REPUBLIC OF INDONESIA
MINISTRY OF PUBLIC WORKS

REPUBLIC OF INDONESIA
THE PREPARATORY SURVEY
FOR
IKK WATER SUPPLY SYSTEM DEVELOPMENT
SECTOR LOAN PROJECT

FINAL REPORT

VOLUME I
EXECUTIVE SUMMARY REPORT

NOVEMBER 2010

JAPAN INTERNATIONAL COOPERATION AGENCY

NIPPON KOEI CO.,LTD
KRI INTERNATIONAL CORP.

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(July 30, 2010)

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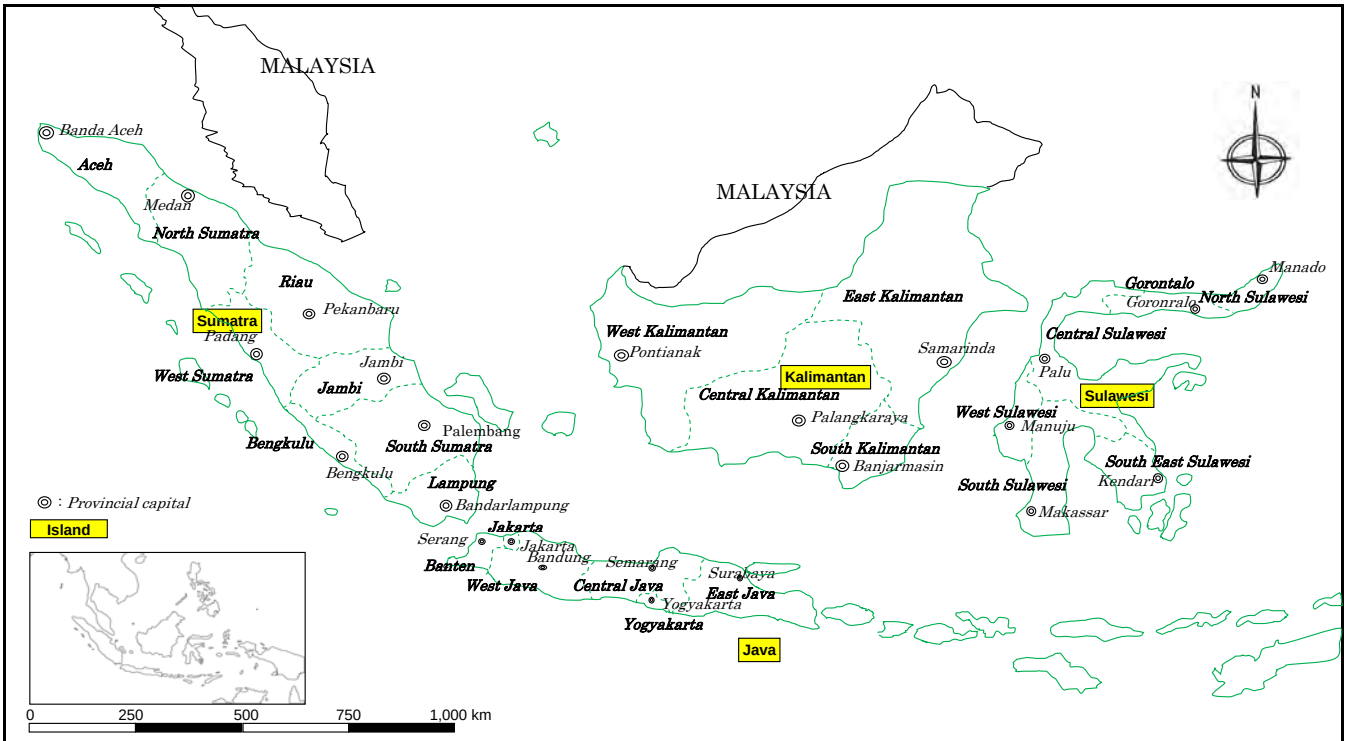


Island	Province	Number of SPAM IKK					on-site review	
		2008	2007	2006	2005	total	First	Second
Sumatra	NAD	3	2	2	3	10		
	North Sumatra	3	1	4	4	12	2	
	West Sumatra	4	3	5	2	14		2
	Riau	3	1	1	1	6		2
	Kepulauan	2	0	0	0	2		
	Jambi	1	1	4	2	8		2
	South Sumatra	3	2	0	2	7		2
	Bangka Belitung	2	2	1	0	5		
	Bengkulu	2	1	2	0	5		2
	Lampung	3	1	0	1	5		1
	sub-total	26	14	19	15	74	2	11
Java	Banten	2	0	0	0	2		1
	West Java	8	2	0	0	10		4
	Central Java	4	3	3	5	15	2	3
	Yogyakarta	2	1	0	0	3		2
	East Java	6	4	7	2	19		5
	sub-total	22	10	10	7	49	2	15
Kalimantan	West Kalimantan	3	3	1	2	9	2	
	Central Kalimantan	3	0	2	2	7		2
	East Kalimantan	3	5	4	3	15		2
	South Kalimantan	2	3	2	0	7		2
	sub-total	11	11	9	7	38	2	6
Sulawesi	North Sulawesi	2	0	3	2	7		2
	Gorontalao	2	2	1	2	7		2
	West Sulawesi	2	4	0	3	9		
	Central Sulawesi	3	2	2	1	8		3
	South Sulawesi	6	4	2	0	12	2	2
	South-East Sulawesi	2	2	1	3	8		1
	sub-total	17	14	9	11	51	2	10
	total	**76**	**49**	**47**	**40**	**212**	**8**	**42**

Location Map and List of SPAM IKK (2005-2008)

(Source: Menuju Pencapaian Target MDGs Bidang Air Minum)

THE PREPARATORY SURVEY
FOR
IKK WATER SUPPLY SYSTEM DEVELOPMNET SECTOR LOAN PROJECT

Study Period: February - November 2010
Counterpart Agency: Directorate General of Human Settlement, Ministry of Public Works, Republic of Indonesia

OUTLINE OF THE STUDY

1. OBJECTIVES

The following are the objectives of the Study:

(1) To comprehend and analyze the present conditions and issues of the Drinking water supply system in the core area of a sub-district area (SPAM IKK) implemented by the Directorate General of Human Settlements (DGHS) of the Ministry of Public Works (MPW);

(2) To take appropriate countermeasures against present issues and support the formulation of a prospective yen-loan-financed project

2. STUDY AREA

The preparatory survey is carried out in Jakarta, and in 50 on-site review areas which are selected from the existing project sites in Sumatra, Java, Kalimantan and Sulawesi islands.

3. PRESENT CONDITIONS AND ISSUES OF SPAM IKK

During the on-site review of 50 SPAM IKK, it was observed that the facilities are operated properly in 42 SPAM IKKs, while the facilities are not properly operated or not in operation in eight SPAM IKKs. In such SPAM IKKs, several problems were observed as follows:

1) Planning stage
- Idling capacity of treatment plants
- Unpredictable selection results of proposal
- Weak design quality

2) Construction stage
- Leakage from fiber reinforced plastic (FRP) tanks.
- Insufficient coordination in implementation between APBN and APBD portions

3) Operation stage
- Small number of house connections
- Low treated water quality

- Low profitability of water works

4. OUTLINE OF THE PROPOSED PROJECTS

The sector loan will finance SPAM IKK projects (sub-projects) in the selected provinces to increase the piped water supply from the semi-urban population. Before considering the sector loan project, it is necessary to take actions to solve the issues described in this report.

4.1 Basic Concepts (Selection of Provinces for Sector Loan Project)

The selection of the province should be conducted under the following criteria.

- Population density (High density > Low density)
- Access to safe water (Poor access > Normal access)
- Number of district (Great number > Small number)
- Number of existing SPAM IKK (Great number > Small number)
- Number of planning SPAM IKK (Great number > Small number)
- Number of healthy Regional Drinking Water Enterprise (PDAM) (Great number > Small number)
- Capacity for SatKer (High potential capacity > Low potential capacity)

The population density, access to safe water and the number of district are indicator for necessity for water supply systems. The number of existing SPAM IKK projects and capacity for Working Unit (SatKer) are the indicators of for the potential capacity for implementation of sub-project under the sector loan project. The number of planning SPAM IKK projects and the number of healthy PDAMs, meanwhile, are indicators of the validity.

4.2 SECTOR LOAN PROJECTS

(1) Basic Concepts for the Formulations of sub-projects

As a result of the selection, the province for the sector loan project should be selected at Central Java and East Java in Region I and South Sulawesi in Region II. From 2010 to 2014, implementation of 632 SPAM IKKs is planned in Sumatra, Java, Kalimantan and Sulawesi Islands. On the average, six SPAM IKKs programs implemented in one province each one year. Finally, 60 SPAM IKKs programs are implemented in the three selected provinces (Central Java, East Java and South Sulawesi) in three years.

(2) The Proposed sub-projects

- A typical sub-project in the sector loan is planned as 10L/s of the size. The target number of connections is 1,000 house connections
- The project composed of 60 sub-projects in three provinces in three years.
- The design population to be served in 60 sub-projects in three provinces is about

300,000.

- The projected total demand of the 60 sub-projects is approximately 75,000m3/day. The number of house connection will eventually reach about 60,000.

Number of the Project for SPAM IKK in sector loan

	Number of Planned SPAM IKK (2010-2014)	Number of Planned SPAM IKK in Sector Loan in three years	Number of Planned SPAM IKK in Sector Loan per one year
CENTRAL JAVA	65	27	9
EAST JAVA	39	18	6
SOUTH SULAWESI	34	15	5
TOTAL	138	60	20

Source: JICA Study Team 2010

4.3 Cost Estimates

(1) Construction costs (base cost)

The construction cost is estimated by the number of sub-project and unit cost of the sub-projects.

Construction Cost

	Q'ty	Unit Price		Total	
		FC (USD)	LC (mil. Rp)	FC (USD)	LC (mil. Rp)
Sector Loan					
Central Jawa	27	0	4,879	0	131,733
East Jawa	18	0	2,615	0	47,070
South Sulawesi	15	0	6,295	0	94,425
				Total	273,228
Counterpart fund (APBD/PDAM)					
Central Jawa	27	0	2,285	0	61,695
East Jawa	18	0	2,285	0	41,130
South Sulawesi	15	0	2,285	0	34,275
				Total	137,100

Source: JICA Study Team 2010

(2) Project costs

Construction cost in the following table consists of the base cost, price escalation, and physical contingency. Total project cost is nearly USD 74 million (Rp. 625,448 million) and the total amount of sector loan is nearly USD 45 million (Rp. 380,340 million).

Summary of the Project Cost

	FC (USD)	LC (mil. Rp)	Total Equivalent (USD)
1. Construction Cost (Sector Loan)	**0**	**341,214**	**40,365,666**
Base Cost	0	273,228	32,322,872
Price Escalation &Contingency	0	67,986	8,042,793
2. Construction Cost (APBD&PDAM)	**0**	**171,214**	**20,254,633**
Base Cost	0	137,100	16,218,930
Price Escalation &Contingency	0	34,114	4,035,703
3. Consulting Service (Sector Loan)	**1,672,516**	**18,678**	**3,882,166**
Base Cost	1,512,000	15,973	3,401,630
Price Escalation &Contingency	160,516	2,705	480,536
4. Land Acquisition	**0**	**0**	**0**
5. Administration	**0**	**25,621**	**3,031,015**
6. Tax	**0**	**57,087**	**6,753,348**
Total Project Cost	**1,672,516**	**613,815**	**74,286,826**
Sector Loan Portion	**1,672,516**	**359,893**	**44,247,831**
Interest and Commitment Charge	1,160,618	0	1,160,618
Total Loan Amount (USD)			**45,408,449**

Source: JICA Study Team 2010

5. CAPACITY DEVELOPMENT FOR SPAM IKK

5.1 Overall Goal

Capacity Development (CD) is a process where the gap between APBN and APBD will be buried continuing for the achievement of MDGs and progress of the effective assistance. MDGs will be achieved as results of acquiring ability to achieve voluntarily by MPW's self efforts.

5.2 Project Purpose

The capacity of staff of MPW (PMU, DirPAM, DirBP of Cipta Karya) and Provincial SatKers of participating provinces in project planning, construction, monitoring, of the SPAM IKK projects is enhanced

5.3 Outputs

- Selection procedure and criteria of SPAM IKK is strengthened.
- Capacity of provincial SatKer staff in project planning, design and screening of SPAM IKK is strengthened.
- Capacity in training of operation and maintenance function of provincial SatKer is strengthened.
- Management capacity of PMU,Dir BP, Dir PAM, of CiptaKarya and provincial SatKer for SPAM IKK monitoring and evaluation r is strengthened.

