplied on an intermittent base and the idle capacity was still more than 0.2 million m3/month in 1998.

The new inline booster pumping station constructed under the project was being bypassed because pumps were not installed yet. The water supply system was not operating as designed because of incomplete works and unavailability of critical facilities for efficient operation of the water supply system. As results, lack of water supply to some customers, in intermittent and unequal distribution of water to others.

The Chart 6-E shows the achievement of the water supply capacities in Palembang.

Chart 6-E: Treatment and Production Capacity



	1991	1992	1993	1994	1995	1996	1997	1998
Target: Treatment Cap.	4.1	4.1	4.5	5.9	7.3	8.1	8.1	8.1
Actual: Treatment Cap.	4.0	4.1	4.3	4.3	4.3	4.7	4.7	4.7
Production Capacity	3.9	4.1	4.0	4.0	4.2	4.4	4.5	4.5

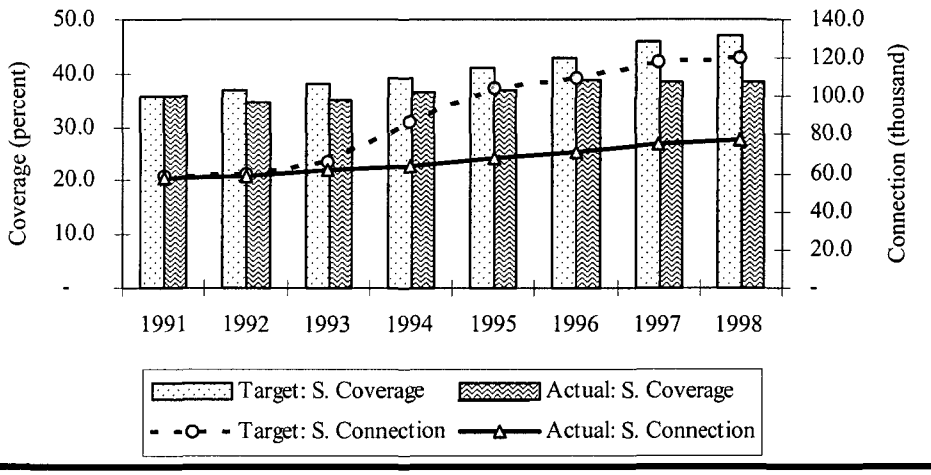
The target of additional treatment capacity which was 3.1 million m3/month was unrealistic and over-ambitious regarding to the given time and the capacity of PDAM to handle the project.

Service Coverage and Service Connection

The service coverage had increased only 2.5 percent since 1991, although the additional populations' served by piped water were increased more than 120,000 people in the same periods. Total service connections provided were about 77,000 connections, which consist of 11,000 new connection and of 13,254 meter replacement. The achievement of 77,000 connections was only about 60 percent of target envisaged at appraisal.(see Chart 6-F).

The service coverage and connection programs are related to UFW activities. The activities were mainly consisted of general operation and maintenance, such as testing meters; repairing meters, finding and repairing leaks, fixing connections, and procuring materials and supplies for replacement and new connections installment. With limited production capacity and high levels of UFW, PDAM Palembang failed to catch the target of service coverage and service connection.

Chart 6-F: Service Coverage and Service Connection

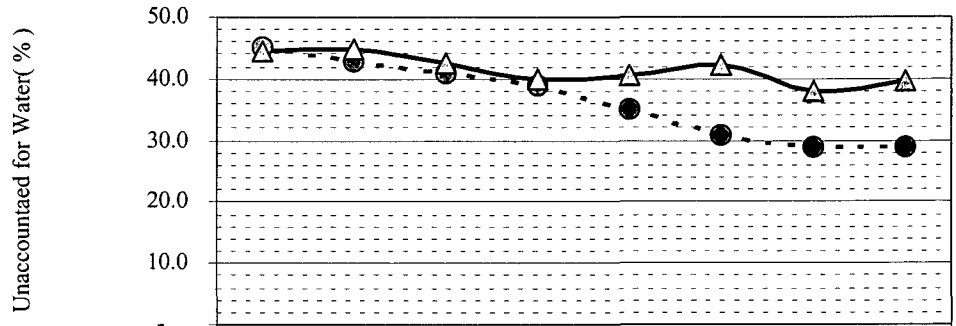


Unaccounted for Water

The main objective of the project that financed by ADB is UFW program. With 45 percent of UFW and intermittent water supply almost in the all service areas, the project aimed to expand the supply of water (financed by KfW), improve and expand the distribution systems, improve the efficiency of the existing system in order to reduce UFW to 29 percent after 1996. The project did not meet their targets to expand the water supply capacity and also failed to reduce the level of UFW. The level of UFW remained high at 40 percent or only reduced 5 percent during 7 years of the implementation.

Chart 6-G shows the UFW performance from 1991 to 1998. Even the trend had shown improvement, but had not been considerably significant.

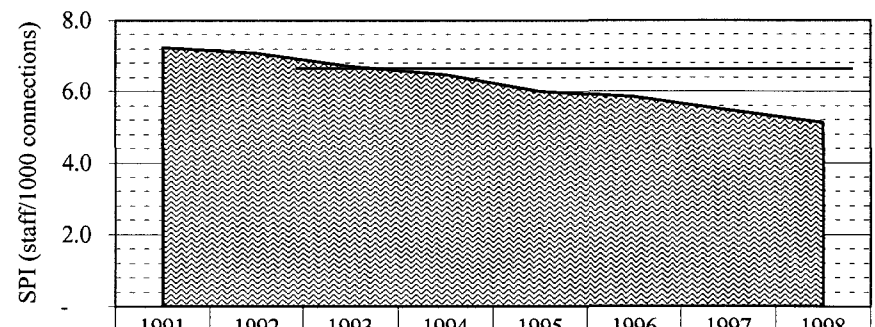
Chart 6-G: Unaccounted for Water



	1991	1992	1993	1994	1995	1996	1997	1998
Target	45.0	43.0	41.0	39.0	35.0	31.0	29.0	29.0
Actual	44.6	44.9	42.5	39.8	40.5	42.2	38.1	39.7

The project did not achieve the complete rehabilitation of all 40 blocks as envisaged at appraisal. At the time of closing date on 30 September 1999, only about 30 blocks that completely rehabilitated. PDAM Palembang was to continue the rehabilitation of the 10 other blocks, which were partially complete, but this too was not left undone because of lack of funds and not enough water in the system.

Chat 6-I: Staff Productivity Index



	1991	1992	1993	1994	1995	1996	1997	1998
SPI	7.2	7.1	6.7	6.5	6.0	5.8	5.5	5.1

Staff Productivity Index

Originally SPI in PDAM Palembang was relatively low, 7.2 staffs per 1,000 connections. SPI continued to decrease from 7.2 in 1991 to 5.1 in 1998 (see Chart 6-I). According to the MOHA standard, 5.1 staffs per 1,000 connections is categorized excellence.

6.1.3 Operational Comparison Between PDAM Bogor and Palembang

A surplus of 6.7 thousand m3/day from the target was potential result of PDAM Bogor compared to Palembang, which the production was deficit of 80.7 thousand m3/day. This indicator shows general performance of the project results. The production indicator of PDAM Bogor and Palembang was 2.2 and 2.0 m3/connection/day respectively. Only a part of this production reaches the consumers, as expressed in consumption per connection: 1.0 of Bogor and 1.1 of Palembang. The rest was an unaccounted for water. It was reflected in the UFW of Bogor 32.1 percent and 39.7 percent. (Table 6.1).

Table 6.1 : Operational Comparison PDAM Bogor and Palembang 1998

Operational Indicator	Unit	Bogor			Palembang		
		Target	Real.	+ or (-)	Target	Real.	+ or (-)
Production	M3/day[1000]	80.0	86.7	6.6	237.6	156.9	(80.7)
Connection	No.[1000]	36.4	39.9	3.5	125.0	77.0	(48.0)
Production/connection	M3/conn./day	2.4	2.2	(0.2)	1.9	2.0	0.1
Consumption	M3/day[1000]	55.7	41.0	(14.7)	168.7	88.2	(80.5)
Consumption/connection	M3/conn./day	1.4	1.0	(0.4)	1.1	1.1	0
Service Coverage	%	34	37	3	47	38.4	(8.6)
Unaccounted for Water	%	29.0	32.1	3.1	29.0	39.7	10.7
Staff Productivity Index	staff/1000con.	< 10	8.3	(1.7)	< 10	5.1	(4.9)

Chart 6-J is presenting the keys operational comparison between PDAM Bogor and Palembang during 1991- 1998.

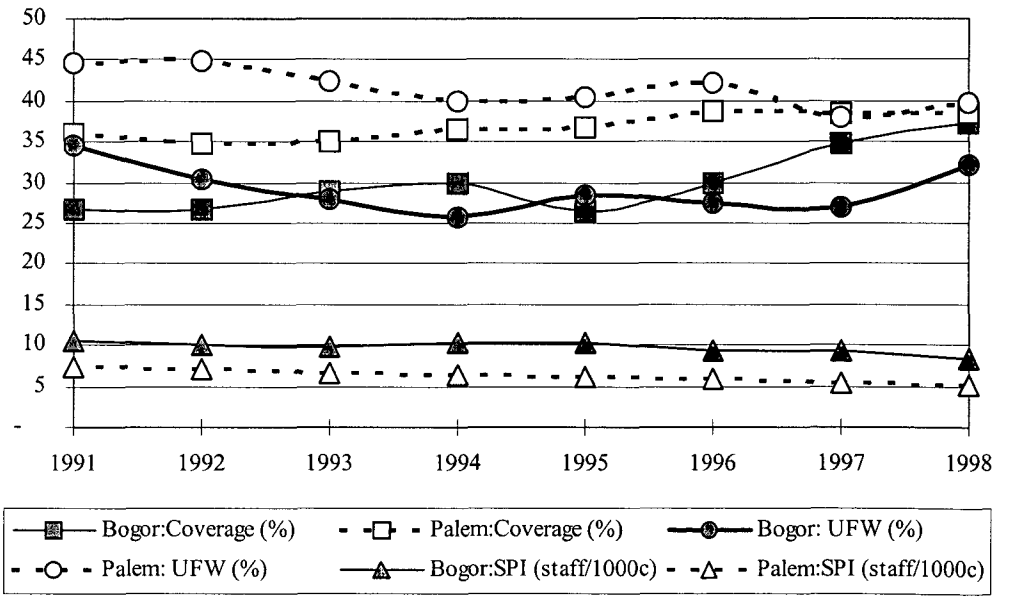


Chart 6-J: Operational Comparison Between Bogor & Palembang

The UFW of 32.1 percent in Bogor was not an unreasonably high level compared to the national average of 33 percent, but it was relatively high against the national target of 25 percent. As noted earlier, the old distribution lines appear to be the cause of high UFW. The UFW of 39.7 percent in Palembang, indicated that reduction targets in water losses at the time of appraisal, did not rely on a firm base and systematic approach to reduce UFW.

Failure in additional capacity and UFW Program in Palembang had caused effects on service coverage and service connection. The service coverage was below 8.6 percent against the target and service connections achievement were about 60 percent of the target. In comparison, service connections of Bogor were about 10 percent beyond the target.

The only one positive side of PDAM Palembang was Staff Productivity Index of 5.1 employees per thousand connections. Both Bogor's and Palembang's SPI were comply with MOHA degree, which were categorized as good condition if the staff productivity index less than 10. From this indicator, PDAM Palembang was more efficient than PDAM Bogor

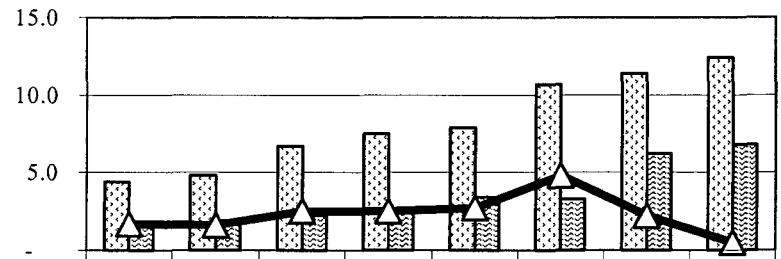
6.2 Financial Performance

Financial performance assessment focuses on the financial capabilities of a water enterprise as effects of the project by using financial indicators. Although in the project formulation was not stated in measurable targets, accept the broad objectives that PDAM shall ensure that the facilities are operated, maintained and repaired in accordance with sound administrative, financial, engineering, environmental, urban development, public utilities and maintenance and operational practices. To measure these broad objectives, it will be used financial performance indicators that consist of efficiency ratios, liquidity ratios, leverage ratios and profitability ratios. However, not all indicators are direct related with the project but some indicators are relevant as a tool to measure achievement of the project objectives.

6.2.1 PDAM Bogor

Chart 6-K shows the operating costs, operating revenues and net incomes of PDAM Bogor from 1991 to 1998. The PDAM net income in 1998 amounted Rp0.5 billion, decreased to Rp1.7 billion or 77 percent compared with 1997. The new treatment plant began to operate in 1997, in the same period with the beginning of the Indonesia's economic crisis. Therefore, the operating cost in 1997 jumped to almost double compared with 1996 and operating revenues only increased 7-10 percent, caused by increasing new connections. Chemical and energy costs were the main factor that made the water treatment costs raised to 303 percent and water transmission and distribution was increased 207 percent compared to in 1996.

Chart 6-K: Operating Costs and Revenues (billion Rp)



	1991	1992	1993	1994	1995	1996	1997	1998
Operating Revenues	4.4	4.8	6.7	7.5	7.9	10.7	11.4	12.4
Operating Costs	1.6	1.9	2.2	2.6	3.4	3.3	6.2	6.8
Net Incomes	1.7	1.6	2.5	2.5	2.7	4.8	2.2	0.5

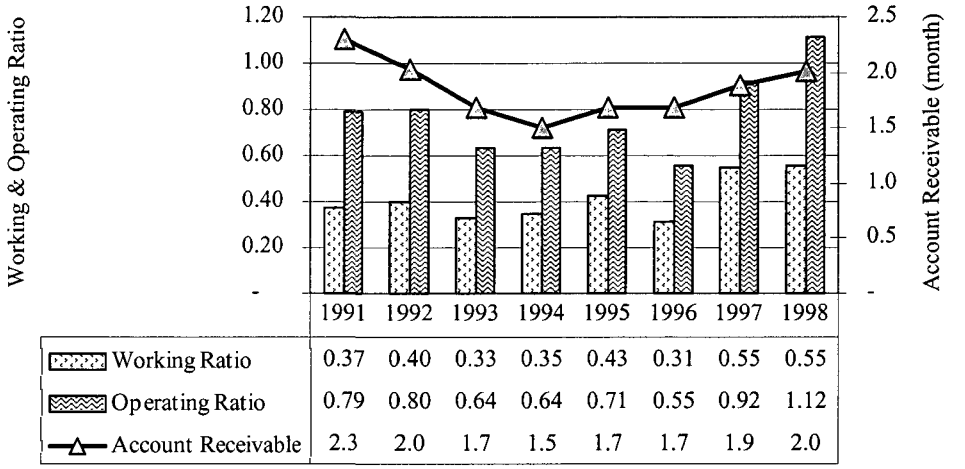
About 13,000 new connections were provided by the project since 1995 to 1998 but it did not help very much in increase the operating revenues. The operating revenues were only growing about 7-10 percent. Without increasing water tariffs, it is impossible for the net incomes to recover in the same level with the peak incomes in 1996. The net incomes has dropped dramatically from Rp4.8 billion in 1996 to Rp0.5 billion in 1998, because of the increasing of operating costs and no increasing of tariffs, there was also because accumulated depreciation from the new treatment plant.

Efficiency Ratios

The chart 6-L shows more clearly about financial management of PDAM Bogor, which is expressed on a working and operating ratio. The different between a working ratio and operating ratio is in term of costs. A working ratio is where operating costs exclude depreciation; interest payments; and debt service payment. While an operating ratio is operating costs include depreciation and interest payments, but exclude debt service payments. Sound financial management requires the working and operating ratio to be less than 1 and well-run enterprises have working ratio's below 0.5 and operating ratio's below 0.75 in order to provide the sufficient surplus required for the future (Yepes,1996).

In the case of PDAM Bogor, before 1997 the financial conditions had shown its soundness with the working ratio of 0.31 and the operating ratio of 0.55. The results of the project effected on financial efficiency of PDAM Bogor. But this condition was interrupted by the economic crisis, thus the working ratio was reached at 0.55 and the operating ratio was attained at 1.12 in 1998. (see Chart 6-L).

Chart 6-L: Efficiency Ratio



	1991	1992	1993	1994	1995	1996	1997	1998
Working Ratio	0.37	0.40	0.33	0.35	0.43	0.31	0.55	0.55
Operating Ratio	0.79	0.80	0.64	0.64	0.71	0.55	0.92	1.12
Account Receivable	2.3	2.0	1.7	1.5	1.7	1.7	1.9	2.0

The account receivable/collection period (CP) shown that the maximum was 2 month (1992). The 2 month is relatively indicated financial soundness. The impact of the economic crisis had influenced the CP only about 0.3 month. The CP trend shown approximately 1.7 during 1993-1996 and increased smoothly to 1.9 in 1997 and continued to 2.0 month in the end of the project.

Liquidity and Leverage Ratios

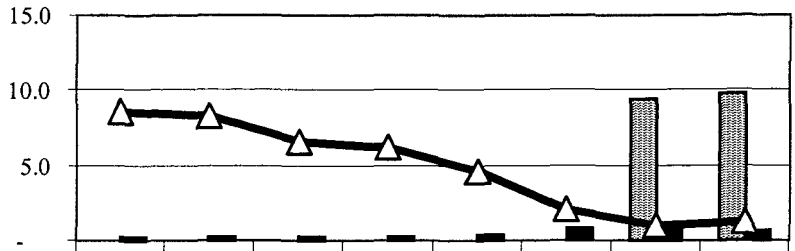
A current ratio is commonly used to measure the ability of the enterprise to meet its current liabilities. The current ratio is expressed the ratio of total current assets to total current liabilities should remain higher than one (WASH,1990), reflecting an excess of assets over liabilities. MOHA degree classified an enterprise is in a healthy condition if its current ratio more than 1.4.

PDAM Bogor during the project implementation, found the current ratio decreased substantially from 8.6 in 1991 to 1.0 in 1997 and increased again to 1.2 in 1998 after the project activities nearly completed. This tendency is normally happen because PDAM had contributed counterpart budget from its own resources to the project (about 20 percent of the total project cost). The decreasing current ratio not only caused by the project financing, but also the other aspects in its management.

Debt service coverage and debt equity ratios measure the extent of the enterprise's financing with debt. In 1998 PDAM Bogor had reached the debt service coverage ratio 9.8 that means the cash generation was adequate to cover debt service obligation. But not for the debt equity ratio which was 0.8 in 1996 and improved to 0.6 in 1997 and 1998. The debt equity ratio from over 0.5 and up to 1.5 are categorized highly leveraged (Yepes,1996). Trend of PDAM Bogor debt equity ratio was remained in question, because two years are not enough to predict the tendency of the trend. International experiences recorded that the debt ratio of public utilities was customarily high, frequently in the order of 60 percent to 70 percent (WASH,1990).

The Chart 6-M shows the liquidity and leverage indicators that are represented by current ratio, debt service coverage and debt equity ratio.

Chart 6-M: Liquidity and Leverage Ratios



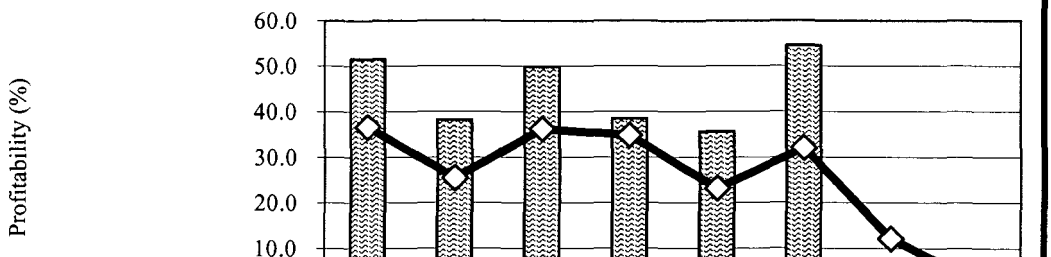
	1991	1992	1993	1994	1995	1996	1997	1998
Debt Service Coverage	-	-	-	-	-	-	9.4	9.8
Debt Equity Ratio	0.2	0.2	0.2	0.2	0.4	0.8	0.6	0.6
Current Ratio	8.6	8.3	6.6	6.2	4.6	2.0	1.0	1.2

Profitability Ratios

Profitability ratios represent the enterprise's ability to translate water sales into profits at different stage of measurement. Return of net fixed asset (ROFA) and return on equity (ROE) are two ratios that measure the overall efficiency of the enterprise in managing its total investment in assets and generating return to equity.

From Chart 6-N shows that the ROFA dropped sharply after the new treatment plan and other facilities transferred to PDAM. The net fixed assets jumped tremendously from Rp8.8 billion in 1996 to Rp48.5 in 1997 or more than 450 percent. The result of ROFA ratio had fallen to 4.4 and ROE ratio dropped to 12.1. The economic crisis in 1997 and 1998, moreover, had effected to make a downward trend in the profitability ratios.

Chart 6-N: Profitability Ratios



	1991	1992	1993	1994	1995	1996	1997	1998
Return of NF Assets	51.6	38.1	49.8	38.4	35.6	54.5	4.4	0.0
Return on Equity	36.6	25.4	36.2	34.7	23.1	31.9	12.1	2.7

6.2.2 PDAM Palembang

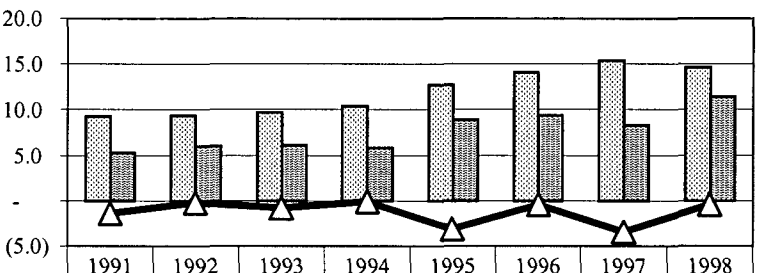
Until the project was closed on March 1999, the project results did not have any improvement on financial conditions, which the net incomes remained loss from Rp1.4 billion in 1991 to Rp0.4 billion in 1998. The peak of loss was happening in the beginning of Indonesia's crisis; the net incomes collapsed at deficit of Rp3.4 billion in 1997.

One of the main problems in PDAM Palembang was management of the water enterprise. After board of directors was changed, PDAM Palembang has shown some improvement that the net income rebounded strongly in 1998. But the PDAM still has tremendous problems, which the production capacity of 5.4 million m3/year only collected operating revenues of Rp14.6 billion compared with the operating cost of Rp11.4 billion. Efficiency is the key word for PDAM Palembang to the improve of overall their financial performance.