5.4 Expertise and Advisory Functions Required/Activities

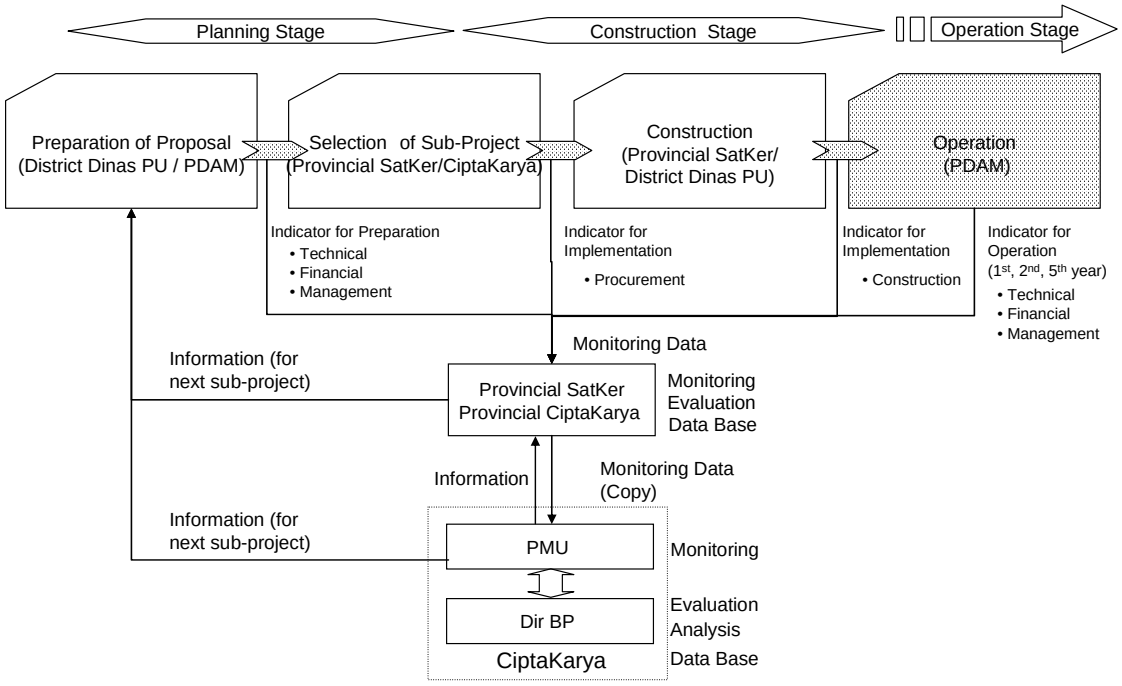
Cipta Karya and provincial SatKer are provided with the required expertise and advisory function by the technical assistance, after confirmation of organizational capacities to perm the SPAM IKK projects, and individual capacities of technical skills, knowledge and experience concerned with SPAM IKK project. The district level is also provided it through provincial SatKer.

6 MONITORING SYSTEM FOR MANAGEMNET, OPERATION AND MAINTENANCE

6.1 Monitoring System

The current capacity of the PMU is very limited as it has a few staff and no experience, therefore; Therefore, the PMU should be strengthened to perform monitoring works. The PMU and Dir BP, Cipta Karya should conduct collect and analyze the monitoring data submitted by the provincial SatKer/provincial Cipta Karya. The collection and compiling of the monitoring data shall be carried out by the PMU while the evaluation and analysis shall be done by Dir BP's their main task in term of monitoring system.

The monitoring structure is shown in below figure. The evaluation data will be taken at each stage, namely: planning stage, construction stage and operation stage. The planning stage data will be taken after submission of the proposal to provincial SatKer. The construction stage data will be taken after completion of the construction work and before facilities' handover to operation organization (PDAM).The operation stage data will be taken on the 1st, 3rd and 5th year after completion of the work. Cipta Karya should monitor the constructed SPAM IKK constantly through PDAM and provincial SatKer. Each PDAM has to establish a constant monitoring system for SPAM IKK with the assistance of provincial SatKer since SPAM IKK is conducted using the national budget.



Source: JICA Study Team 2010

Proposed Monitoring Structure

6.2 Monitoring and Evaluation Indicator

The PMU, Cipta Karya should monitor during the project period and Dir BP should also evaluate the monitoring data each year. The quantitative indicators for the sector loan should be proposed as shown in the table below. The result shall be disclosed to the organization concerned including the foreign donor.

Proposed Quantitative Indicators for Sector Loan Project Monitoring

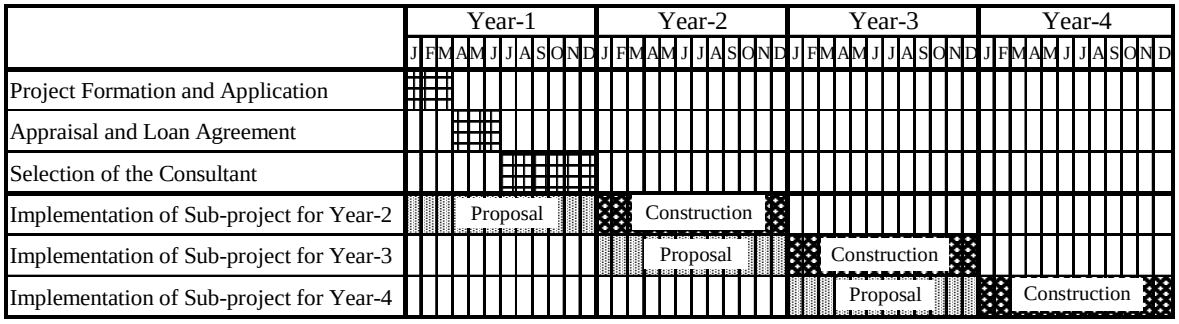
Quantitative Indicators	Targets
The number of 24 hours/day operated SPAM IKK systems.	50 out of 60 SPAM IKKs within two years after construction completed by APBN.
Total water consumption (L/s)	500 L/s (around 80% of total water consumption of sub-project)
Total house connection numbers	50,000 out of 60,000 number of house connection
Number of sub-project	60 nos. (100%)
Selection ratio of approved Sub-project	>90%

Source: JICA Study Team 2010

7 IMPLEMENTATION PLAN

7.1 Implementation Schedule

The implementation schedule of the Sector Loan has been worked out based on the assumption that the Government of Indonesia is with its application for the project, after confirming present issues that needed to be solved through the implemented countermeasures. The implementation schedule of the outline is shown in figure below.



Source: JICA Study Team 2010

Outline of the Implementation Schedule

7.2 Proposed Project Structure

(1) Options for Project Structure

How to implement and fund the distribution network development is the key to ensure the project outcome. Presented below are the options of the funding structure and the demarcation of responsibility between the central and local governments.

Option 1: Present Structure with Sector Loan Funding

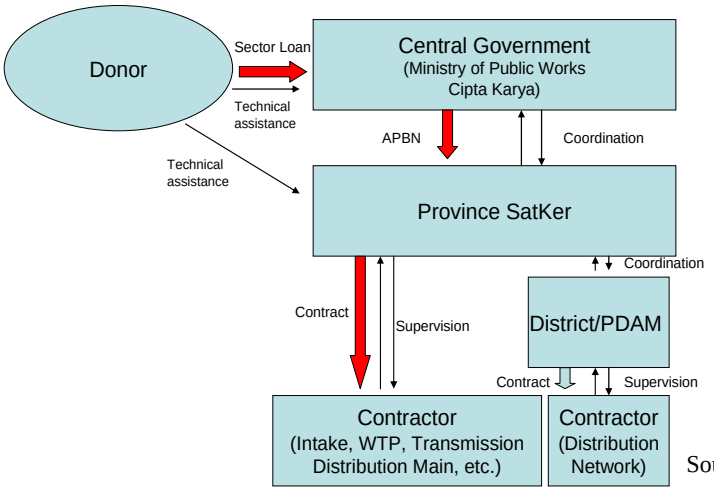
Option 2: Expanded APBN Project Scope

Option 3: Single Contract with Mixed Funding

Option 4: On-lending Loan for Distribution

(2) Proposed Project Structure

Among the four options, Option 2 (Expanded APBN Project Scope) as shown below figure is recommended to be adapted as the project structure for the proposed sector loan because it secures more funding for distribution facilities and increases control over the project scope; and it is more adaptable to the present SPAM IKK program framework due to its moderate requirement for regulatory/institutional adjustments.



Source: JICA Study Team 2010

Expanded APBN Project Scope

8. PROJECT EVALUATION

8.1 Financial Evaluation

FIRR by the sub-project type are calculated as shown in the table below. Compared with the weighted average cost of capital of 3.44% calculated from foreign loan 1.4% per annum (weight: 60%) and local budget cost assumed as the government bond coupon rate 6.5% per annum with over 10 year maturity (weight: 40%), the results show that the sub-projects under the current tariff level are not considered financially viable except for the type 1A with the least cost.

Results of FIRR Calculation

Item	Sub-project Type			
	Type 1A	Type 1B	Type 2A	Type 2B
Distribution Main Length	1,000m	1,000m	5,000m	5,000m
WTP	Without WTP	With WTP	Without WTP	With WTP
FIRR	5.90%	3.18%	0.81%	-0.92%

Source: JICA Study Team 2010

8.2 Economic Evaluation

EIRR by the sub-project type are calculated as shown in the table below, ranging from 13.78 to 26.51%. Compared with the generally accepted opportunity cost of capital of 10 to 12%, the results indicate that the sub-projects under the aforementioned assumptions are economically viable.

Results of EIRR Calculation

Item	Sub-project Type			
	Type 1A	Type 1B	Type 2A	Type 2B
Distribution Main Length	1,000m	1,000m	5,000m	5,000m
WTP	Without WTP	With WTP	Without WTP	With WTP
EIRR	26.51%	20.73%	16.24%	13.78%

Source: JICA Study Team 2010

9. Recommendations

Steps toward the Sector Loan Project

1) In order to increase the access to safe water of semi-urban population and thereby achieve MDGs targets, the existing SPAM IKK program is deemed as one of the crucial national programs implemented by MPW. To cope with its fiscal and technical constraints, financial assistance through the sector loan project is considered necessary.

2) However, it is recommended that MPW take necessary actions to solve the issues described in this report before considering the sector loan project for SPAM IKK to ease the foreseen risks against efficient implementation of the future financial assistance.

3) After completion of the Study, MPW should prepare the capacity development plan to improve the current SPAM IKK program as proposed in this report. Technical assistance from donors should also be considered to support such efforts by MPW for its capacity development.

Capacity Development for SPAM IKK Program

4) Based on the existing framework and guidelines for the current SPAM IKK program, it is required to make (i) clearer standards for the site selection criteria and (ii) close coordination among the concerned agencies at the central and local levels. The latter is highly important to solve imbalanced investment between APBN and APBD portions and improve project monitoring.

5) The Cipta Karya, PMU, the selected provincial SatKer, and concerned districts/PDAM are the main subject agencies of the capacity development. As described in Chapters 1 and 6, Main Report Part 2 in detail, the emphasis should be put in the establishment of a firm process management and monitoring system to reduce uncertainty and unpredictability in the project selection and execution.

6) It is recommended that MPW enhance its human resources to implement the proposed capacity development especially for PMU..

Improvement of SPAM IKK Program

7) During the planning stage, the SPAM IKK site should be selected in view of operation efficiency. Especially, a needs assessment among beneficiaries is necessary to grasp the actual demand and should be one of the prerequisites for the SPAM IKK application.

- MPW should establish clear selection criteria with definite indicators based on the existing SPAM IKK guidelines to increase predictability of site selection process for local governments to ensure their smooth implementation of APBD investment.
- APBN project scope should be amplified partially to cover investment in distribution network to reduce financial burden of local governments.
- Responsibility of provincial SatKers in project screening should be increased at local level. Close monitoring and strict appraisal by SatKers and MPW is required in project planning and construction especially on distribution network development by local governments.

8) Construction deficiencies are less observed by the on-site review than insufficient level of planning works and operation except several problems of construction quality in projects with FRP tanks.
   - It is recommended to reinforce provincial SatKer's function in construction supervision and inspection.

9) During the operation stage, the biggest issues are small number of house connections and low treated water quality.
   - High connection fee is one of the obstacles for beneficiaries willing to have tap water connections. Connection fee plan should be improved by PDAMs through introducing monthly payments, discount campaign.
   - Most household without water connections possess alternative water sources such as shallow wells attached to their residence. To ensure efficient investment based on the real demand for water connections, it is also required to do strict project screening based on needs survey and socialization on planning stage as a prerequisite of SPAM IKK site selection.
   - Lack of technical knowledge among PDAM staff causes inappropriate operation of the water works. No design plans or operating manuals are transferred in many SPAM IKK projects. Most projects do not follow five-day commissioning test requirement prescribed in the guidelines. Provincial SatKers should ensure technical transfer from contractor to PDAM in construction stage.
   - Training programs for PDAM staff should also be reinforced by utilizing the MPW training centers and PERPAMSI trainings to increase skilled operators.