Without obvious results on UFW program, the project did not have any substantial effects to improve the financial performance of PDAM Palembang. The upward trends of revenues because additional capacities that were not financed under the project. The project only shared in additional coverage and some improvement in the distribution systems including installment of new connections and replacement of water meters.

Chart 6-O shows consolidated earnings of PDAM Palembang. The consolidated earnings are presented as operating revenues, operating costs and net incomes.

Chart 6-O: Operating Revenues and Costs (billion Rp)



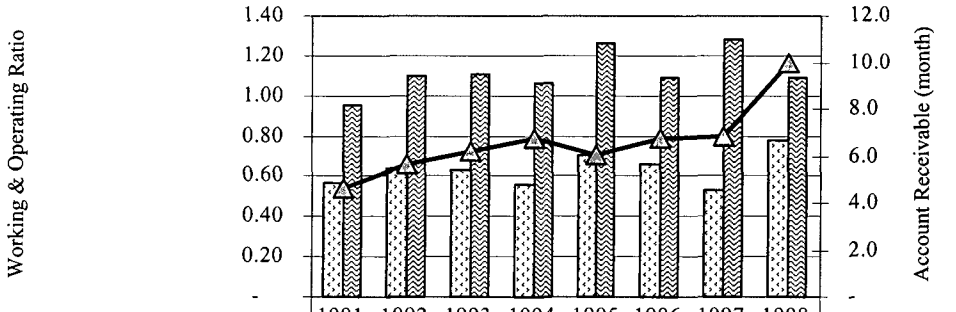
	1991	1992	1993	1994	1995	1996	1997	1998
Operating Revenues	9.3	9.4	9.7	10.4	12.7	14.1	15.4	14.6
Operating Costs	5.3	6.0	6.1	5.8	8.9	9.4	8.3	11.4
Net Incomes	(1.4)	(0.2)	(0.8)	(0.1)	(3.1)	(0.4)	(3.4)	(0.4)

Efficiency Ratios

Efficiency ratios of PDAM Palembang were poor. The data recorded that the account receivable/collection period were beyond 6 month during the project and reached the lowest position of 10 months in 1998, in which the accounts receivable was about Rp12 billion or more than 80 percent of the operating revenues. One of the reasons of low billing efficiency was because of poor levels of service and PDAM's management problems. The consumers only received water in maximum about 8 hour per day with an intermittent supply and a low-pressure in almost the service areas. The management

problems were indicative problems in the commercial system (billing and collection), an inadequate effort in collections, and inadequate effort in dealing with overdue account including weak penalties for late payment because the services were poor performance.

Chart 6-P: Efficiency Ratios



	1991	1992	1993	1994	1995	1996	1997	1998
Working Ratio	0.56	0.64	0.63	0.56	0.70	0.66	0.53	0.78
Operating Ratio	0.95	1.10	1.11	1.06	1.26	1.09	1.28	1.09
Account Receivable	4.7	5.6	6.2	6.7	6.0	6.7	6.9	10.0

Data on the working ratios during 1992 to 1998 had been less than 1, but the operating ratios had been more than 1. The data indicated that the operating revenues did not cover their operational expenses including their replacement costs (depreciation). This condition stated that PDAM Palembang had been operated at a loss condition. After the worst condition in 1997 that PDAM had loss Rp3.3 billion, the operating ratio was recovered at the same levels with 1996 of almost 1 (see Chat 6-P).

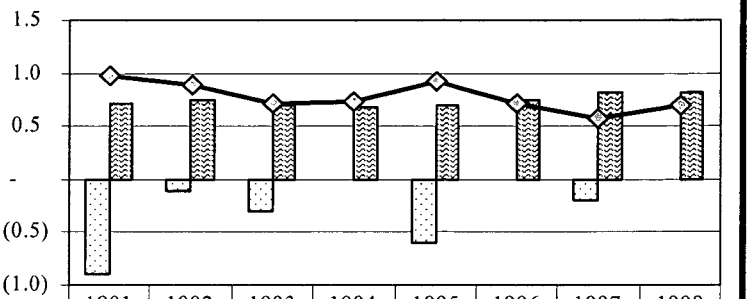
The project activities were attempted to improve this financial problems but only little improvement had been made; the UFW program only reduced 5 percent and only provided about 11,000 new connections.

Liquidity and Leverage Ratios

The current ratio of PDAM Palembang during the project had been fluctuated between 0.6 and 0.9. It means that PDAM Palembang had short-term liquidity problems. These ratios also measure the quality or liquidity of accounts receivable. The accounts receivable had been considered high during 1992-1998. No improvement in billing efficiency because of problem for the PDAM to meet its debts requirements as they come due.

The financial problems of PDAM Palembang were presented by the ratio of debt service coverage and debt equity ratio which less than 1. PDAM Palembang's debt amount was Rp 11 billion and Nfl 5.7 million before the ADB loan became effective in 1992. Because some financial problems, those loan including the ADB loan has been rescheduled until additional capacities financed by KfW are fully operated in 2001.

Chart 6-Q: Liquidity and Leverage Ratios

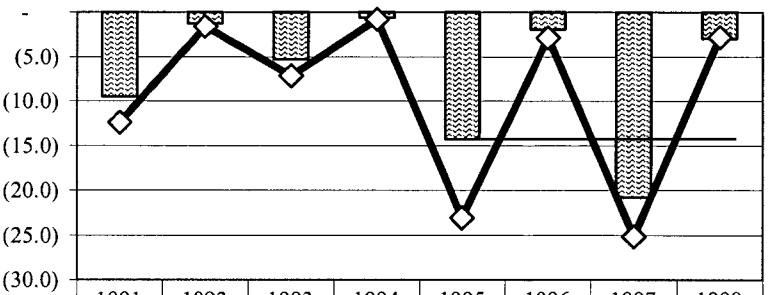


	1991	1992	1993	1994	1995	1996	1997	1998
Debt Service Coverage	(0.9)	(0.1)	(0.3)	(0.0)	(0.6)	(0.0)	(0.2)	(0.0)
Debt Equity Ratio	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8
Current Ratio	1.0	0.9	0.7	0.7	0.9	0.7	0.6	0.7

Profitability Ratios

As mentioned earlier, the PDAM Palembang had been operated at a loss condition. The return of net fixed assets (ROFA) and return on equity (ROE) reached the worst condition in 1997 that ROFA and ROE was less than minus 20 percent, but improved strongly in 1998 to minus 3 percent. In 1998, the substantial change of ROFA and ROE ratios were caused by asset management and debt management that the operating costs and other expenses was reduced about 20 percent compared with 1997. The Chart 6-R shows that the PDAM Palembang had been operated at a loss condition before and after the project.

Chart 6-R: Profitability Ratios (%)



	1991	1992	1993	1994	1995	1996	1997	1998
Return of NF Assets	(9.6)	(1.3)	(5.3)	(0.6)	(14.3)	(1.9)	(20.8)	(3.0)
Return on Equity	(12.4)	(1.6)	(7.2)	(0.8)	(23.1)	(2.9)	(25.2)	(2.8)

The project did not any have substantial effects to improve profitability ratios of PDAM Palembang. It indicated that no positive trend on the return of net fixed assets and return on equity.

6.2.3 Financial Comparison Between PDAM Bogor and Palembang

It is difficult to make a clear comparative analysis of financial performance in different levels of service. The Indonesia's financial crisis that affect exchange rates, operating cost, and declining real income of house holds vary widely and cloud the analysis. However, certain financial indicators can be utilized: the working ratio gives indication of the capacity of the enterprise to satisfy its operating costs; the account receivable shows the efficiency; debt equity ratio measures the extent of the enterprise's financing with dept; current ratio ensures that asset are used effectively; and return of net fixed assets and return on equity are two ratios that measure the overall efficiency of the enterprise in managing its total investment in assets and in generating profit.

The financial indicators are set out in Table 6.2 that shows the target and realization of financial indicators on 1996 and 1998. The reason of presenting the realization of the two fiscal years to measure the effects of the project on financial achievements before and after the crisis. Criteria of financial soundness are also presented based on Water and Wastewater Utilities 2nd edition (Yepes,1996) to make a comparison.

Table 6.2 : Financial Indicator of PDAM Bogor and Palembang

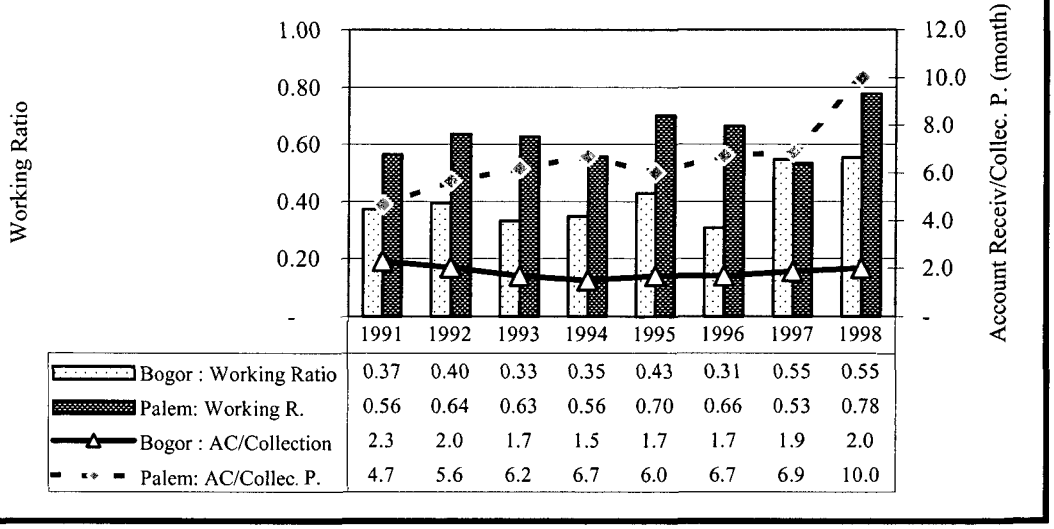
Financial Indicator	**Bogor**			**Palembang**			Sound ness*)
	Target	Realization		Target	Realization		
		1996	1998		1996	1998	
Working Ratio	<0.6	0.3	0.6	<0.7	0.7	0.8	<0.8
AR/Collection Period (month)	<2.0	1.7	2.0	<2.0	6.7	10.0	<2.0
Current Ratio	>2.0	2.0	1.2	>1.0	0.7	0.7	>1.0
Debt Equity Ratio	<0.7	0.8	0.6	<1.0	0.7	0.8	<0.5
Return of NF Assets (%)	>10	54.5	0	>5.0	(1.9)	(3.0)	>10
Return on Equity (%)	>10	31.9	2.7	>5.0	(2.9)	(2.8)	>10

*) Water & Wastewater Utilities 2nd Edition (Yepes,1996)

Efficiency Ratios

The working ratio of both PDAM were matched the target, in spite of the fact that PDAM Palembang in 1998 with the working ratio of 0.8 was already in troubles in to satisfying its operating costs with its operating revenues. Effects of the project on working ratios were not substantially attended. Although for Bogor the working ratio had showed some improvement in 1996 but suddenly after the assets of the project were transferred to PDAM, the working ratio dropped dramatically. The crisis may also affect on the working ratio, but the increasing of assets more than 3.5 times from the previous year was causing the working ratio climb up to level of 0.55 (see Chart 6-S).

Chart 6-S: Comparison of Efficiency Ratios



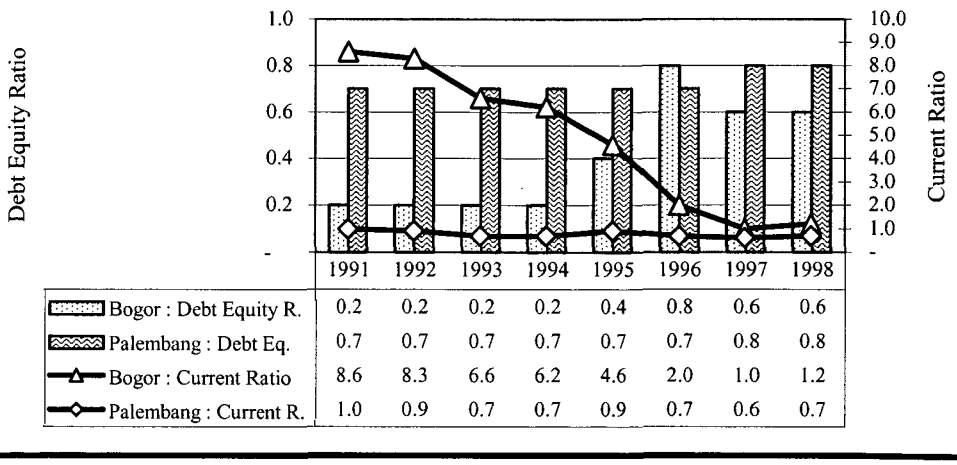
	1991	1992	1993	1994	1995	1996	1997	1998
Bogor : Working Ratio	0.37	0.40	0.33	0.35	0.43	0.31	0.55	0.55
Palem: Working R.	0.56	0.64	0.63	0.56	0.70	0.66	0.53	0.78
Bogor : AC/Collection	2.3	2.0	1.7	1.5	1.7	1.7	1.9	2.0
Palem: AC/Collec. P.	4.7	5.6	6.2	6.7	6.0	6.7	6.9	10.0

The account receivable of PDAM Bogor had shown a trend of improvement, but not for PDAM Palembang that the account receivable per collection period became worst from 4.7 month in 1991 to 10 month in 1998. A value greater than 6 is totally unacceptable and the project did not any have positive affects in improving the capacity of PDAM to manage the revenues.

Liquidity and Leverage Ratios

A high level of the account receivable of PDAM Palembang was caused problem in current ratio. The current ratio of PDAM Palembang had been less than 1 during the project. In contrast, the current ratio of PDAM Bogor had been greater than 1, which indicated that they had applied conservative policies to manage the assets. Although PDAM had to cover part of the project cost, consequently the current ratio had decreased substantially from 8.6 in 1991 to 1.2 in 1998. (see Chart 6-T).

Chart 6-T: Comparison Leverage & Liquidity Ratios



	1991	1992	1993	1994	1995	1996	1997	1998
Bogor : Debt Equity R.	0.2	0.2	0.2	0.2	0.4	0.8	0.6	0.6
Palembang : Debt Eq.	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8
Bogor : Current Ratio	8.6	8.3	6.6	6.2	4.6	2.0	1.0	1.2
Palembang : Current R.	1.0	0.9	0.7	0.7	0.9	0.7	0.6	0.7

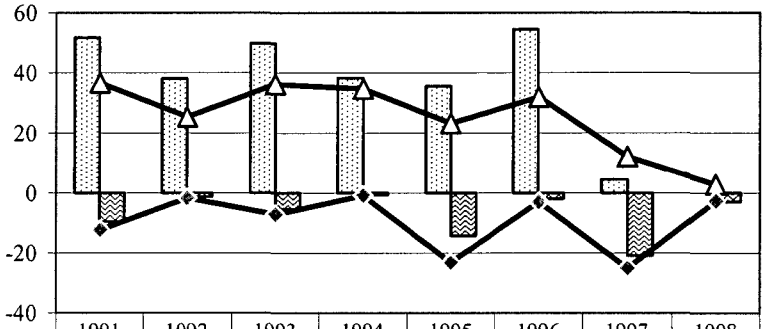
Both Bogor and Palembang had the uncertainty in dealing with debt. Proved by the debt coverage ratio of 0.6 for Bogor and 0.8 for Palembang which were relatively high compared with 0.5. PDAM Bogor had the ability to cover its interest loans with operating profits, but not for PDAM Palembang. Even the debt of some loans had been rescheduled, PDAM Palembang still have higher risk of bad debt.

Profitability Ratios

Return of net fixed assets (ROFA) and a return on equity (ROE) ratio measure how the enterprise has performed in overall efficiency and profitability. Because the project, PDAM Bogor and Palembang had increased its investment in fixed assets. The ROFA and ROE of both PDAMs show a downward trend in their profitability. PDAM Bogor had its peak profitability in 1996 before the project assets were given to PDAM. In comparison, PDAM Palembang had a maximum loss in 1997 with ROFA of minus 20.8 and ROE minus 25.2, in other words PDAM Palembang reached its bankruptcy in 1997.

Chart 6-U shows the comparison of profitability ratios of PDAM Bogor and Palembang.

Chart 6-U: Comparison of Profitability Ratio



	1991	1992	1993	1994	1995	1996	1997	1998
Bogor: Return NF Asset	51.6	38.1	49.8	38.4	35.6	54.5	4.4	0
Palembang: Return NFA	(9.6)	(1.3)	(5.3)	(0.6)	(14.3)	(1.9)	(20.8)	(3.0)
Bogor: Return on Equity	36.6	25.4	36.2	34.7	23.1	31.9	12.1	2.7
Palembang: R. on Equity	(12.4)	(1.6)	(7.2)	(0.8)	(23.1)	(2.9)	(25.2)	(2.8)

6.3 Conclusions

6.3.1 PDAM Bogor

Operational Performance

As a result of water supply expansion program under the project, the water treatment plant at Kotamadya Bogor has been expanded its production to about 1.2 million m3/month, which is larger than the appraisal of 1.0 million m3/month. The new service

connections in urban areas had increased markedly, from about 26,500 (1994) to 40,000 (1998). The populations directly served by piped water were also increased by about 10 percent from the originally estimated.

The average UFW during 7 years the project implementation was 28.5 percent compared to 29 percent of the target. Although the level of UFW increased to 32 percent in 1998 upon completion of the project. The higher water pressure in the old distribution line appears to be the cause of the increasing of UFW.

Financial Performance

Financial performance appeared quite satisfactory with debt service coverage ratio at 9.8 in 1998. However, at the same time, financial data showed that the return of net fixed assets was almost zero. It indicates that PDAM Bogor was only covering all its operation costs and replacement costs (depreciation), but not able to contribute the new capital expenditures.

Indonesia's economic crisis had affected financial performances of PDAM Bogor. The new treatment plant has been operated in 1997, in the same period of the beginning of the crisis. As a result, the operating costs had increased remarkably, but the operating revenues only growing for about 10 per years. The crisis has caused PDAM to postpone the increasing water tariff.

6.3.2 PDAM Palembang

Operational Performance

The target of expanding treatment capacity had not achieved due to delayed co-financing arrangement with KfW. The additional capacity of 0.6 m3/month was mostly financed by Central Government to respond the demand-supply gap. This additional capacity has not been effected very much to service coverage. The new service connections about 11,000 provided under the project as compared to 30,000 envisaged at appraisal. Other physical achievements were substantially below the targets. At the loan was closed, the actual UFW was close to 40 percent or only about 5 percent reduction. Accordingly, the anticipated benefits from the additional capacity and UFW program were negligible.

Financial Performance

The project results did not give any improvement to PDAM's financial performances. The failure of the project had affected to the overall financial performance of PDAM. This evidence is shown in the financial performances in 1998 that the account receivable per collection period increased to 10 months and the net incomes remained loss to Rp0.4 billion.

CHAPTER SEVEN
CONCLUSIONS AND RECOMMENDATIONS

This chapter aims are to identify key issues that have been learned from the project and to summarize them in the conclusions and recommendations that would be useful in improving project design, formulation, implementation, and operation of any future urban infrastructure development projects. The lessons from the experience could also be address for any implementation bottlenecks occurs in ongoing water supply sector under Integrated Urban Infrastructure Development Program in many cities all over Indonesia.

7.1 Major Findings

1. The project design showed that the project was focused on expanding water supply and reducing UFW through physical infrastructure and institutional development. However, the objectives of the institutional development aspects were not well defined. Accordingly, the institutional inputs and activities were not focused on performing specific outcomes.

2. The implementation was delayed substantially and the project was closed on 30 September 1999 with three extensions. The actual start of physical works in PDAM Palembang had experienced a serious delay for almost four years due to delayed co-financing arrangement with KfW. At the time of the project was closed, Kotamadya Palembang was still not fully completed.

3. The major objectives envisaged at the appraisal of the project was to expand water to 400 l/s for PDAM Bogor and 1200 l/s for PDAM Palembang, and reduce UFW to 29 percent. PDAM Bogor was generally obtain the objectives, but PDAM Palembang was unsuccessful: its physical achievements were significantly lower than expected and actual UFW was close to 40 percent or only 5 percent reduction.

4. PMUs and PIUs were established in the local Government as temporary organization and only for project specific purposes.

7.2 KEY ISSUES

Based on the findings, key issues worth attentions include:

Project Design

1. The design of project implementation and institutional development supports do not provide an establishment of performance indicators against which achievements can be easily measured. Moreover, in the case of LIDAP and RIAP, working closely to the Ministry of Home Affair in central level, may reduce their attention to local circumstances and needs.

2. Traditional least-cost approach in planning an infrastructure project is not enough to achieve sustainable resource usage efficiency. In order to optimize efficiency and maximize benefits, design of urban infrastructure should be clearly integrated between infrastructure and institutional development.

Project Implementation

1. Integration in the planning and programming process was not followed by integration in the project implementation. The project components were implemented separately because of institutional and financial reasons. This sectoral approach was not conducive to produce synergetic effects as planned in the project formulation.

2. Management of infrastructure development was project-oriented, PMUs and PIUs were created outside the permanent local organizational structure. These organizations structure were not conducive to a smooth hand-over of facilities from implementation to O&M

Specific Results in PDAM Bogor

1. The level of UFW increased to 32 percent of water production in 1998 upon completion of the project. The higher water pressure in the old distribution pipes appears to be the cause of the higher UFW compared to the average of UFW during 1992-1997 which was about 28 percent.

2. Capacity under-utilization was largely slower than expected because of the limitation on the distribution system and low piped water demand in the service areas. The demand for piped water was also weakened by the economic crisis and the alternative supplies from natural sources.

Specific Results in PDAM Palembang

1. The project design showed that the project was focused on expanding water supply and reducing UFW through physical infrastructure development. The design of UFW program stressed on physical infrastructure activities. But non-physical losses that may contributed to high UFW such as illegal connections, water theft, inefficient meter riding and uncollected water charge which were not specifically addressed by the project.

2. Failure of additional capacity and UFW in Palembang had caused some effects on service coverage and service connection. The water supply system was not operating as designed because of incomplete works and some critical facilities for efficient operation of the water supply system were still missing. Consequently, some customers in lack of water or intermittent supply.

3. The financial data approved that O&M expenditure per unit of water production in Palembang was lower than Bogor, although the energy costs of PDAM Palembang was much higher than PDAM Bogor. PDAM Palembang was financially and technically insufficient in undertaking effective maintenance of its system and handling its routine water meters replacement. Inadequate maintenance resulted a frequent breakdown of water distribution system and contributed a high UFW.

7.3 Conclusions

Project Design

1. By using the logical framework, approved that the physical infrastructure development was shown clearly formulated. In which specific quantitative targets and appropriate technical process were being set, in order to meet the objectives. In contrast, the project implementation and institutional support were inadequately formulated.