10) Strengthening of PDAM in the financial and managerial aspects is another factor for

a sustainable SPAM IKK operation. It is recommended for district governments to consider more flexible tariff setting and connection fee plan to meet the financial burden borne by PDAMs that operate SPAM IKK. In general, the technical level of PDAM staff has to be enhanced also through other instruments such as the existing training system and other technical support.

- During the construction stage, proper inspection by the provincial SatKer and technical transfer from contractors to PDAM should be more emphasized for appropriate operation and service quality of SPAM IKK.

CHAPTER 1 INTRODUCTION

1.1 Background of the Study

In sub-district areas located between regional capitals and the rural areas, MPW has been implementing the Program for Development of Drinking Water Supply System in Sub District Areas (SPAM IKK) to mitigate water scarcity. SPAM IKK has initially planned to construct 600 drinking water supply facilities within the timeframe of RPJM 2005-2009; however, only 433 facilities had been constructed so far. At present, SPAM IKK is planning to construct 820 water supply facilities within the next RPJM 2010-2014 and therefore requires a donor's cooperation for its enhancement and promotion.

Meanwhile, the National Development Planning Agency (BAPPENAS) deems that many existing SPAM IKK facilities are not operational or underutilized due to malfunctioning equipment and management problems. Therefore, a cautious approach is required to formulate a project based on the study of present issues.

Under such situation, Japan International Cooperation Agency (JICA) mission held discussions with the officials of the MPW on the scope of work of the Preparatory Survey for IKK Water Supply System Development Sector Loan Project (the Project). Consequently, the JICA mission, MPW and BAPPENAS agreed upon the scope of work of the preparatory survey for the Project in August 2009.

1.2 Objectives of the Study

The following are the objectives of the Study:

1) To comprehend and analyze the present conditions and issues of SPAM IKK implemented by the Directorate General of Human Settlements (DGHS) of MPW;
2) To take appropriate countermeasures against present issues and support the formulation of a prospective yen-loan-financed project

1.3 Study Area

The preparatory survey is carried out in Jakarta, and in 50 on-site review areas which are selected from the existing project sites in Sumatra, Java, Kalimantan and Sulawesi islands.

THE PREPARATORY SURVEY
FOR
IKK WATER SUPPLY SYSTEM DEVELOPMENT SECTOR LOAN PROJECT

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Abbreviations

Abbreviation	Indonesian/English
ADB	Asian Development Bank
APBD	Anggaran Pendapatan dan Belanja Daerah Tingkat (District Budget)
APBN	Anggaran Pendapatan dan Belanja National (National Budget)
BAPPEDA	Badan Perencanaan Pembangunan Daerah Tingkat-I and Tingkat-II (Development Planning Board for Provincial and District Level)
BAPPENAS	Badan Perencanaan Pembangunan Nasional (National Development Planning Board)
BLU	Badan Layanan Umum (Public Service Agency)
BPS	Biro Pusat Statistik (Central Bureau of Statistics)
BPAM	Badan Pengelola Air Minum (Management Board for new Drinking Water Projects before being established as a PDAM)
BPKP	Badan Pengawas Keuangan Pembangunan (Financial Supervisory Agency for Development)
BPPSPAM	Badan Pendukung Pengembangan Sistim Penyediaan Air Minum (Supporting Agency Water Supply System Development)
Broncapturing	Any small structure built to 'capture' a water source
Bupati	Kepala Kabupaten (Head of a District; sometimes called "Regent")
Camat	Kepala Kecamatan (Head of a Sub-District)
Cipta Karya	Direktorat Jenderal Cipta Karya (Directorate General of Human Settlements DGHS)
Dinas	Provincial or District level governmental department
DirBP	Direktorat Bina Program (Directorate of Progamme Development)
DirPAM	Direktorat Pengemgangan Air Minum (Directorate of Water Supply Development)
FRP	Fiber Reinforced Plastics
GIP	Galvanized Iron Pipe
GSP	Galvanized Steel Pipe
HC	House Connection (To a piped water supply system, usually metered)
HDPE	High Density Polyethylene Pipe
IBRD	International Bank for Reconstruction and Development (World Bank)
IKK	Ibu Kota Kecamatan (Core Area of a Sub-District)
JICA	Japan International Cooperation Agency
Kabupaten	District (Local Government level II)
Kecamatan	Sub-District (Local Government level III)
Kotamadya	City - equivalent administrative status to a Kabupaten
MDGs	Millennium Development Goals
MOH	Ministry of Health
MPW	Ministry of Public Works
Musrembang	Musyawarah Rencana Pembangunan (The Council Development Plan)
NGO	Non-governmental Organization
PAM	Perusahaan Air Minum (Water Enterprises) Generic term used for PDAM and BPAMs
PDAM	Perusahaan Daerah Air Minum (Regional Drinking Water Enterprise)
PERPAMSI	Persatuan Perusahaan Air Minum Seluruh Indonesia (Indonesian Water Supply Association)
PH	Public Hydrant
PLN	Perusahaan Listrik Negara (National Electricity Enterprise)
PMU	Program Management Unit
RPIJM	Rencana Program Investasi Jangka Menengah (Medium Term Investment Program Plan)
PU	Generic term for all departments of Public Works
PVC	Unplasticized Polyvinyl Chloride (Pipe)
Propinsi	Province (First level of local government Tk.I.)
RC	RC (Reinforced Concrete)

RENSTRA	Rencana Strategis (Strategic Plan)
RPJPN	Rencana Pembangunan Jangka Panjang Nasional (National Long Term Development Plan)
RPJMN	Rencana Pembangunan Jangka Menengah Nasional (National Medium Term Development Plan)
RSF	Rapid Sand Filter (Water Treatment Plant)
SatKer	Satuan Kerja (Working Unit)
SPAM IKK	Program for Development of Drinking Water Supply System in Sub District Areas
SSF	Slow Sand Filter (Water Treatment Plant))
T/A	Technical Assistance
UFW	Unaccounted-for-Water
YPTD	Yayasan Pendidikan Tirta Dharma (Tirta Dharma Eduacation Foundation)
WSLIC-2	Second Water & Sanitation for Low Income Communites Project
WTP	Water Treatment Plant

CHAPTER 2 IKK WATER SUPPLY DEVELOPMENT POLICIES AND PLANS

According to "Achieving for the Millennium Development Goals (MDGs) Target of the Directorate General of Human Settlements (Cipta Karya) on 31 May 2010", target of people proportion against clean water access is set up 60.3% (57.5% in urban and 61.6% in rural area) by the end of 2015, from 47.6% in 2009. The new coverage ratio (piped water supply) target is 36.4% (47.4% in urban and 19.8% in rural area) in 2015, from 25.6% in 2009 in whole country as shown in Table 2.1.1.

Table 2.1.1 Access Proportion to Clean Water and Piped Water

Year		2009	2015
		(Present) (*2)	MDGs Target of the Cipta Karya(*2)
Population(*1)	(Million)	231.4	247.6
Clean Water Access	Urban (%)	49.8	57.5
	Rural (%)	45.6	61.6
	Nation (%)	47.6	60.3
Piped Water Supply	Urban (%)	35.0	47.4
	Rural (%)	14.3	19.8
	Nation (%)	25.6	36.4

Source: *1) Trends of the Selected Socio-Economic Indicators of Indonesia, October 2009, The Indonesia Statistics Institute (BPS), number of population in 2009, 2015 is projection of intercensal population survey 1995.
*2) Acceleration of MDGs Target Achieving on Cipta Karya Section, 31 May 2010

The government proposed a strategy to improve PDAM's performance and implement 820 SPAM IKK development programs in 32 provinces in the next five years, requiring an amount of Rp.4,929 billion as shown in the MPW Strategic Plan (RENSTRA 2010-2014).

CHAPTER 3 BACKGROUND INFORMATION ON THE WATER SUPPLY SYSTEM IN IKK

3.1 Executing Agency and Responsibility

The executing agency for the development of water supply system in the core area of a sub-district (SPAM IKK) is the MPW, Directorate General of Human Settlements (Cipta Karya). Such projects are implemented based on the division of roles between the central, provincial and local governments. Since the PDAM conduct operation and maintenance (O&M) of SPAM IKK after construction, the local government, which has jurisdiction over regional administration, is greatly involved in the operating systems and policies for SPAM IKK.

3.2 Governing Structure

Operation and management of SPAM IKK projects is carried out by PDAM under the district or municipal jurisdiction or the public services agency (BLU) established under the jurisdiction of local governments. PDAMs adopt an independent accounting system (Ministry of Home Affairs Notice No. 23/2006). However, many PDAMs face tough financial conditions because their water sales prices (tariffs) are less than the production costs.

3.3 Technical Aspects

Water supply system of SPAM IKK is composed of water intakes, treatment facilities, distribution facilites and water services facilites as follows. The detailed information obtained through on-site review is described in the Chapter 10.

(1) Water Intakes

Types of water sources for SPAM IKK are classified into surface water, spring water, and groundwater. Surface water is drawn from river or irrigation canal or lake. In case of gravity system, raw water is collected by channel located on the side of the water source. In case of pump system, raw water is collected by a pump set installed to the pier of the water source or the intake well (or basin) at the side of the water source. Spring water is collected by broncapturing and conveyed through gravity system. Groundwater meanwhile is taken from wells using a pump.

(2) Treatment Facilities

Most surface water will require treatment for water supply use. Rapid sand filtration system is generally applied to surface water with turbidities. Most of these facilities

comprising floculation tank, settling tank, and rapid filter tank, are applied as the unit package plant. Structural material of these plants is generally made of steel.

Slow sand filtration system is applied to some water treatment plants where surface water has low turbidity. In this system consits of a bed of sand used for treatment and do not use chemical dosing. Raw water move slowly through the sand filter layers downwards, its quality is improved consderably.

(3) Distribution Facilities

Distribution method is classified into gravity and pumping systems. Most of the water distribution system is supplied with comparatively high pressure by pump. Materials used as distribution pipes are mainly PVC and GIP, and applied HDPE partly.

(4) Water Service Facilities

In principle, the level of water supply service of SPAM IKK project is house connection (HC) supplies. The service pipe for HC is connected with the distribution pipe, and installed at each house with water meter and water tap. PVC is mostly used as service pipes.

3.4 Governing Laws

Following the emergence of problems over water rights and so on, the Law of Water Resources underwent review in 2004 and the regulation for the Development of Drinking Water Supply System was enforced in 2005. As a result, Cipta Karya in the MPW was designated as the responsible organization for providing guidance on water supply development in districts (Kabupaten) and cities. Meanwhile, provincial SatKer in the provincial government provides coordination and support on issues with multiple districts and cities. Ordinances, regulations and guidelines related to the implementation and O&M of recent water supply projects by PDAMs are summarized in Table 3.4.1.

Table 3.4.1 Applicable Legislation and Guidelines concerning SPAM IKK

Legislation	Legislation Number and Year Issued
Water Resources	Law No.7/2004 of the Government Republic of Indonesia
Development of Drinking Water Supply System	Regulation No.16/2005 of the Government of Republic of Indonesia
Technical Guideline and Procedure of Water Tariff Determination in PDAM	Regulation No.23/2006 of the Minister of Home Affairs
Formation of Organization and Working System of the PMU for Development of Drinking Water Supply System in Cities in the SPAM IKK	Letter of Decision of Director General of Cipta Karya No. 09/KPTS/DC/2008
Implementation of Economic Programs Year 2008 – 2009, The Increase in Performance for SPAM by PDAM	President Declaration No.5/2008
Technical Guidelines for Feasibility of Investment of Drinking Water Supply System Development by PDAM	Regulation No. 21/PRT/M/2009 of the Ministry of Public Works

Source: JICA Survey Team 2010 based on collected regulations, president declarations and guidelines

3.5 Budget Allocation and Financial Sources

As shown in Table 3.5.1, the construction of the upstream part is financed with the central government budget (APBN), of which funding sources are tax revenues, national bonds, foreign assistance, etc. Meanwhile, the construction of the downstream part is financed by local government budget (APBD), of which funding sources are local tax revenues and the special allocation from the central government (DAK). Since water supply development is under the responsibility of the district/city governments, provincial APBD is not allocated for SPAM IKK as much as district/city APBD.