2. The evaluation of institutional support were found to be handicap, since there were lack of institutional framework and performance indicators in establishing inputs, outputs, and outcomes. A well-developed project framework in physical infrastructure development is a great help in evaluation of the project.

Project Implementation

1. The delays in the project implementation reflected institutional weaknesses, included the lack of delegation of authority, the cumbersome domestic procedures for procurement, and lack of transparency of the selection process.

2. A clear linkage between institutional and physical development is necessary to ensure sustainability of urban infrastructure development. The project indicated that

the institutional development was implemented separately from physical infrastructure development. Thus, institutional development was not as great as envisaged at appraisal, particularly as found in RIAP and LIDAP case.

3. Decentralization in the project implementation was generally lower than what local governments and PDAMs had expected, while interventions of Central Government were relatively remained high.

Project Results

1. In the end of the project, the results of the project did not have any substantial effects to improve the financial performances of the PDAMs.

2. High level of account receivable in PDAM Palembang was caused by a poor levels of service.

3. Actual UFW in PDAM Palembang after the project implementation was close to 40 percent or 5 percent reduction. The anticipated net incremental revenue of financial savings from UFW program was negligible.

4. Factors which impeded performance of the project in PDAM Palembang were unrealistic targets of the additional capacity , over-optimistic of the implementation schedule, and institutional shortcomings.

5. The main factors contributing to the success of the project in PDAM Bogor was strong committed PDAM on the project, realistic objectives, deliverable outputs, and adequate financial and human resources.

7.4 Recommendations

Some recommendations for the current and future development include:

1. In designing future urban development project, it may be advisable:

   - to develop a specific logical framework requiring objectives, inputs, activities, outputs, and performance criteria which are specified clearly for both physical infrastructure and institutional development.

   - more attention needs to be paid to actual integration between infrastructure and institutional development, not only in planning and programming, but also in implementation;

2. Integrated efforts on physical infrastructure rehabilitation and an effective institutional development are essential to reduce UFW. The integrated efforts could be done by together with increasing services coverage, improving the system design, strengthening organization for O & M and improving the institutional capacity of PDAM.

3. The project organization could have made more impact if PMUs and PIUs are integrated within permanent organization in the local government.

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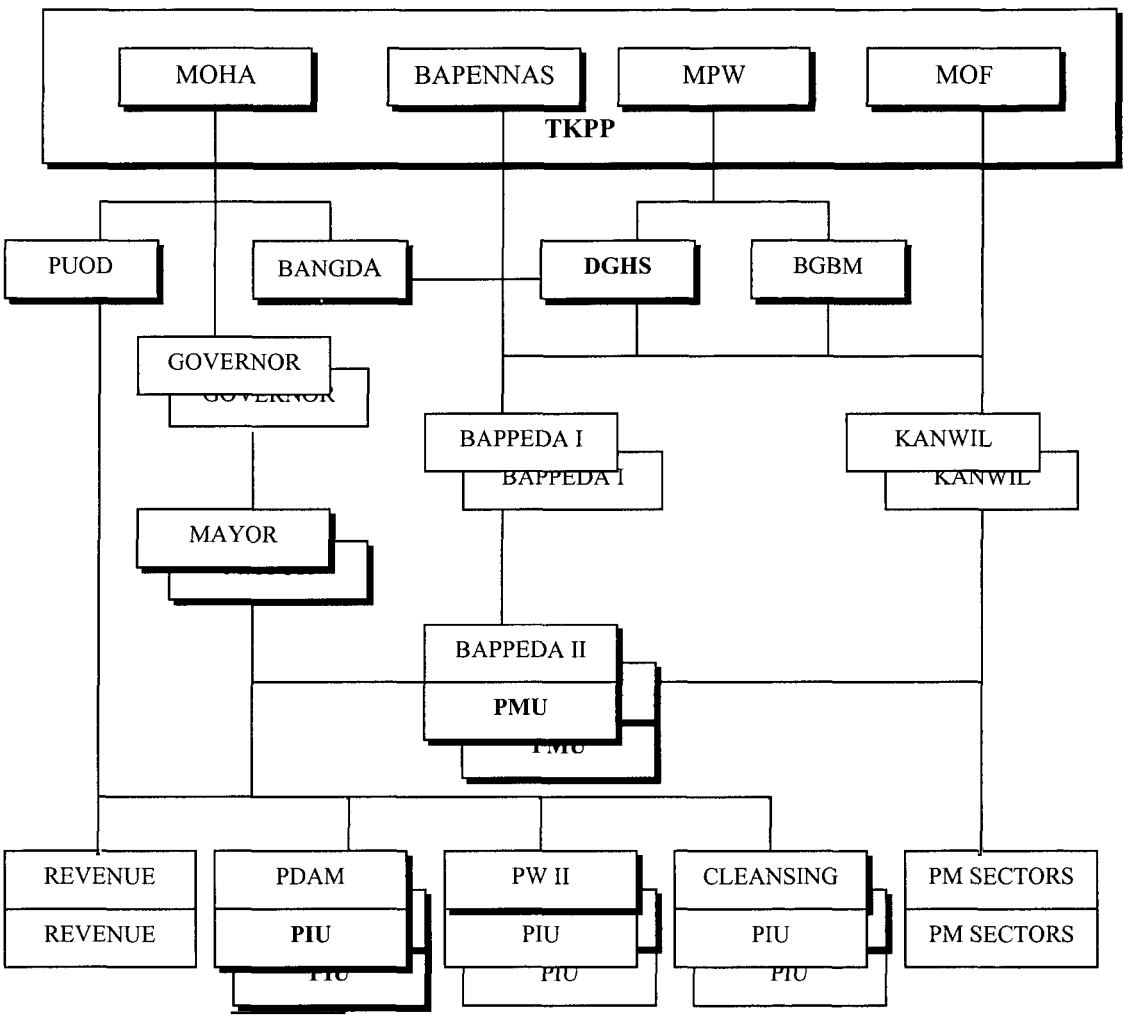
APPENDIXES

Appendix 1

ORGANIZATIONAL ARRANGEMENTS FOR PROJECT IMPLEMENTATION

Bogor and Palembang Urban Development Project

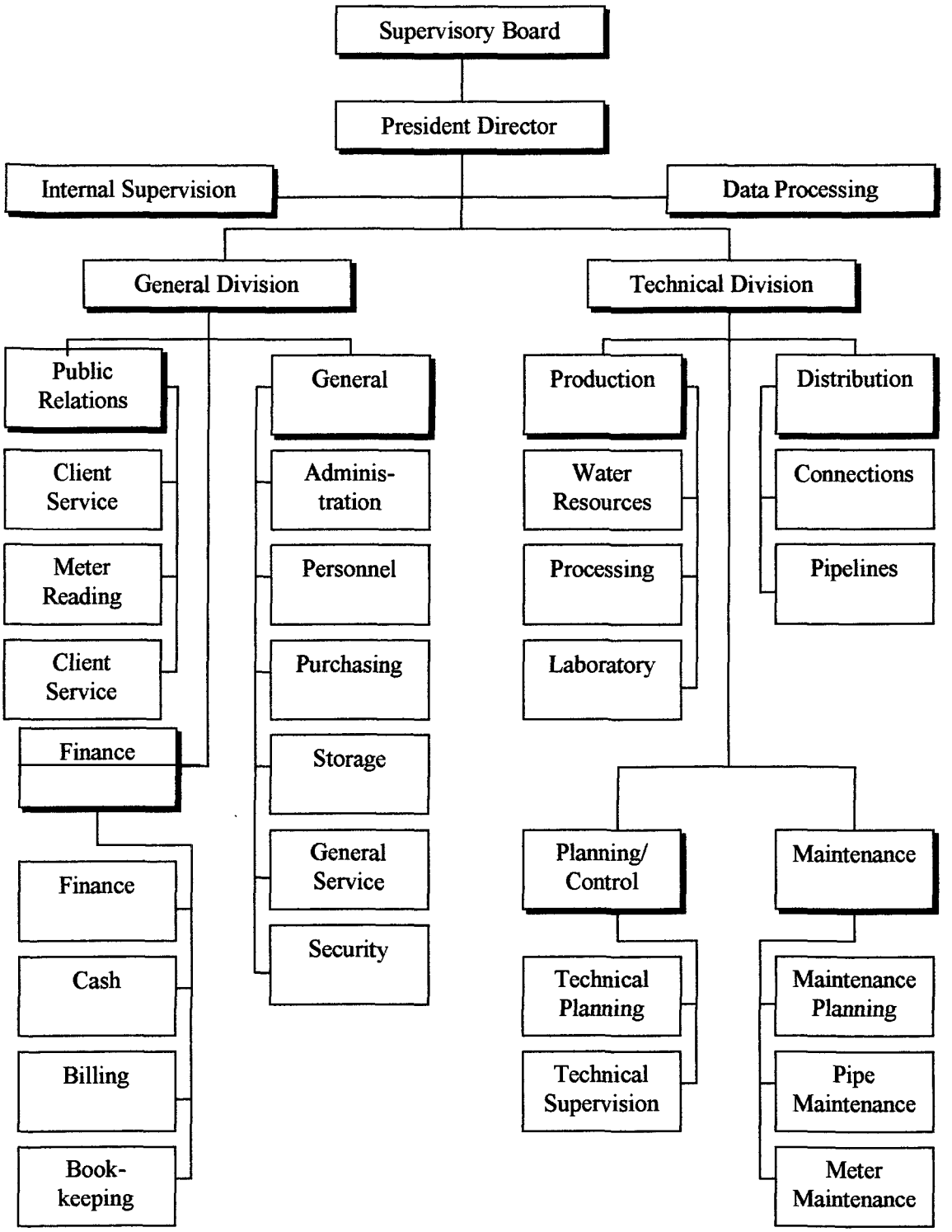


Sectors:	Water Supply	Urban Road KIP & MIIP	Solid Waste Man. Sanitation (on-site)	National Road Wastewater Drainage