Table 3.5.1 Central and Local Government Budgets for SPAM IKK

	Central Government (APBN)		Local Government (APBD)		PDAM
Budget	SPAM IKK	Other water supply development	Provincial APBD	District/City APBD	Own Budget
Sources	Tax Revenue, National Bond, Foreign Assistance/Loans		Local Tax Revenue, Special Allocation (DAK), etc.		Own Fund, Loans

Source: JICA Study Team 2010

3.6 Water Demand and Supply Amount

In accordance with the Guideline for Development of SPAM IKK 2008 by MPW, the minimum water consumption is 60 L/c/d. Table 3.6.1 shows the summary of SPAM IKK from 2005 to 2009. The water development yield per SPAM IKK is 15 L/s and the served population is around 10,000 people. These figures of it indicate the water supply amount per capita per day is 110 L/c/d. This is identified as suitable for the

domestic water usage in the sub district.

Table 3.6.1 Summary of SPAM IKK from 2005 to 2009 (*: Included plan)

Year	Number (A)	For the year		Per one site		Water supply amounts per capita (L/c/d)
		Water development yield (B) (L/s)	Served population (C) (People)	Water development yield (B/A) (L/s)	Served population (C/A) (People)	
2005	52	730	532,000	14	10,231	118
2006	52	855	684,000	16	13,154	105
2007	59	915	732,000	16	12,407	111
2008	93	1,339	1,071,200	14	11,518	105
2009*	155	2,314	1,851,200	15	11,943	109

Source : Achievement of MDGs Target in Drinking Water Sector 2005-2009

CHAPTER 4 OUTLINE OF THE SPAM IKK PROJECT

4.1 Scope of Project

In line with Government Regulation No. 16, 2005 regarding development of SPAM, the SPAM IKK project, which provides water supply system in Ibu Kota Kecamatan (center of sub-district), is being implemented through the cooperation of the central and local governments.

The source of funds is the APBN, APBD and PDAM budget. The budget demarcation is shown in Table 4.1.1.

Table 4.1.1 Budget Demarcation of SPAM IKK Project

Facility		APBN		APBD		PDAM
		Central	Province	Province	District/ City	
Intake Facility		○	○			
Treatment Facility		○	○			
Distribution Facility	Transmission/Distribution main		○	○	○	
	Distribution pipeline			○	○	○
Service Installation					○	○

Source: Directory of SPAM IKK 2008, Final Report of Advisory Consultant SPAM IKK 2009

Intake and treatment facilities are implemented by the provincial/central SatKer (working unit), in line with the Decision of Director General of Cipta Karya, MPW No.13/KPTS/DC/2009 regarding Guidelines for Implementation of Development Program of SPAM IKK.

The distribution facility and service installation are basically implemented by the local government utilizing APBD/PDAM budget. In some cases, the provincial SatKer implements the distribution facility (transmission/distribution main) utilizing APBN.

4.2 Technical Assistance and Training

The technical assistance and training for PDAM staff is carried out by the central government (MPW, BPP SPAM), provincial SatKer and the semi-private organization of PDAM, PERPAMSI. In these training, PDAM bears the transportation cost of PDAM staff. PDAM, which are financially weak find it difficult to dispatch their staff to a distant training venue.

1) By Central Government

The training is carried out in the training center (TC) of Bekasi and Surabaya. The TC is organized under the secretary of MPW. Initially, these are the object for PDAM staff

technical support. However, the Bekasi TC provides priority to government staff while the Surabaya TC prioritizes PDAM staff.

BPP SPAM also conducts the training program for PDAM. However, they do not have a particular organization for the training.

2) By Provincial SatKer

Some SatKers have a training program for PDAM staff. It is however limited to technical topics (e.g. water supply planning, design and maintenance, etc.). However, most SatKers, especially in the local areas, cannot carry out the training due to shortage of staff and budget.

3) By PERPAMSI

PERPAMSI is a semi-private organization by PDAM. Its head office is in Jakarta and it has branch offices in most of the provinces. Their training programs cover all PDAM works which include the financial and operation aspects as well as technical ones. Tirta Dharma Education Foundation (YPTD), which was established under the PERPAMSI, is the actual organization for the training.

4.3 Scale of Project

According to Cipta Karya, 600 SPAM IKK projects in total were planned from 2005 to 2009. However, only 433 projects (around 72%) were actually executed during the period. About 86 SPAM IKK projects have been implemented annually on average.

The average project cost (only APBN part only) amounts to Rp. 2,000-4,000 million per project and the installed water treatment plant capacity is 10-20 L/s for most projects. Some SPAM IKK projects are as small as 5 L/s while there are several much larger projects with treatment capacity of 50-60 L/s.

4.4 Total Project Costs

Each SPAM IKK project is divided into upstream part with the APBN budget and the downstream part with APBD budget. Since MPW (Cipta Karya) does not efficiently monitor the implementation status of the APBD part, the total project costs are unclear in most SPAM IKK projects. Many provincial SatKers have no information on the APBD executing status depending on their institutional capability. Consequently, integrated information for all SPAM IKK projects are not available.

4.5 Financial Flows

Central government fund is disbursed under the contracts between the central or provincial SatKer and suppliers after the bidding process. Likewise, local government (district/city) fund is disbursed based on the contracts concluded by Dinas PU from its district/city budget allocated for SPAM IKK. Both central and local government parts of the constructed facilities are transferred to PDAM after the guarantee period. The constructed assets are then transferred to PDAM in the form of capital grant and the transaction does not involve such financial flows of lending/borrowing and repayments. The official procedure for the transfer of constructed facilities requires a cumbersome valuation process by MPW and MOF. Thus, most of the transfer of SPAM IKK project facilities has not been completed yet. To cope with this problem, MPW has issued an order to enable temporary transfer of the assets constructed by MPW to PDAMs through the district/city governments.

4.6 Project Schedule, Future Plan

In "RENSTRA 2010-2014 Drinking Water Supply System", following activities for water supply development are planned in 2010- 2014.

Table 4.6.1 Planned Water Supply Development Activities (2010-2014)

Activity	Performance Target	APBN Budget (Billion Rp.)
1. Development of urban water supply in low income community	577 areas	1,254
2. Development of SPAM IKK	820 IKK 8,200 lit./sec	4,929
3. Development of rural water supply	4,650 villages	4,223
4. Development of rural water supply specially for outskirt island, border area, remote area	100 areas 960 lit./sec	292
5. Development of rural water supply specially for fishing port	53 areas 310 lit./sec	186

Source: RENSTRA 2010-2014 Drinking Water Supply Development

Activity 2 indicated in Table 4.6.1 is planned for SPAM IKK project which targets 820 SPAM IKK to be constructed in 2010 - 2014. The planned number of SPAM IKK and APBN budget for each fiscal year is as shown in Table 4.6.2.

Table 4.6.2 Planned Number of SPAM IKKs and APBN Budget (2010-2014)

FY	2010	2011	2012	2013	2014	2010-2014
Number of IKKs	144	154	160	175	187	820
Budget (Billion Rp.)	605	924	1,028	1,150	1,222	4,929
Budget/IKK (Billion Rp./IKK)	4.20	6.00	6.43	6.57	6.53	6.01

Source: RENSTRA 2010-2014 Drinking Water Supply Development

4.7 Procurement

The procurement is conducted separately as follows:

For APBN portion: by Central Government (Central/Province SatKer)
For APBD portion: by Local Government (Dinas PU Province/District/City)

The procurement of APBN portion usually commences at the beginning of the year while that of APBD commences at the end of May. Both portions are supposed to be completed within its fiscal year. In some cases, however, certain works are carried over to the next fiscal year. There are often cases when the allocation of APBD budget is delayed, consequently deferring commencement of the work to the next fiscal year.

1) APBN portion

Scope: Intake facility, Treatment facility, Distribution facility
(Transmission/Distribution main bigger than dia 100 mm)

Implementation Agency:
Central/Province SatKer

Method of Procurement:
- General competitive bidding (pipe material)
- Competitive bidding with pre-qualification (construction work)
- The contract for treatment plant is made as a combined contract for manufacturing, installation and civil work.
- Three to four IKKs are developed as one contract package.
- The tender is usually announced and conducted on the website of PU.

2) APBD portion

Scope: Distribution Facility, Service Installation

Implementation Agency:
Dinas PU (Province/District/City)

Method of Procurement:
- General competitive bidding (pipe material)
- Competitive bidding with pre-qualification (construction work)

4.8 Construction Methods and Performance

The water treatment facilities are built mostly with package plants using rapid sand filtration system. These plants are mainly produced in Jakarta and its neighboring regions. As a form of contract, these manufacturers have to undertake civil works including intake facilities, transmission pipes, and distribution main pipes. The manufactured plants are transported by land and sea to the site, and are then simultaneously set up with connecting pipes.

The average duration for the construction of water treatment facilities, including civil

works, in one site is about six months.

For distribution facilities, the main construction work is pipe installation. Related civil works meanwhile is conducted by local constructors. In many cases, the construction works in each project is carried out by splitting the scope among the districts concerned, based on the local government budgets and the construction capacities of local constructors.

4.9 Maintenance Management Plan, Improvement and Extension Plan

(1) Maintenance Management Plan

The selection criteria for SPAM IKK do not include a maintenance management plan. In accordance with the on-site review result, most SPAM IKK have not been actually operated due to the absence of a maintenance management plan.

(2) Improvement and Extension Plan

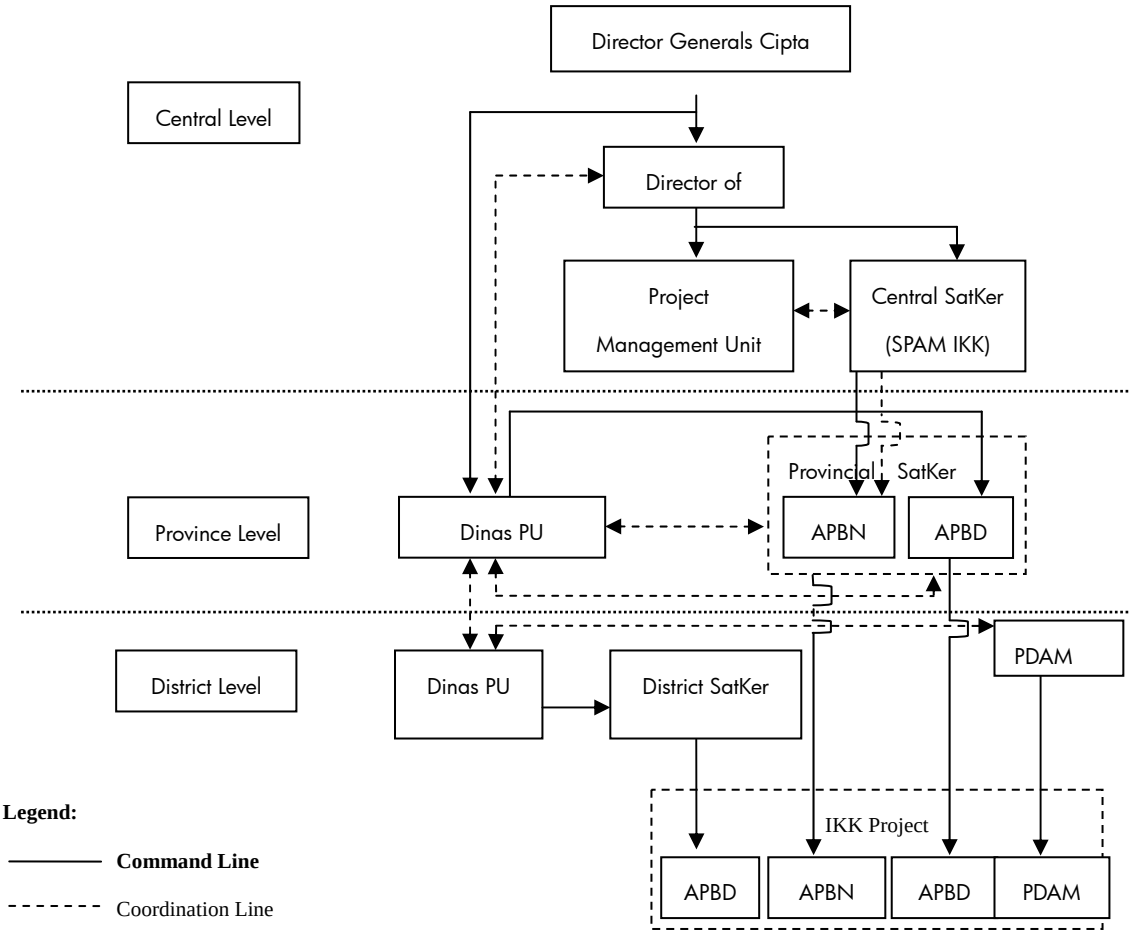
The SPAM IKK program is conducted basically for areas with no water supply. The program component includes construction of new water supply facilities, including intake facility and distribution network. However, the program does not include water facility improvement and extension plan. In some cases, SPAM IKKs were connected to existing distribution network from new water treatment plant.

CHAPTER 5 IMPLEMENTATION STRUCTURE OF SPAM IKK

5.1 Relevant Authorities and Overall Implementation System

The Cipta Karya provides essential technical support and guidance to local governments for the design and implementation of water supply facilities, and is responsible for water supply projects funded by the central government.

Under regional autonomy, district governments are responsible for ensuring that water supply is provided in their districts. Responsibility for operation and management for SPAM IKK is under PDAMs within their administration. The overall implementation system of SPAM IKK entails collaboration between the central government and local governments. Figure 5.1.1 shows the SPAM IKK implementation structure.



Source: Guideline for Implementation of Program for Development of Drinking Water Supply System in Cites in Sub-District (SPAM IKK) for Year 2008

Figure 5.1.1 SPAM IKK Implementation Structure

5.2 Sharing Roles among Relevant Authorities

(1) Central Government Level

The PMU is mainly responsible for coordinating works with related agencies and compiles the annual IKK project implementation plans, project selection, overall program coordination, budget allocation, monitoring and so on. In collaboration with the PMU, a central government working unit (central SatKer) is established to be responsible for SPAM IKK projects. It consists of a department in charge of bidding for water supply facilities (basically includes water intake facility and treatment plant) under the central government budget (APBN).

(2) Provincial Level

Provincial Working Units (provincial SatKer) are established in the provincial Cipta Karya as the executing agencies of water supply projects implemented under the central government budget (APBN). They are responsible for coordinating between the districts and central government, and supervising the construction of facilities implemented under the central government budget and APBN. The provincial SatKer is composed of employees of the provincial government and it implements all water supply projects in the province, including SPAM IKK projects implemented by each district belonging to the provincial government in collaboration with the district governments.

(3) District Level

At the district level, BAPPEDA compiles annual and mid-term infrastructure development plans (RPIJM five years), including water supply projects for the purpose of budget (APBD) allocation over the entire district. Meanwhile, the Dinas PU is in charge of preparation of design, bidding documents and construction supervision of the water supply projects (distribution network) which are already approved by the head of district (Bupati). Proposals and design for SPAM IKK projects are prepared and submitted to the provincial SatKer through the cooperation of BAPPEDA and Dinas PU, although there are some district governments that directly apply to the central government.

PDAM is the water supply operator after the SPAM IKK projects constructed under APBN and APBD are handed over. BLU and BPAM are regional water supply agencies that are possible to be established by decision of the Head of then district (Bupati). There is a little proportion of BLU/BPAMs in Indonesia. BLU/BPAM's personnel is owned and directly controlled by Dinas PU. Annual O&M costs are borne

by Dinas PU. BLU/BPAM is not required to make a profit, which is different from PDAM acting as a financially independent body.

5.3 Implementation System in Authorities Concerned

(1) MPW

The Directorate General of Cipta Karya is in charge of water supply development. Two departments that are directly concerned with SPAM IKK are the Directorate of Water Supply Development (DirPAM) for technical guidance and the Directorate of Programme Development (DirBP) for project planning. DirPAM consists of five sections, including Region I and II sections in charge of SPAM IKK in the western and eastern region of Indonesia, respectively. The PMUs are established as dedicated monitoring agencies for the SPAM IKK. Since the main activity consists of the annual planning and implementation of projects, SPAM IKK projects are conducted jointly with the central working unit (central SatKer).

(2) Provincial Working Units (Provincial SatKer)

The provincial SatKers are established as executing agencies in each province. They handle all water supply projects including SPAM IKK. Their employees belong to the provincial government, although in organizational terms, the provincial SatKers are directly linked to central PMU and Cipta Karya at provincial level. The central government provides all operating expenses (all office expenses including lighting and heating costs) other than the personnel expenses of the provincial SatKer. In the case of SPAM IKK, the provincial SatKer cooperates with Dinas PU province and BAPPEDA province in coordinating the proposals submitted by each district and submitting them for application to the central government.

(3) District Level

On the district level, the Dinas PU and PDAM are the executing agencies. The basic role of each PDAM is to serve as the operator for SPAM IKK. Dinas PU meanwhile compiles infrastructure development documents including those for water supply projects subjected to planning and implementation. District BAPPEDA compiles development plans including those in other sectors and prepares draft budget proposals (APBD).

5.4 Activities of Project Management Unit (PMU)

The PMU is the project unit in charge of the SPAM IKK projects out of the sectors managed by Cipta Karya. Since numerous members also work in the Directorate of Water Supply Development, the PMU only has five dedicated personnel supported by

one contracted consultant. Accordingly, in order to strengthen the organization of the PMU, it is necessary to start from basic work such as the collection and analysis of data on SPAM IKK.

5.5 Technical Level and Execution Capability

Since many district governments have not acquired design technology, they either employ a consultant to perform the design, estimation and construction planning, or they entrust said work to the higher executing agency on the provincial level (provincial SatKer).

The provincial SatKer reviews the contents of applications received from Dinas PU. Also, because there are some provincial SatKers that lack the capacity to properly review project applications, delays sometimes occur in the execution of district budgets (APBD), and projects do not always advance as planned. Meanwhile, PDAM employs engineers to operate the water treatment plant facility. However, in PDAM, where management conditions are poor as there is not enough funds to cover maintenance expenses, numerous problems arise such as water leakage and deterioration of water quality and service level. It is also noted that almost all of its employees are assigned to small-scale SPAM IKK where no basic training is conducted. As a result, the quality of maintenance for the water treatment plants deteriorate.

5.6 Financial Management Capacity of Implementation Agencies

(1) MPW and Provincial SatKers

As for the implementation of SPAM IKK projects, MPW and provincial SatKers are considered capable of financial management, at least to execute the central government budget allocated for the construction of facilities. However, Cipta Karya has no grasp on the implementation status of most of the SPAM IKK projects. Furthermore, there is very limited coordination between the central and local government works.

(2) District and City Governments

In many SPAM IKK projects, serious delay in the construction of distribution facilities is caused by local governments' budget shortage. There is a substantial time lag between completion of the upstream part (APBN budget) and downstream part (APBD budget) resulting in large idling capacity of the treatment plants constructed under the central government budget.

(3) PDAMs

Most PDAMs are not financially sustainable due to water tariff revenue being below the cost recovery level. Many also owe a large amount of long-term debt from the central government for past foreign assistance projects.

5.7 Site Selection Criteria and Procedure for SPAM IKK Program

Cipta Karya of MPW stated the site selection criteria in the Guideline for Development of SPAM IKK on 2008. Consequently, the district governments require that the proposals comply with these criteria after 2008. Said criteria are shown in Table 5.7.1.

Table 5.7.1 Selection Criteria of SPAM IKK Program

No.	Description	Condition
I. General Condition		
1.	Condition of IKK	There are potable water problem.
		There is no SPAM IKK or if it exists, the facility has problems.
2.	Status of IKK	Candidate location for SPAM IKK is not proposed by other programs funded by the local budget, national budget and loan/grant from outside the country.
3.	Planning documents	To be listed in the Documents on the Medium-term Investment Program (RPIJM)
		Detailed Engineering Design (DED) or equivalent document of technical planning.
4.	Commitment of district	To be accompanied with the confirmation letter of the fund for development of distribution network and house connection signed by the head of local government and DPRD.
		New system management by PDAM or BLU. Fiscal health of management organization.
		The fund for O&M for new system.
II. Special Conditions		
1.	Technical Criteria:	Water consumption: minimum 60 L/person/day
		Water quality: portable water
		Operation hour: 24 hours.
		Proportion of house connection and public hydrant = 8:2
		To be equipped with the master meter for production and distribution zone.
2.	Procurement / installation.	Execution of procurement and installation of the facility funded by the national budget to complete within one annual period.
		More than 50% of the planning number of house connection and public hydrant shall be installed in the first year after completion of the project and all house connections and public hydrants shall be installed up to two years after.
3.	Condition of management organization	PDAM: Healthy category
		UPTD-BLU: to be established when PDAM is not healthy (Local government is obliged to give operational assistance/subsidy to the control unit of SPAM IKK until the said PDAM may achieve full cost recovery.)
4.	Proposal	Availability of land
		Acceptance of plan and design
		Acceptance of annual development program and execution schedule.
		Acceptance of O&M plan and cost. (Acceptance of O&M and implementation organization)
		Acceptance of technique and costs according to RPIJM (Medium-term Investment Program)
		Statement of Regent / Mayor and district assembly chairman

Source: Guideline for Development of SPAM IKK（2008, MPW）

District governments made the proposal following the criteria. Especially, water demand forecast and development impact was considered as the most important of all the criteria. Furthermore, the issue on water rights should also form part of the criteria.

5.8 Contents of Proposal

The necessary documents for proposal of SPAM IKK are summarized in Table 5.8.1. The proposals are generally prepared by BAPPEDA , Dinas PU,and PDAM. However, in some cases, PDAM does not participate in the proposal preparation. The design is sometimes prepared by the consultant employed by Dinas PU or PDAM. The proposal is then submitted to the provincial SatKer and evaluated.

Table 5.8.1 Documents for Proposal of SPAM IKK

	Documents	Department in Charge
1	DED (F/S +D/D)	PDAM/PU
2	SIAP (Acceptance of water rights)	PDAM/PU
3	Land acquisition	PDAM/PU
4	Dara Pendanping (Pledge of local budget)	BAPPEDA
5	Kasamp pan Menyhhda(Certificate of management for the system)	PDAM/PU
6	RPJM (Middle development plan of local government)	BAPPEDA

Note: In many cases, PDAMs do not participate in the preparation of the proposal
Source：SatKer Central Java 2010

CHAPTER 6 MANAGEMENT, OPERATION AND MAINTENANCE

6.1 Present Conditions of Existing Facilities

(1) Operating Status

1) General outline (Inventory summary of operating condition of 50 SPAM IKKs)

The current operating conditions of 50 SPAM IKKs are summarized in Table 6.1.1 based on the site survey. The 50 SPAM IKKs range in the operation hours from 24 hours operation to non operation. Distribution system is divided into new and expansion projects based on the category of connected distribution system. New project is connected new distribution systems independent from existing distribution systems. Expansion project is connected to existing distribution system. The results of operating status analysis are shown following sentence.

Table 6.1.1 Summary of Operating Condition of 50 SPAM IKKs

No.	Province	District/City	Site No.	SPAM IKK	Project Year	Distribution	Operation Hours	Reason of not 24h running
1	North Sumatra	Dairi	A - 1	Sumbul	2008	New	-	Social Conflict
2		Asahan	A - 2	Kisaran	2006	Expansion	24	-
3	West Sumatra	Solok	B - 1	Nagari Kota Sani	2007	Expansion	-	Social Conflict
4		Kota Sawahlunto	B - 2	Sumpahan	2008	Expansion	24	-
5	Riau	Rokan Hulu	B - 5	Tandun	2007	New	8	Low Demand
6		Kuantan Singingi	B - 6	Inuman	2008	New	6	Low Demand
7	Jambi	Muaro Jambi	B - 7	Candi Muaro	2005	Expansion	2	Low Demand
8		Batang Hari	B - 8	Lubuk Ruso	2007	New	3	Low Demand
9	South Sumatra	Banyuasin	B - 3	Sungai Pinang	2007	New	6	Low Demand
10		Muara Enim	B - 4	Gelumbang	2008	New	3	Low Demand
11	Lampung	Lampung Selatan	B - 9	Way Lima	2007	New	12	Low Demand
12	Bengkulu	Rejang Lebong	B - 10	KotaPadang	2006	New	-	Under Preparing
13		Rejang Lebong	B - 11	Selupu Rejang & Curup Timur	2007	Expansion	24	-
14	Banten	Serang	B - 12	Cikande	2008	Expansion	24	-
15	West Java	Kuningan	B - 13	Garawangi	2008	Expansion	24	-
16		Kuningan	B - 14	Luragung	2008	Expansion	24	-
17		Cirebon	B - 15	Ciwaringin	2008	New	-	Low Demand
18		Kota Bogor	B - 16	Palasari	2008	New	6	Low Demand
19	Central Java	Grobogan	A - 3	Toroh	2005	Expansion	12	Low Demand
20		Grobogan	B - 18	Gubug	2007	New	4	Low Demand
21		Kendal	A - 4	Boja	2005	Expansion	8	Excessive Design
22		Boyolali	B - 17	Sawit	2005	New	3	Low Demand
23		Rembang	B - 19	Sulang	2007	Expansion	16	Lack of Raw water
24	East Java	Tuban	B - 20	Bancar	2006	Expansion	24	-
25		Ponorogo	B - 21	Jenangan	2006	Expansion	15	Lack of Electricity
26		Madiun	B - 22	Gemarang	2006	Expansion	16	Low Demand
27		Bangkalan	B - 23	Burneh	2007	Expansion	-	Low O&M Skills
28		Kediri	B - 24	Kepung	2008	New	1.4	Low Demand
29	Yogyakarta	Bantul	B - 25	Selopamioro	2007	Expansion	3	Social Conflict
30		Sleman	B - 26	Gamping	2008	Expansion	2	Excessive Design
31	West Kalimantan	Pontianak	A - 5	Jungkat	2007	Expansion	8	Low Demand
32		Singkawang	A - 6	Sei Bulan	2008	New	3	Social Conflict
33	East Kalimantan	Penajam Paser Utara	B - 27	Sepaku	2005	Expansion	24 (2 d/w)	Low Demand
34		Kutai Kertanegara	B - 28	Loa Janan	2007	Expansion	7	Low Demand
35	South Kalimantan	Banjar	B - 29	Kertak Hanyar	2005	Expansion	24	-
36		Tapin	B - 30	Binuang	2005	Expansion	24	-
37	Central Kalimantan	Katingan	B - 31	Kareng Pangi	2005	Expansion	21	Save of operation cost
38		Gunung Mas	B - 32	Tumbang Talakan	2008	Expansion	4	Low Demand
39	Central Sulawesi	Donggala	B - 33	Binanga	2005	New	24	Mistake of WTP choice
40		Donggala	B - 35	Sabang	2008	New	-	Low Demand
41		Palu	B - 34	Palu	2006	New	24	-
42	South Sulawesi	Takalar	A - 7	Pattallassang	2006	Expansion	24	-
43		Takalar	B - 37	Galesong Selatan	2008	New	12	Low Demand
44		Gowa	A - 8	Pattallassang	2008	New	10	Social Conflict
45		Jeneponto	B - 36	Parapa	2007	Expansion	24	-
46	South East Sulawesi	Kolaka	B - 38	Lakambaga	2008	Expansion	-	Low O&M Skills
47	North Sulawesi	Minahasa Utara	B - 39	Air Madidi	2006	New	24	-
48		Minahasa Selatan	B - 40	Amurang	2006	New	24	-
49	Gorontalo	Bone Bolango	B - 41	Suwawa	2006	New	-	Poor Construction (FRP Plant)
50		Gorontalo Utara	B - 42	Kwandang	2008	Expansion	10	Low Demand