Source: Appraisal Report

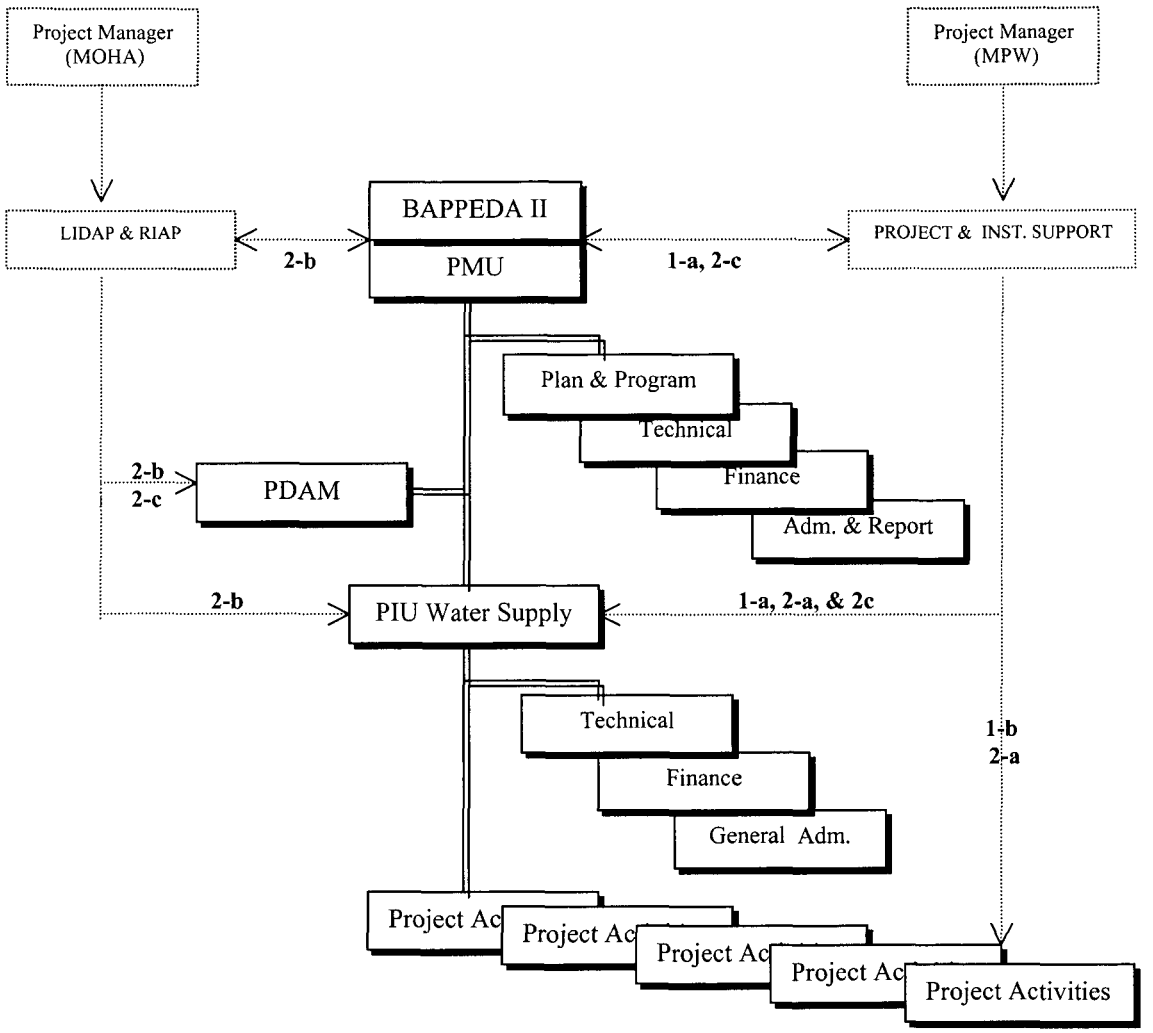
Appendix 2

ORGANIZATION CHARTS OF WATER SUPPLY ENTERPRISES
(Kotamadya Bogor)



Source: PDAM Bogor

ORGANIZATION OF PROJECT MANAGEMENT UNIT AND PROJECT IMPLEMENTATION UNIT



Legend :

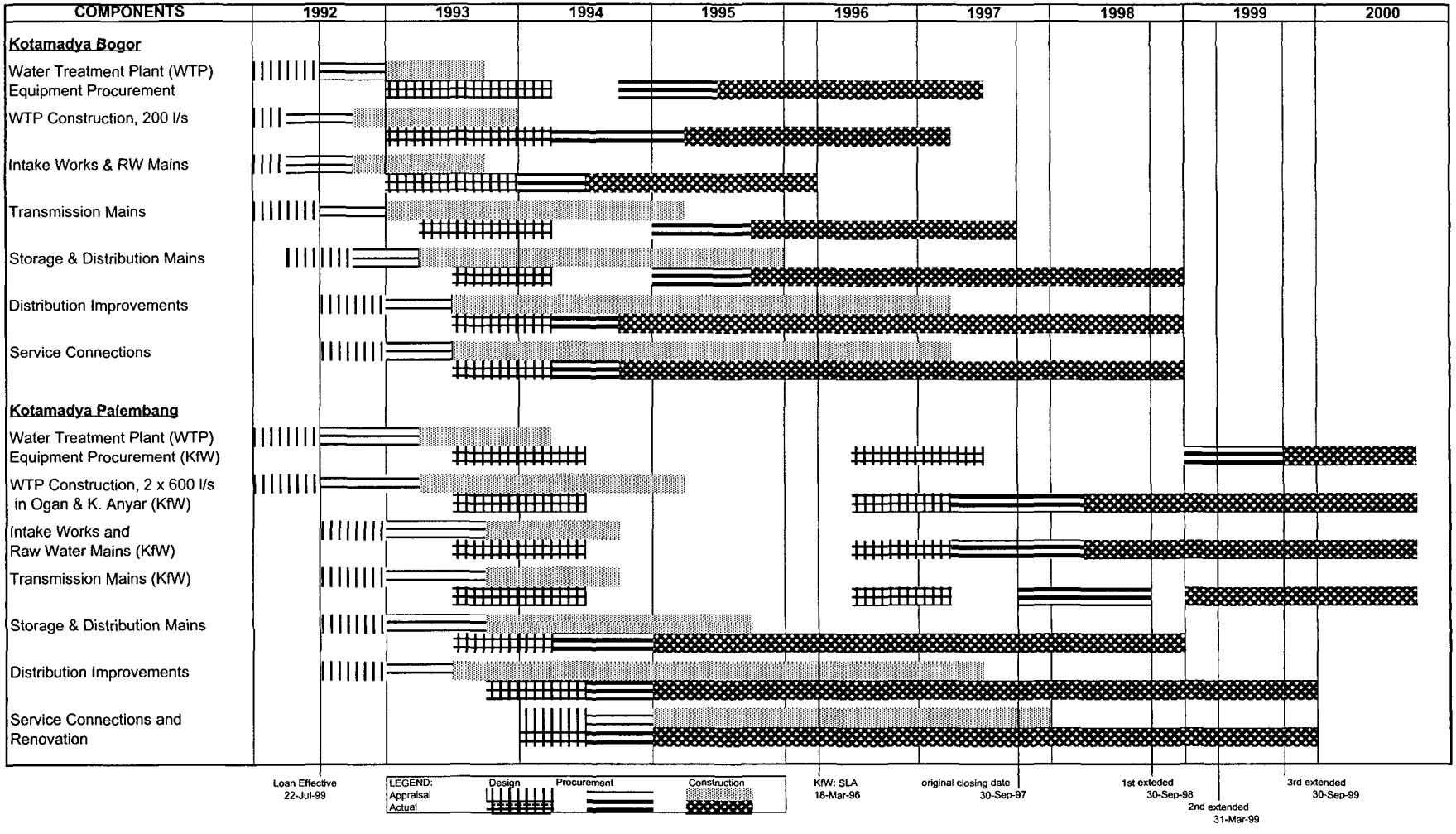
Direction

Project Implementation and Institutional Supports:

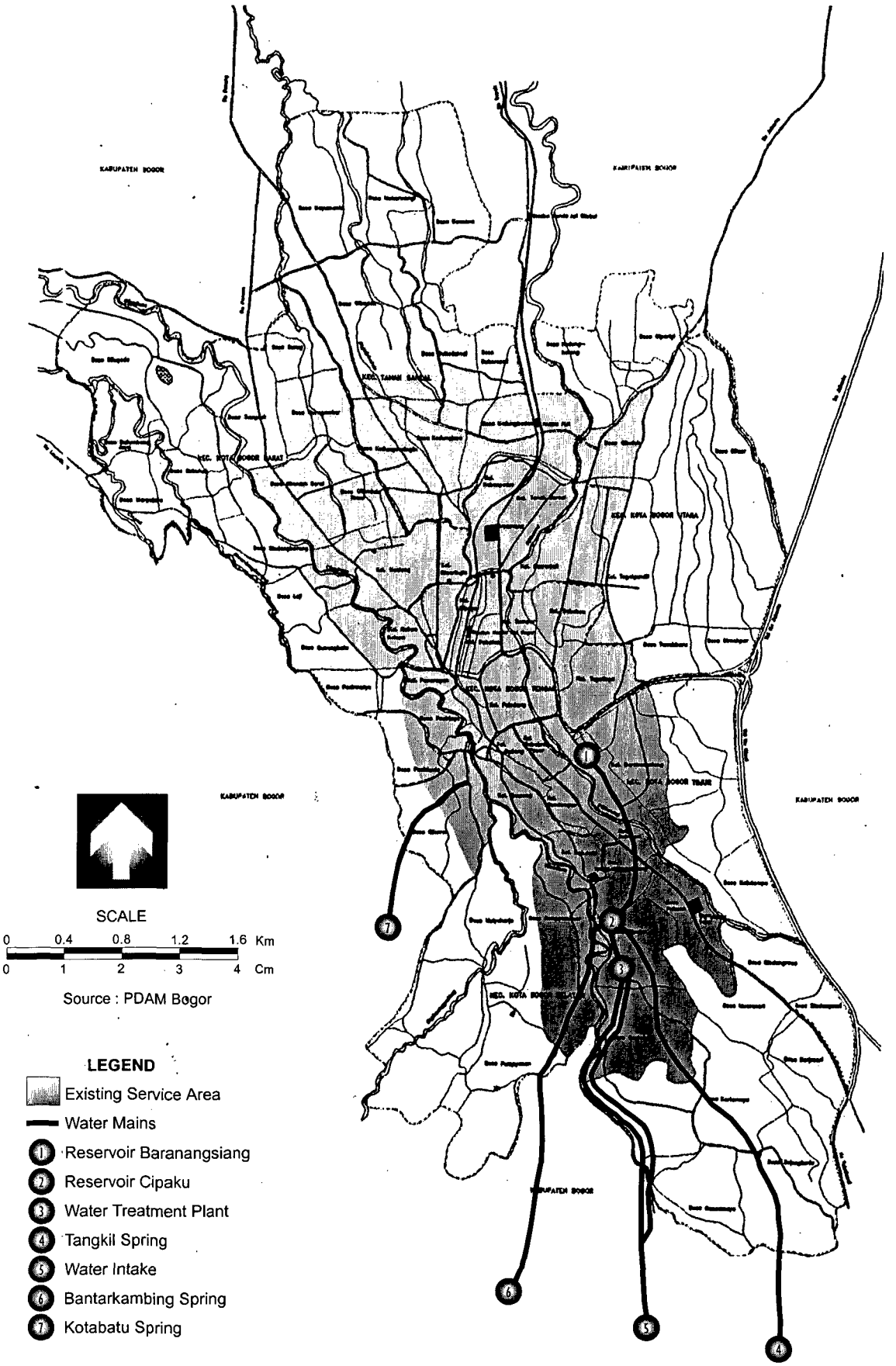
1. Project administration support:
   1-a: Support for PMU and PIU
   1-b: Public education program
2. Consulting services
   2-a: DED and Supervision
   2-b: LIDAP and RIAP
   2-c: Training

PROJECT IMPLEMENTATION SCHEDULE AT APPRAISAL AND ACTUAL
WATER SUPPLY SECTOR
UNDER BOGOR AND PALEMBANG URBAN DEVELOPMENT PROJECT