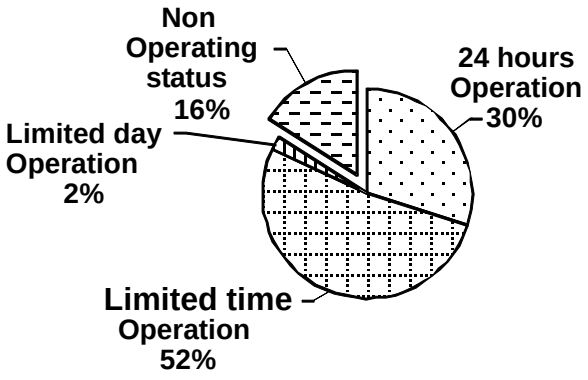
Notes: “New” is independent from existing systems. “Expansion” is the project connected to existing systems.

For the Site No., “A-“ indicates the first survey site while “B-“ indicates the second survey site.

Source: JICA Study Team 2010

2) Non-operational system due to incomplete distribution pipes and other reasons

There are about 16 % of SPAM IKK sites with non-operational facilities as shown in Figure 6.1.1. For these sites, non-operating status is classified into two types. The first type is treatment plants which have not been functioning since construction completion. The second type is treatment plants which have operated initially but have stopped functioning. SPAM IKK is operated by PDAM or BLU.



Source: JICA Study Team 2010

Figure 6.1.1 Operating status of SPAM IKK

Those classified in the first type are due to the following main reasons:

- The facilities could not accommodate the demand to operate due to the delay in the construction of distribution pipes and house connection.
- Operators and engineers of PDAM/BLU are still required a lot of training to operate the treatment facilities properly.
- The commissioning test of treatment plants are not finished due to poor construction work.

Meanwhile, those classified in the second type are due to the following main reasons:

- PDAM has suspended operations due to a lot of residents complaining on poor treated water quality.
- PDAM has suspended operations in order to repair the water treatment plant (especially FRP plant).

3) Deficiency of distribution pipes (Delay of installation of distribution pipes)

The main reason for the deficiency of distribution pipes is the lack of budget of local governments that are responsible for the implementation of the distribution network construction.

4) Small number of house connections

The small number of house connection (HC) is significantly below the intended capacity of the water treatment plant (WTP). The average house connection of 10L/s WTP in SPAM IKK is about 1,000 households. It is used a target for break-even of operation cost and water revenue. The highest case of achieving the target is 57% at 20 L/s in expansion project. The lowest case is 0 % at 20 L/s in new project. Some projects do not reach 250 HC, due to the short length of distribution pipes or high connection fee.

5) Failure of water treatment plants made of FRP

Treatment plants made of FRP are adopted in about 18% of the sites. In most sites of FRP plants, the following problems have occurred:

- Plant is not functioning due to water leakages at joints. This is caused by defective materials and poor construction works.
- Frequent repairs have been initiated after the start of operation. This is also caused by defective materials and poor construction works.
- The plant has never been operated because of some faults found during commissioning test.

6) Water leakage and Unaccounted for Water (UFW)

According to interview survey with PDAM, the percentage of UFW indicates the water leakage occurrence status. UFW is calculated based on the amount of “production” and “metered use”. In most sites, UFW is high. About 58% of SPAM IKK shows 20 to 40 % UFW, in addition about 23 % of SPAM IKK shows more than 40% UFW. Therefore, all PDAMs have strong interest in the water leakage reduction.

(2) Availability of Water Quantity and Quality

1) Water shortage during the dry season

There are about 10% of SPAM IKK sites where the necessary amount of raw water cannot be secured due to reduction of surface water during the dry season. Therefore, this has a significant impact on facility operations, including suspension of operation.

2) Inadequate water treatment

Most SPAM IKK sites have problems on treated water, especially due to turbidity. Main reasons of inadequate treated water are as follows:

- Skill of operator: Most operators do not understand adequately how to manage water quality in treatment plants.

- Type of treatment system: Slow sand filtration system has been selected in spite of high raw water turbidity in some place.

(3) Operation and Maintenance (O&M) Technology

Transferring of knowledge on O&M to PDAM staff by contractors at commissioning test seems to be not sufficient. This is attributed to the takeover situation of design plans and operating manuals. It is noted that design plans and equipment operating manuals have not been handed over at 86% of the sites.

It is noted that 94% of the sites do not conduct education and training for PDAM staff on facility operations. It seems that most of the operators of each SPAM IKK project had no basic operation knowledge until the start of operation.

For operation of treatment plant, raw water quality management is important. However, at about 80% of SPAM IKK sites, operators do not know how to use these instruments. In addition, even if water quality measurement is done, operators do not know how to reflect the amount of chemical injection.

6.2 Support System for O&M

The water supply facility constructed by the central government (Cipta Karya) and district government is transferred to the water supply management organization like PDAM. The central government does not support the O&M for the constructed facility. Financially weak PDAMs receives subsidy from the district government.

In some cases, the district government, Dinas PU, operates the new system by BLU which is established in areas with no PDAM as water supply system does not exist.

6.3 Monitoring System for Management, O&M

Nobody conducts the monitoring and evaluation for each SPAM IKK. Supporting Agency Water Supply System Development (BPP SPAM) conducts monitoring and evaluation of PDAM which operates the SPAM IKK system. PDAM submits the monthly statement report to the district, Control Bureau, and obtain approval from the assembly and head of district.

6.4 Organization Structure

The SPAM IKK system is generally operated by PDAM when an O&M office is provided as the PDAM branch office. The office staff consists of plant manager, operation staff and tariff collector. An average of 5 to 10 personnel is employed for one branch office.

6.5 Financial Conditions

Facilities constructed in most SPAM IKK projects are operated and maintained by PDAMs. BPP SPAM is the agency responsible to monitor and evaluate the financial and managerial performance of PDAMs. BPP SPAM issues Performance Assessment Report to PDAM annually based on the information collected from PDAMs through provincial SatKers. The latest performance assessment report issued in 2009, evaluates the financial status of 337 PDAMs from 2005 to 2008 through scoring method. The PDAMs are categorized according to soundness on financial and managerial status into "Healthy", "Unhealthy" and "Sick". Indicators applied in the evaluation are illustrated in Table 6.5.1. BPP SPAM has planned to apply improved indicators for its assessment in 2010.

Table 6.5.1 PDAM Performance Evaluation Indicators

Category	Indicator	Weight
Financial (Weight: 0.55)	Operating Ratio (Cost/Revenue)	0.150
	Debt to Total Assets	0.125
	Income to Total Debt	0.100
	Cash to Earnings per Day	0.175
Management (Weight: 0.30)	Water Consumption (m^3/customer/month)	0.090
	Customer Structure (Industry & Business, Households, Social)	0.195
	Staff per 1,000 customers	0.015
Technical (Weight: 0.15)	Water Loss	0.055
	Production Efficiency	0.035
	Operating Hours (hours/day)	0.040
	Distribution Efficiency	0.020

Source: PDAM performance assessment 2008 (BPP SPAM 2009)

Table 6.5.2 shows the evaluation results by BPP SPAM. Number of PDAMs evaluated as "Healthy" is increased from 89 in 2007 to 103 in 2008; however, this is represent a mere of about 30% of all PDAMs.

Table 6.5.2 PDAM Performance Evaluation Results (2007 and 2008)

PDAM Healthiness		2008		2007	
Category	Score	PDAM	%	PDAM	%
Healthy	> 2.0	103	30.56	89	27.38
Unhealthy	1.7 – 2.0	115	34.13	119	36.62
Sick	< 1.7	119	35.31	117	36.00
Total		337	100	325	100

Source: BPP SPAM Assessment Report 2009

CHAPTER 7 ENVIRONMENTAL CONSIDERATION AND IMPACTS

7.1 Environmental Assessment, Management and Monitoring Methods

Projects which require environmental assessment for the implementations are identified under Decree of State Minister for the Environment No.11/2006 on Types of Business and/or Activity Plans（KEP 11/2006 Jenis Rencana Usaha dan/atau Kegiatan yang Wajib Dilengkapi dengan Analisis Mengenai Dampak Lingkungan Hidup）. Regarding water supply project, Appendix-1 of the above mentioned decree (KEP 11/2006), projects which require AMDAL includes water supply network installation at public work sector (corresponding to item H in the Appendix) and ground water pumping at energy and mineral resources sector (corresponding to item I in the Appendix). This process is applied to projects that cover more than 500 ha of service area or more than 10 km of water transmission network for the water supply project, and more than 250 L/s of surface water intake and 50 L/s of groundwater pumping.

7.2 Consistency of Current Environmental Framework in SPAM IKK Program with the Indonesian Laws

No particular AMDAL on the SPAM IKK projects, which were conducted under abovementioned legislation, have been found during the conduct of this study. SPAM IKK program is basically limited to projects involving treatment capacity of less than 50 L/s (2005-2009, SPAM IKK Implementation Report, Munuju Pencapaian Target MDGs Bidang Air Minum) and thus, do not require preparation of environmental study based on AMDAL process due to its small scale. However, the law of AMDAL indicates 13 types of protected areas which require environmental study prior to implementation. The environmental confirmation for the project implementation, mainly at planning stage, should be considered for these protected areas.

7.3 Confirmation of the Current Environmental Management and Monitoring Methods in SPAM IKK based on the JICA Guidelines for Environmental and Social Consideration

Because the scales of the projects are basically small, AMDAL are not conducted and ANDAL are not prepared for most SPAM IKK. However, most of the projects require obtaining water use permit. Hence, UKL/ UPL documents are required.

Among the 50 SPAM IKKs in the study, UKL and UPL were prepared (or are still

being prepared) for 11 projects in order to obtain water use permit. Moreover, the other three SPAM IKKs intend to prepare UKL and UPL to obtain said permit.

7.4 Issues on Environmental Management and Monitoring Methods

Also, the SPAM IKK should follow the environmental screening based on the recently revised legislations relevant to AMDAL. As mentioned above, Environmental Minister Decree 11 in 2006, presents the revised list of projects subject to AMDAL. Furthermore, it requires implementation of screening process even if the project has lesser scale than those in the list. As also mentioned in the above section, although the scales of the activities are not subject to AMDAL process, location of the project including water treatment facility and pipeline should be confirmed during the planning stage whether any protected areas are closely located or not. This is intended to determine whether further environmental assessment on the protected area is required.

CHAPTER 8 SOCIAL CONSIDERATION AND IMPACTS

8.1 Necessity and Existence of Land Acquisition and Involuntary Resettlement

The selected land for the SPAM IKK is basically located in non-residential areas and at locations where no involuntary resettlement is necessary, according to Cipta Karya. Most cases, the land acquisition process are conducted by the PDAM or district government in their own budgets at the beginning of the project implementation after approval. The evidence on the availability of land including agreement of acquisition is requested during the application for SPAM IKK project, as one of the required documents.

At the land acquisition for the SPAM IKK which normally not accompanied involuntary resettlements, land owners are normally offered with monetary compensation for the land. Corresponding prices are decided between PDAM/government of district and land owners in mutual agreement under negotiations referring the general land price. .

8.2 Approaches Regarding the Land Acquisition and Involuntary Resettlement

Involuntary resettlement will not likely occur for SPAM IKK. There is no involuntary resettlement found during the site survey. Land acquisitions for the projects are conducted by government of district or PDAM. In the present SPAM IKK guideline, the agreement letters on the lands are supposed to be presented at the time of application.

8.3 Consistency with the Indonesian Laws on Involuntary Resettlement

Legislation related to land acquisition in Indonesia is summarized in Table 8.3.1. However, in most cases of SPAM IKK, involuntary resettlement does not usually occur.

Table 8.3.1 Legislation related to Land Acquisition in Indonesia

1. Law No. 5 of 1960 concerning Basic Agrarian Law (UU No 5 /1960 Tentang Peraturan Dasar Pokok-Pokok Agraria)
2. Law No. 20/1961 concerning the Expropriation of Land and Objects Attached to the Land (UU No. 20/1961 Tentang Pencabutan Hak-Hak Tanah dan Benda-Benda yang Ada Diatasnya)
3. Law No. 24 of 1992 on Spatial Use Management (UU No24 /1992 Tentang : Penataan Ruang)
4. Presidential Decree No. 55/1993 on Land Acquisition for the Developments in the Public Interest.(KEP No 55 /1993 Tentang : Pengadaan Tanah bagi Pelaksanaan Pembangunan Untuk Kepentingan Umum)

Source: JICA Study Team 2010, based on the information from the Cipta Karya

8.4 Confirmation of the Current Social Consideration Management and Monitoring Methods in SPAM IKK based on the JICA Guidelines for Environmental and Social Consideration

In this study, implementation on the environmental social consideration has been confirmed based on the representative projects. As mentioned above, most of the projects did not have particular reports on the environment. There is no any serious environmental and social problem related to the SPAM IKK according to the study.

CHAPTER 9 PROGRAM EFFECTS

9.1 Monitoring Indicators for SPAM IKK

1) Organization of monitoring and evaluation

The PMU of SPAM IKK was established under the Cipta Karya to manage the SPAM IKK program. However, Cipta Karya does not grasp the current condition of SPAM IKK because constant monitoring and evaluation for each SPAM IKK is not carried out.

2) Monitoring and evaluation indicator

The Ministry of Public Works (MPW) does not have any monitoring and evaluation indicator for SPAM IKK. The provincial SatKer should take the evaluation data from each responsible organization and hence, the PMU and Cipta Karya should analyze for the background of successful or unsuccessful cases. These data and information are disclosed to all organizations concerned and they should also be advised of any successful outcomes.

9.2 Monitoring Progress and Results

Cipta Karya should monitor the constructed SPAM IKK constantly through PDAM and provincial SatKer. PDAM has to establish a constant monitoring system for SPAM IKK with the assistance of provincial SatKer because since SPAM IKK is conducted using the national budget.

CHAPTER 10 ON-SITE REVIEW

10.1 Site Selection for On-Site Review

The JICA study team selected a total of 50 on-site review sites from the 224 SPAM IKKs based on the discussion with MPW Cipta Karya. Site selection procedures were prepared such that the selected SPAM IKK represents various types of SPAM IKK. Therefore, the following site selection criteria are established on the basis of discussions with counterparts:

- Fiscal year: 2005, 2006, 2007, 2008
- Capacity: > 10 L/s, < 10 L/s
- Water source: Surface water, Spring, Groundwater
- Operating organization: PDAM, BLU
- Water conveyance: Gravity, Pump
- Treatment system and material: Rapid sand filtration method, Low sand filtration method / Steel made, FRP made, reinforced concrete made
- Accessibility and security: Good, Poor / Safe, Risky

The selected 50 sites for on-site review are shown in Table 10.1.1. There are eight first on-site review sites indicated by No. A- , and 42 second on-site review sites shown as No. B-. The location of 50 sites for on-site review is shown in Figure 10.1.1(1/4-4/4).

Table 10.1.1 List of 50 Sites for On-site Review

No	Locations				
	Province	**District/Kota**	**No.**	**Year**	**IKKs**
1	North Sumatra	Dairi	A - 1	2008	Sumbul
2	North Sumatra	Asahan	A - 2	2006	Kisaran
3	West Sumatra	Solok	B - 1	2007	Nagari Kota Sani
4	West Sumatra	Kota Sawahlunto	B - 2	2008	Sumpahan
5	Riau	Rokan Hulu	B - 5	2007	Tandun
6	Riau	Kuantan Singingi	B - 6	2008	Inuman
7	Jambi	Muaro Jambi	B - 7	2005	Candi Muaro
8	Jambi	Batang Hari	B - 8	2007	Lubuk Ruso
9	South Sumatra	Banyuasin	B - 3	2007	Sungai Pinang
10	South Sumatra	Muara Enim	B - 4	2008	Gelumbang
11	Lampung	Lampung Selatan	B - 9	2007	Way Lima
12	Bengkulu	Rejang Lebong	B - 10	2006	Kotapadang
13	Bengkulu	Rejang Lebong	B - 11	2007	Selupu Rejang & Curup Timur
14	Banten	Serang	B - 12	2008	Cikande
15	West Java	Kuningan	B - 13	2008	Garawangi
16	West Java	Kuningan	B - 14	2008	Luragung
17	West Java	Cirebon	B - 15	2008	Ciwaringin
18	West Java	Kota Bogor	B - 16	2008	Palasari
19	Central Java	Grobogan	A - 3	2005	Toroh
20	Central Java	Grobogan	B - 18	2007	Gubug
21	Central Java	Kendal	A - 4	2005	Boja
22	Central Java	Boyolali	B - 17	2005	Sawit
23	Central Java	Rembang	B - 19	2007	Sulang
24	East Java	Tuban	B - 20	2006	Bancar
25	East Java	Ponorogo	B - 21	2006	Jenangan
26	East Java	Madiun	B - 22	2006	Gemarang
27	East Java	Bangkalan	B - 23	2007	Burneh
28	East Java	Kediri	B - 24	2008	Kepung
29	Yogyakarta	Bantul	B - 25	2007	Selopamioro
30	Yogyakarta	Sleman	B - 26	2008	Gamping
31	West Kalimantan	Pontianak	A - 5	2007	Jungkat
32	West Kalimantan	Singkawang	A - 6	2008	Sei Bulan
33	East Kalimantan	Penajam Paser Utara	B - 27	2005	Sepaku
34	East Kalimantan	Kutai Kertanegara	B - 28	2007	Loa Janan
35	South Kalimantan	Banjar	B - 29	2005	Kertak Hanyar
36	South Kalimantan	Tapin	B - 30	2005	Binuang
37	Central Kalimantan	Katingan	B - 31	2005	Kareng Pangi
38	Central Kalimantan	Gunung Mas	B - 32	2008	Tumbang Talakan
39	Central Sulawesi	Donggala	B - 33	2005	Binanga
40	Central Sulawesi	Donggala	B - 35	2008	Sabang
41	Central Sulawesi	Palu	B - 34	2006	Palu
42	South Sulawesi	Takalar	A - 7	2006	Pattallassang
43	South Sulawesi	Takalar	B - 37	2008	Galesong Selatan
44	South Sulawesi	Gowa	A - 8	2008	Pattallassang
45	South Sulawesi	Jeneponto	B - 36	2007	Parapa
46	South East Sulawesi	Kolaka	B - 38	2008	Lakambaga
47	North Sulawesi	Minahasa Utara	B - 39	2006	Air Madidi
48	North Sulawesi	Minahasa Selatan	B - 40	2006	Amurang
49	Gorontalo	Bone Bolango	B - 41	2006	Suwawa
50	Gorontalo	Gorontalo Utara	B - 42	2008	Kwandang

Note: "A-": 1st on-site review site, "B-": 2nd on-site review site.
Source: Cipta Karya / JICA Study Team 2010

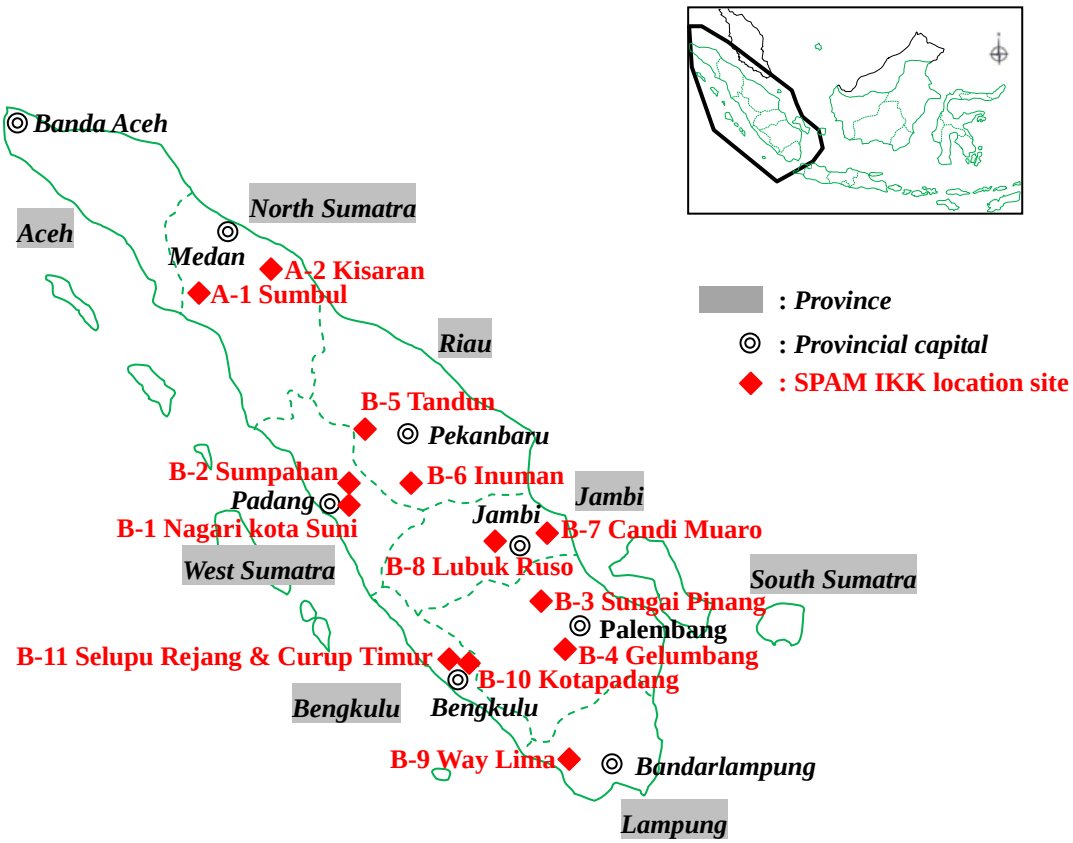


Figure 10.1.1 Location Map for SPAM IKK (Sumatra, 1/4)

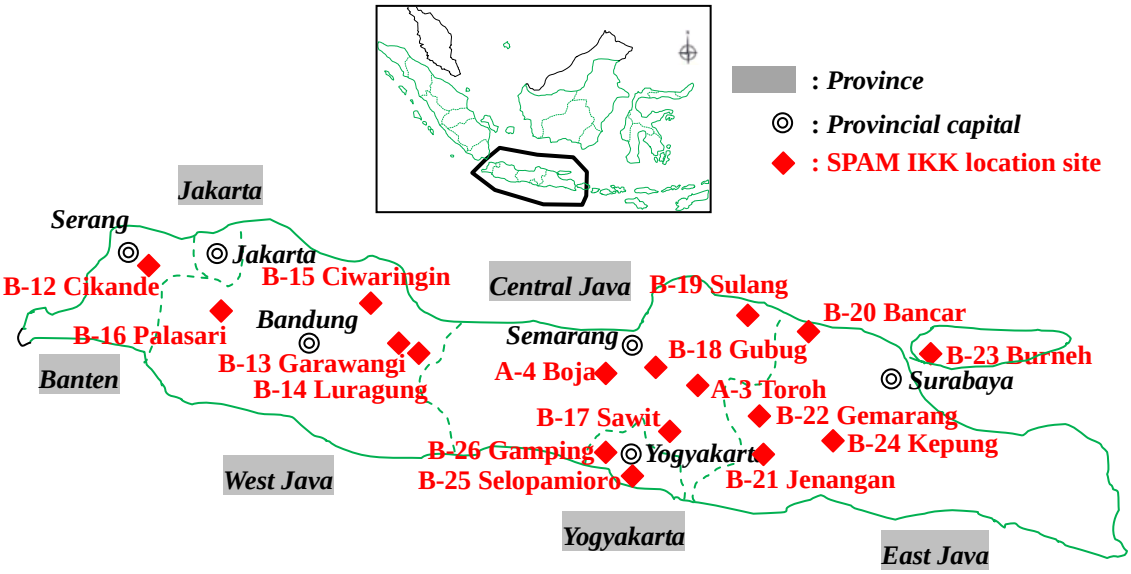


Figure 10.1.1 Location Map for SPAM IKK (Java, 2/4)