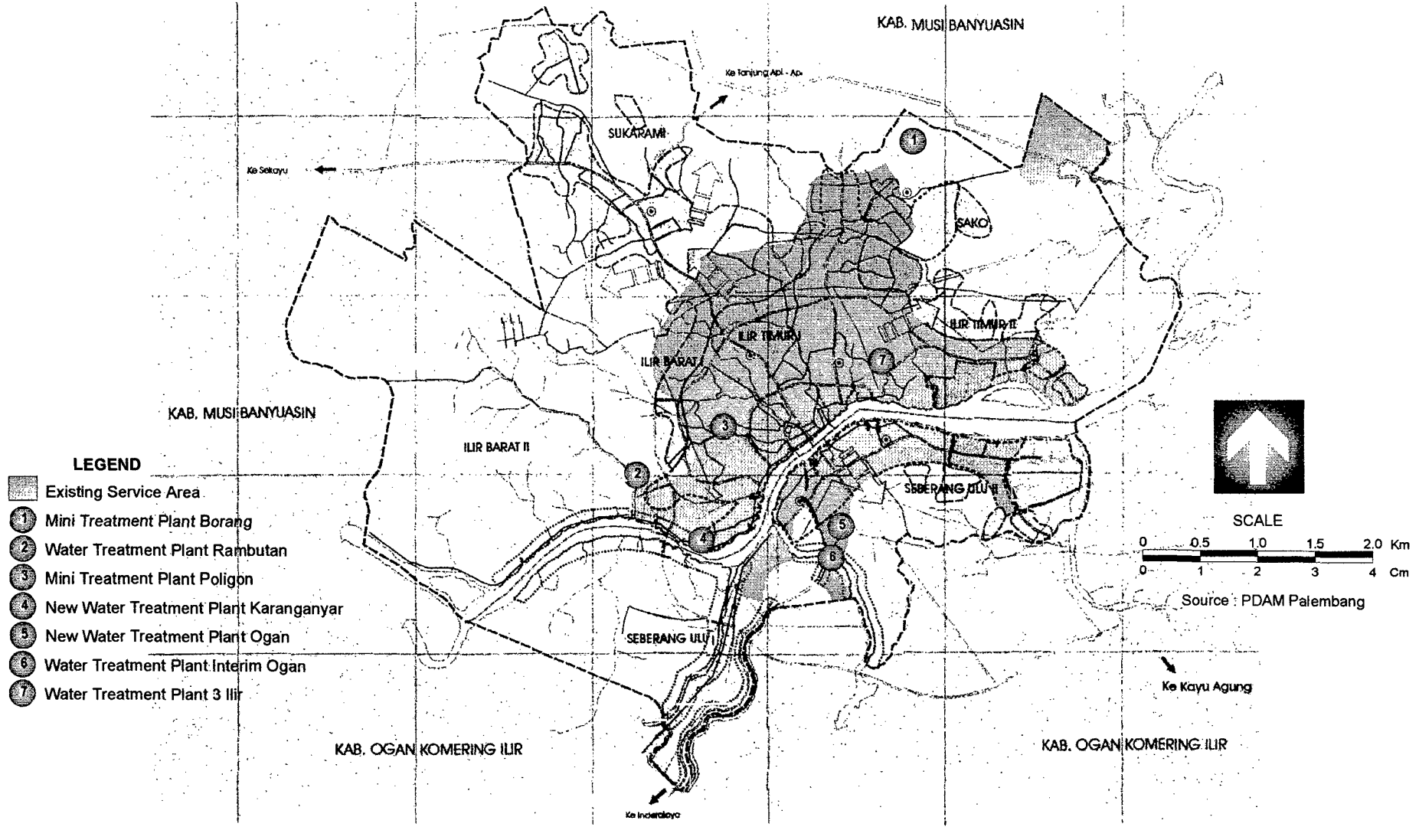
Appendix 4



MAP OF WATER SUPPLY SYSTEM: KOTAMADYA BOGOR



MAP OF WATER SUPPLY SYSTEM: KOTAMADYA PALEMBANG



DATA OF PERFORMANCE INDICATORS: PDAM KOTAMADYA BOGOR

	INDICATORS	UNIT	1991	1992	1993	1994	1995	1996	1997	1998	TARGET
A	**Operational Indicators**										
	Production		1,991.0	1,992.0	1,993.0	1,994.0	1,995.0	1,996.0	1,997.0	1998	
1	Installed Capacity	m3/month	1,373,760.0	1,373,760.0	1,373,760.0	1,373,760.0	1,607,040.0	1,607,040.0	2,566,080.0	2,617,920.0	**2) Production Capacity = 2,355,300 m3/M**
2	Water Production	m3/month	1,250,136.0	1,250,016.0	1,306,789.0	1,334,279.5	1,473,471.8	1,521,923.6	1,625,667.6	1,853,407.8	
3	Water Distributed	m3/month	1,250,136.0	1,250,016.0	1,306,215.0	1,334,366.1	1,466,382.3	1,483,876.6	1,579,475.1	1,810,958.1	
4	Idle Capacity	m3/month	123,744.0	66,971.0	66,971.0	39,480.5	133,568.2	85,116.4	940,412.4	764,512.3	
5	Operation Hour	hour/day	18.0	18.0	18.0	20.0	20.0	24.0	24.0	24.0	
	Consumption										
6	Total Population	No.	621,652.8	633,693.0	647,286.0	659,920.0	658,607.0	669,027.0	675,308.0	677,414.0	
7	Number of people served	No.	165,638.0	169,872.0	187,574.0	196,547.0	174,200.0	199,935.0	234,450.0	252,256.0	7) Total Population Served = 214,000
8	Service Coverage	%	26.6	26.8	29.0	29.8	26.4	29.9	34.7	37.2	**8) Service Coverage = 34 %**
9	Domestic Metered Consumption	m3/month	560,060.0	594,601.0	639,865.0	686,407.8	733,183.2	753,977.5	840,130.4	896,527.8	
10	Non Domestic Metered Consumption	m3/month	257,548.0	274,335.0	300,908.0	303,479.0	314,884.0	321,848.0	312,853.0	333,025.0	
11	Total Metered Consumption	m3/month	817,608.0	868,936.0	940,773.0	989,886.8	1,048,067.2	1,075,825.5	1,152,983.4	1,229,552.8	
12	Domestic Connection	No.	20,141.0	21,540.0	22,776.0	23,906.0	25,218.0	27,647.0	32,681.0	36,864.0	
13	Non Domestic Connection	No.	2,229.0	2,332.0	2,556.0	2,578.0	2,686.0	2,750.0	2,886.0	3,058.0	
14	Total Connection	No.	22,370.0	23,872.0	25,332.0	26,484.0	27,904.0	30,397.0	35,567.0	39,922.0	14) Total Connection = 32,000
15	Domestic Consumption/Connection	liter/day	926.9	920.2	936.5	957.1	969.1	909.1	856.9	810.7	15) Domestic Water Consumption/Connec.
16	Non Domestic Consumption/Connection	liter/day	3,851.5	3,921.3	3,924.2	3,924.0	3,907.7	3,901.2	3,613.5	3,630.1	= 705 liter/connection/day
17	Domestic Water Sold	Mil. Rp/year	2,519.8	2,673.7	3,686.1	4,274.7	4,600.3	6,338.0	7,038.8	7,814.9	5 persons served each HC
18	Non Domestic Water Sold	Mil. Rp/year	2,300.7	2,459.8	3,188.0	3,181.2	3,500.3	4,728.4	4,625.5	4,834.5	
19	Total Water Sold	Mil. Rp/year	4,820.6	5,133.5	6,874.1	7,455.9	8,100.6	11,066.4	11,664.4	12,649.4	
	Unaccounted for Water										
20	Water losses	m3/month: (3-11)	432,528.0	381,080.0	365,442.0	344,479.3	418,315.2	408,051.1	426,491.7	581,405.3	
21	Unaccounted for Water	% : (20/3)*100	34.6	30.5	28.0	25.8	28.5	27.5	27.0	32.1	**21) Unaccounted for Water = < 29 %**
	Personnel										
22	Number of staff	No.	234.0	242.0	250.0	272.0	285.0	284.0	334.0	331.0	
	Operational Ratios										
23	Personnel costs	Million Rp	1,038.8	1,314.0	1,635.8	1,796.9	1,927.8	2,560.2	2,872.8	3,040.8	
24	Staff Productivity Index	Staff/000:(22/14)/1000	10.5	10.1	9.9	10.3	10.2	9.3	9.4	8.3	24) Staff Productivity Index < 10 staff/1000
	Composition of Operational Costs										connections
25	* Personnel	%	29.9	34.5	38.2	37.8	34.3	43.4	27.4	22.1	
26	* Energy	%	4.6	6.0	6.8	6.5	7.0	7.2	3.6	1.7	
27	* Others	%	65.6	59.5	55.0	55.7	58.7	49.4	69.0	76.3	
28	Unit Operational Costs	Rp/m : (44+45)/12/(2)	231.7	254.1	272.9	297.1	317.5	323.2	537.2	620.0	
29	Average Tariff	Rp/m3 : (43/11)	448.2	455.5	596.8	628.5	629.6	827.6	822.7	837.7	
30	Tariff Ratio	(29/28)	1.9	1.8	2.2	2.1	2.0	2.6	1.5	1.4	

DATA OF PERFORMANCE INDICATORS: PDAM KOTAMADYA BOGOR

	INDICATORS	UNIT	1991	1992	1993	1994	1995	1996	1997	1998	TARGET
	Financial Indicator										
	Assets										
31	* Current Assets	Million Rp	3,995.2	5,089.4	6,437.6	5,188.3	4,759.5	5,899.5	3,586.0	4,501.3	*Based on Feasibility Study and Appraisal Report*
32	* Fixed Assets	Million Rp	7,629.4	9,181.9	10,614.4	12,907.1	15,160.8	17,095.0	60,504.4	64,617.8	*Bogor & Palembang Urban Development Project*
33	* Accounts Receivable	Million Rp	845.6	806.3	943.0	933.5	1,116.2	1,499.0	1,781.0	2,070.7	*(1991), Degree of Ministry of Home affair No.*
34	* Accumulated Depreciation	Million Rp	4,252.9	4,950.8	5,615.3	6,438.0	7,480.7	8,323.9	11,981.9	15,934.0	*690.900.327 (1994) and Water and Wastewater*
35	* Net Fixed Assets	Million Rp	3,376.4	4,231.1	4,999.1	6,469.0	7,680.1	8,771.1	48,522.5	48,683.8	*2nd Edition, Yepes and Dianderas (1996)*
36	* Total Assets	Million Rp	8,188.6	10,162.7	12,313.6	12,690.3	23,696.4	43,851.7	56,677.8	56,400.8	
	Liabilities and Equity										
37	* Current Liabilities	Million Rp	466.6	614.8	981.9	840.2	1,030.4	2,888.6	3,716.8	3,666.0	
38	* Long-term Debt	Million Rp	-	-	-	-	5,397.9	17,937.7	29,184.7	28,961.1	
39	* Total Debt Service	Million Rp	-	-	-	-	-	-	748.4	762.1	
40	* Total Liabilities	Million Rp	1,695.0	2,211.8	2,942.6	3,044.9	9,138.2	35,795.5	36,691.7	36,592.9	
41	* Equity	Million Rp	4,752.7	6,340.8	6,882.3	7,159.5	11,824.4	14,969.1	17,828.3	17,828.3	
42	* Total liabilities and Equity	Million Rp	8,188.6	10,162.7	12,313.6	12,690.3	23,696.4	43,851.7	56,677.8	56,400.8	
	Statements of Consolidated Earnings										
43	* Operating Revenues	Million Rp	4,397.7	4,750.1	6,737.4	7,465.4	7,917.9	10,683.6	11,382.3	12,359.6	
44	* Operating Cost	Million Rp	1,635.0	1,881.9	2,246.7	2,601.0	3,389.6	3,298.9	6,212.1	6,828.5	
45	* Other Expenses	Million Rp	1,841.0	1,930.4	2,033.2	2,156.2	2,224.9	2,602.9	4,267.3	6,960.6	
46	* Gross Profit	Million Rp	3,416.1	3,574.5	5,333.7	5,668.2	5,661.6	8,946.6	7,025.6	7,438.2	
47	* Net earnings	Million Rp	1,740.8	1,610.1	2,488.7	2,485.8	2,733.9	4,777.2	2,157.8	485.0	
	Efficiency										
48	Working ratio	(44/43)	0.37	0.40	0.33	0.35	0.43	0.31	0.55	0.55	48) Working Ratio < 0.6
49	Operating ratio	(44+45)/43	0.79	0.80	0.64	0.64	0.71	0.55	0.92	1.12	49) Operating Ratio < 1.0
50	Accounts receivable/Collec.Period	Month : (33/43)*12	2.31	2.04	1.68	1.50	1.69	1.68	1.88	2.01	**50) Accounts receivable/Collection Period = < 2 month**
	Leverage										
51	Debt Service Coverage Ratio	(46)/(39)	-	-	-	-	-	-	9.39	9.76	51) Debt Coverage Ratio = > 3
52	Debt Equity Ratio	(40)/(42)	0.21	0.22	0.24	0.24	0.39	0.82	0.65	0.65	52) Debt Equity Ratio = < 0.4
	Liquidity										
53	Current ratio	(31/37)	8.56	8.28	6.56	6.17	4.62	2.04	0.96	1.23	53) Current Ratio = > 2.0
	Profitability										
54	Return of Net Fixed Assets	% : (47/35)*100	51.56	38.05	49.78	38.43	35.60	54.46	4.45	0.01	54) Return of Net Fixed Assets > 10%
55	Return on equity	% : (47/41)*100	36.63	25.39	36.16	34.72	23.12	31.91	12.10	2.72	55) Return on equity > 10%
56	Net Profit Margin	% : (47/43)*100	39.58	33.90	36.94	33.30	34.53	44.71	18.96	3.92	56) Net Profit Margin > 15 %

DATA PERFORMANCE INDICATOR: PDAM KOTAMADYA PALEMBANG

	INDICATORS	UNIT	1991	1992	1993	1994	1995	1996	1997	1998	TARGET
	Operation										
	Production										
1	Installed Capacity	m3/month	4,024,200.0	4,132,944.0	4,319,568.0	4,319,568.0	4,319,568.0	4,707,072.0	4,707,072.0	4,707,072.0	**2) Production Capacity = 7,128,000 m3/M**
2	Water Production	m3/month	3,954,000.0	4,122,415.3	4,031,614.7	4,011,013.4	4,162,488.3	4,424,990.4	4,507,929.6	4,484,906.3	
3	Water Distributed	m3/month	3,808,735.7	3,933,923.1	3,883,498.9	3,855,180.6	4,017,202.3	4,292,668.4	4,330,497.0	4,386,354.4	
4	Idle Capacity	m3/month	70,200.0	10,528.8	287,953.3	308,554.6	157,079.8	282,081.6	199,142.4	222,165.7	
5	Operation Hour	hour/day	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	
	Consumption										
6	Total Population	No.	1,181,492.0	1,232,400.0	1,272,600.0	1,311,099.0	1,352,301.0	1,354,608.0	1,396,635.0	1,418,709.0	
7	Number of People Served	No.	424,740.0	428,169.0	446,719.0	477,554.0	498,554.0	523,313.0	539,105.0	545,432.0	7) Total Population Served = 570,000
8	Service Coverages	%	35.9	34.7	35.1	36.4	36.9	38.6	38.6	38.4	**8) Service Coverage = 47 %**
9	Domestic Metered Consumption	m3/month	1,710,879.0	1,766,064.0	1,757,555.0	1,923,309.0	1,983,960.0	2,150,507.0	2,383,246.0	2,218,747.0	
10	Non Domestic Metered Consumption	m3/month	398,752.0	445,662.0	457,834.0	451,370.0	450,059.0	472,825.0	482,867.0	443,519.0	
11	Total Metered Consumption	m3/month	2,109,631.0	2,166,290.0	2,232,227.8	2,318,967.5	2,389,998.6	2,483,044.6	2,681,332.1	2,646,289.3	
12	Domestic Connections	No.	52,376.0	53,321.0	55,251.0	57,879.0	62,024.0	64,962.0	68,487.0	70,613.0	
13	Non Domestic Connections	No.	5,294.0	5,605.0	5,916.0	5,938.0	6,198.0	6,260.0	6,272.0	6,402.0	
14	Total Connections	No.	57,670.0	58,926.0	61,167.0	63,817.0	68,222.0	71,222.0	74,759.0	77,015.0	14) Total Connection = 120,000 connections
15	Domestic Consumption/connection	liter/day	1,088.8	1,104.0	1,060.3	1,107.7	1,066.2	1,103.5	1,160.0	1,047.4	15) Domestic Water Consumption/Connec.
16	Non Domestic Consumption/connection	liter/day	10,772.4	10,502.9	9,902.8	10,796.6	10,669.9	11,451.0	12,666.1	11,552.4	= 945 liter/connection/day
17	Domestic Water Sold	Million Rp	6,346.4	6,051.7	6,148.2	6,651.2	7,549.9	8,871.4	10,135.0	12,640.9	7 persons served each HC
18	Non Domestic Water Sold	Million Rp	3,878.4	4,154.1	4,128.3	4,618.8	5,681.7	6,885.3	6,193.7	5,345.7	
19	Total Water Sold	Million Rp	10,224.8	10,205.8	10,276.5	11,270.0	13,231.6	15,756.7	16,328.7	17,986.6	
	Unaccounted for Water										
20	Water losses	m3/month: (3-11)	1,699,104.7	1,767,633.1	1,651,271.1	1,536,213.1	1,627,203.8	1,809,623.8	1,649,164.9	1,740,065.2	
21	Unaccounted for Water	% : (20/3)*100	44.6	44.9	42.5	39.8	40.5	42.2	38.1	39.7	**21) Unaccounted for Water = < 29 %**
	Personnel										
22	Number of staff	No.	417	417	410	413	410	416	409	395	
	Operational Ratios										
23	Personnel costs	Million Rp	975.0	1,192.0	1,155.4	1,245.2	1,941.4	1,653.1	1,892.7	2,324.8	
24	Staff Productivity Index	Staff/000:(22/14)/1000	7.2	7.1	6.7	6.5	6.0	5.8	5.5	5.1	24) Staff Productivity Index < 10 staff/1000 connections
	Composition of Operational Costs										
25	* Personnel	%	18.6	19.9	19.0	21.4	21.8	17.6	22.9	20.4	
26	* Energy	%	27.9	28.8	30.1	29.3	27.3	30.3	36.5	38.1	
27	* Others	%	53.5	51.3	50.9	49.3	50.9	52.1	40.6	41.5	
28	Unit Operational Costs	Rp/m : (44+45)/12/(2)	221.4	242.2	251.9	242.2	356.1	354.0	305.1	422.8	
29	Average Tariff	Rp/m3 : (43/11)	368.1	361.7	362.2	375.0	443.0	475.8	480.1	460.9	
30	Tariff Ratio	(29/28)	1.7	1.5	1.4	1.5	1.2	1.3	1.6	1.1	

Bold: Stated in Appraisal / Loan Agreement

DATA OF PERFORMANCE INDICATORS: PDAM KOTAMADYA PALEMBANG

	INDICATORS	UNIT	1991	1992	1993	1994	1995	1996	1997	1998	TARGET
	Financial Indicator										
	Assets										
31	* Current Assets	Million Rp	5,717.9	6,826.1	7,124.8	8,855.4	13,241.8	11,886.3	13,413.6	16,317.0	*Based on Feasibility Study and Appraisal Report*
32	* Fixed Assets	Million Rp	28,946.2	30,101.0	33,129.4	34,263.3	43,506.9	43,723.7	44,520.7	45,387.4	*Bogor & Palembang Urban Development Project*
33	* Accounts Receivable	Million Rp	3,622.2	4,424.9	4,999.0	5,834.2	6,361.4	7,941.1	8,823.3	12,175.0	*(1991), Degree of Ministry of Home affair No.*
34	* Accumulated Depreciation	Million Rp	(13,807.7)	(15,493.4)	(17,264.1)	(18,968.1)	(21,680.5)	(24,893.2)	(28,232.7)	(32,465.9)	*690.900.327 (1994) and Water and Wastewater*
35	* Net Fixed Assets	Million Rp	15,138.5	14,607.6	15,865.2	15,295.2	21,826.4	18,830.5	16,287.9	12,921.5	*2nd Edition, Yepes and Dianderas (1996)*
36	* Total Assets	Million Rp	25,986.6	28,561.6	30,588.4	34,805.7	38,806.6	54,489.1	63,505.1	63,238.7	
	Liabilities and Equity										
37	* Current Liabilities	Million Rp	5,895.2	7,686.3	9,975.8	12,123.6	14,458.2	16,726.0	23,278.0	23,330.4	
38	* Long-term Debt	Million Rp	12,752.3	13,673.0	11,446.8	11,782.2	12,554.8	23,591.6	28,582.4	28,498.4	
39	* Total Debt Services	Million Rp	1,614.8	2,379.0	3,363.9	4,216.4	4,948.1	15,052.8	20,550.4	20,550.4	
40	* Total Liabilities	Million Rp	18,647.5	21,359.3	21,422.6	23,905.8	27,013.0	40,317.6	51,860.4	51,828.8	
41	* Equity	Million Rp	11,657.4	11,710.4	11,719.6	11,719.6	13,487.4	12,482.5	13,473.7	13,534.6	
42	* Total liabilities and Equity	Million Rp	25,986.6	28,561.6	30,588.4	34,805.7	38,806.7	54,489.1	63,505.1	63,238.7	
	Statements of Consolidated Earnings										
43	* Operating Revenues	Million Rp	9,319.3	9,403.1	9,702.4	10,434.8	12,704.4	14,176.9	15,446.5	14,634.9	
44	* Operating Cost	Million Rp	5,252.7	5,991.3	6,093.0	5,828.9	8,894.7	9,399.8	8,251.7	11,376.3	
45	* Other Expenses	Million Rp	3,643.6	4,339.9	4,638.2	5,217.8	7,172.3	6,076.5	11,552.5	4,561.7	
46	* Gross Profit	Million Rp	4,066.6	3,411.8	3,678.4	4,978.8	3,809.7	4,777.1	7,194.8	3,258.5	
47	* Net earnings	Million Rp	(1,445.8)	(190.4)	(841.9)	(93.8)	(3,116.4)	(363.9)	(3,392.2)	(383.9)	
	Efficiency										
48	Working ratio	(44/43)	0.56	0.64	0.63	0.56	0.70	0.66	0.53	0.78	48) Working Ratio < 0.7
49	Operating ratio	(44+45)/43	0.95	1.10	1.11	1.06	1.26	1.09	1.28	1.09	49) Operating Ratio < 1.0
50	Accounts receivable/Collection Period	Month : (33/43)*12	4.66	5.65	6.18	6.71	6.01	6.72	6.85	9.98	**50) Accounts receivable/Collection Period = < 2 month**
	Leverage										
51	Debt Service Coverage Ratio	(46)/(39)	(0.90)	(0.08)	(0.25)	(0.02)	(0.63)	(0.02)	(0.17)	(0.02)	51) Debt Coverage Ratio = > 3
52	Debt equity Ratio	(40)/(42)	0.72	0.75	0.70	0.69	0.70	0.74	0.82	0.82	52) Debt Equity Ratio = < 1.0
	Liquidity										
53	Current ratio	(31/37)	0.97	0.89	0.71	0.73	0.92	0.71	0.58	0.70	53) Current Ratio = > 1.0
	Profitability										
54	Return of Net Fixed Assets	% : (47/35)*100	(0.10)	(0.01)	(0.05)	(0.01)	(0.14)	(0.02)	(0.21)	(0.03)	54) Return of Net Fixed Assets > 5%
55	Return on equity	% : (47/41)*100	(0.12)	(0.02)	(0.07)	(0.01)	(0.23)	(0.03)	(0.25)	(0.03)	55) Return on equity > 5%
56	Net Profit Margin	% : (47/43)*100	(15.51)	(2.02)	(8.68)	(0.90)	(24.53)	(2.57)	(21.96)	(2.62)	56) Net Profit Margin > 10%

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