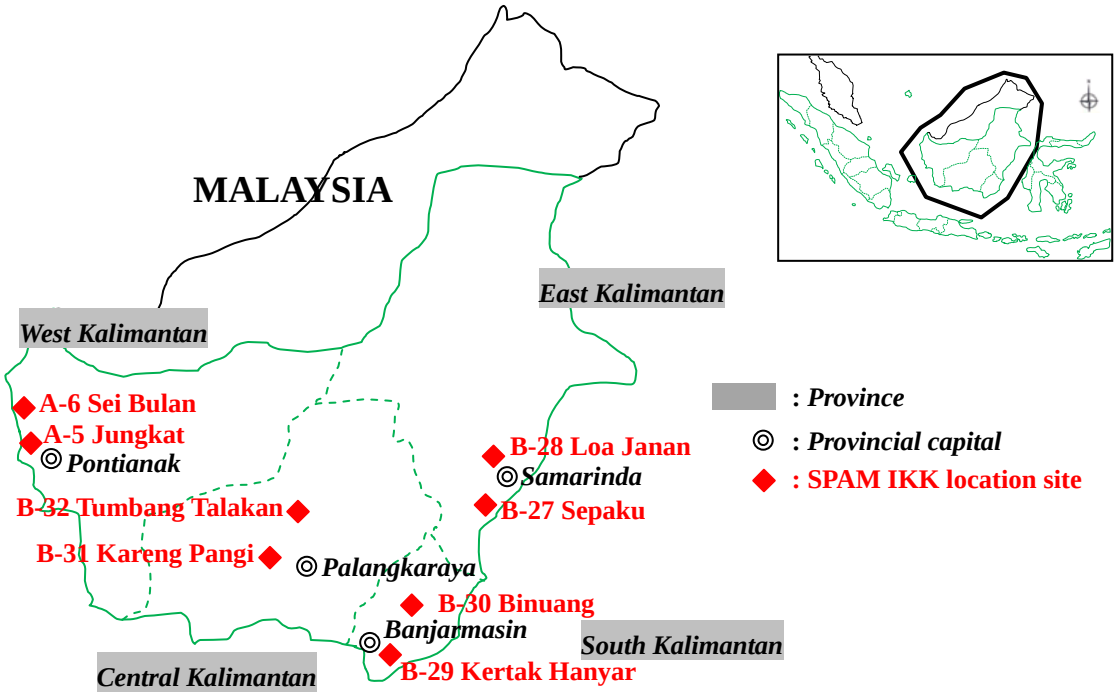


Figure 10.1.1 Location Map for SPAM IKK (Kalimantan, 3/4)

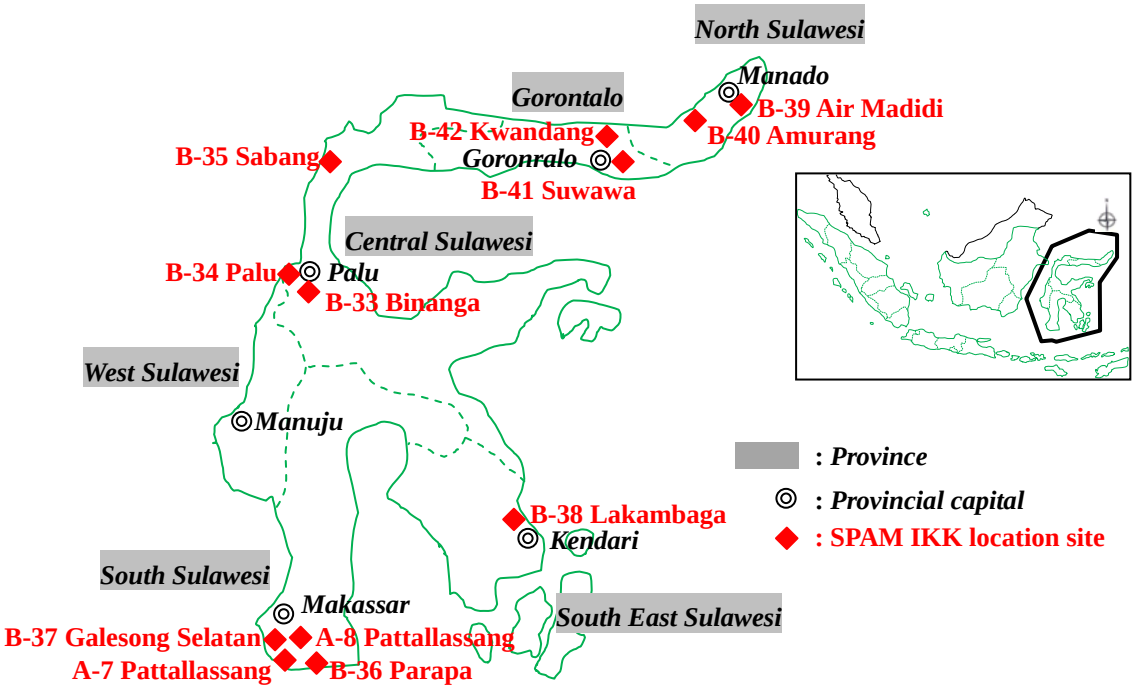


Figure 10.1.1 Location Map for SPAM IKK (Sulawesi, 4/4)

10.2 On-Site Review Approach

(1) Field Survey

Field survey consists of the first and second on-site reviews.

The first on-site review was carried out by the JICA Study Team with some local consultant engineers and counterparts using questionnaire from March 15 to April 9, 2010 at eight SPAM IKKs in four provinces. During the site survey, the study team met with the provincial Cipta Karya, provincial SatKer, District Cipta Karya, District BAPPEDA and PDAM. In addition to the above meetings, interview surveys of beneficiaries of SPAM IKK were carried out in the service area.

The second on-site review was carried out by a local consultant team consisting of three members, namely: water supply management engineer, water supply engineer, and social expert, from April 19 to June 2, 2010 at 42 SPAM IKKs in 19 provinces using a revised questionnaire.

(2) On-Site Review Findings

In the following Sub-chapters 10.3 to 10.8, the findings at the 50 sites are described with respect to each of the following aspect:

- Planning and implementation of SPAM IKK
- Outline of SPAM IKK
- Outline of PDAM
- Interview Survey of Beneficiaries
- Social Baseline Data
- Environmental and Social Consideration

10.3 Planning and Implementation of SPAM IKK

(1) Provincial Work Unit (Provincial SatKer)

The work unit for water supply development (Provincial SatKer) established at each province is responsible for all activities regarding water supply development within its province. Provincial SatKer is responsible for the implementation of the APBN portion of the SPAM IKK project. Moreover, it is expected to coordinate the APBN and APBD portions.

(2) Observed Problems Regarding Implementation of SPAM IKK Project

During the on-site review of 50 SPAM IKK, it was observed that the facilities are operated properly in 42 SPAM IKKs, while the facilities are not properly operated or not in operation in eight SPAM IKKs. In such SPAM IKKs, several problems were observed as follows:

1) Planning stage

- Inappropriate project formulation such as:
  - Lack of overall water supply master plan
  - Insufficient needs assessment
  - Lack of proper operation plan
  - Limited consultation with stakeholders
- Uncertain APBD budget plan and disbursement for distribution pipes
  - Insufficient WTP operation due to incomplete distribution pipes

2) Construction stage

- Inappropriate construction material and workmanship such as:
  - Leakage from FRP tank, etc.
- Insufficient technical transfer during commissioning such as:
  - Insufficient operation training on commissioning
  - Lack of transfer of technical documents such as commissioning test record, as-built drawings, and operation manual
- Limited linkage in the implementation between APBN and APBD portions

3) Operation stage

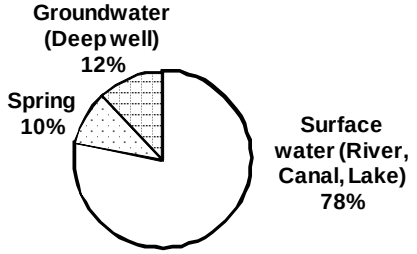
- Low quality of treated water
- High production cost and low water revenue
- Limited house connections against system capacity

10.4 Outline of SPAM IKK (Infrastructures, O&M)

(1) Intake Facilities

1) Surface water （River, Canal, Lake）

As water source for water treatment plant (WTP), surface water accounts 78% of IKK sites as shown in Figure10.4.2.



Source: JICA Study Team 2010

Figure 10.4.1 Water source

As for the allowable capacity of surface water, there are many sites to meet the supply

capacity because the capacity of WTP in SPAM IKK is mostly small, with ranging from 5 to 20 L/s. However, during the dry season, some sites suspend operations due to the lack of raw water (e.g., A-3 Toroh, B-2 Sumpahan, B-19 Sulang, B-30 Binuang).

2) Spring

As shwon in Figure 10.4.1, spring water accounts for 10% of SPAM IKK sites. Spring water, which has stable water quantity and quality is collected by broncapturing and conveyed through gravity system.

(2) Deep Well

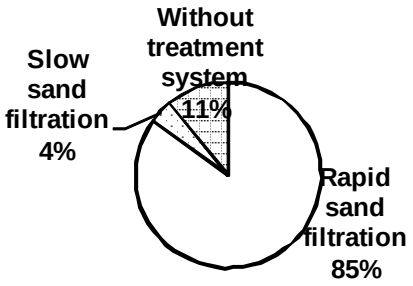
As shwon in Figure 10.4.1, groundwater accounts for 12% of SPAM IKK sites. Groundwater is pumped up from deep wells and water quality is generally good and stable. In most of sites, therefore, groundwater from deep well is supplied directly without treatment. Disinfection facilities are equppied in some sites .

(3) Water Treatment Facilities

1) Rapid sand filtration system

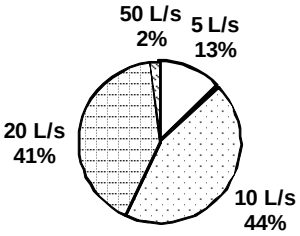
(a) Treatment system and capacity

Rapid sand filtration system is employed at 85% of sites as shown in Figure10.4.2. The water treatment capacities of package plant type are mainly divided into three sizes, namely: 5 L/s, 10 L/s, and 20 L/s. The package plant is made of steel and FRP. The breakdown of WTPs based on capacity and material are shown in Figure 10.4.3 and Figure 10.4.4.



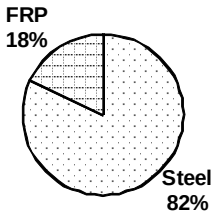
Source: JICA Study Team 2010

Figure 10.4.2Treatment system of WTP



Source: JICA Study Team 2010

Figure 10.4.3WTP capacity

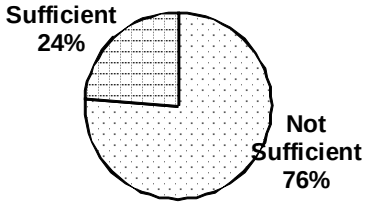


Source: JICA Study Team 2010

Figure 10.4.4 WTP material

(b) Facilities operation status (Water quality measurement and dosing equipment operation)

In 76% of SPAM IKK sites, water quality monitoring equipment is not installed, or not used if actually installed as shown in Figure 10.4.5. However, raw water quality monitoring is important in WTP. Even at the sites using monitoring equipment, operators have no knowledge how to interpret the results on chemical dosing although they understand how to test water quality.

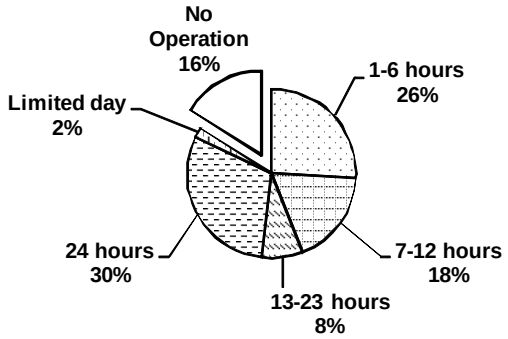


Source: JICA Study Team 2010

Figure 10.4.5 Water quality monitoring status

(c) Facilities operation status (Limited operation and non-operation)

In principle, water should be supplied continuously (i.e., 24 hours operation). However, 52% of SPAM IKK has limited operating time. The breakdown of operating hours per day is shown in Figure 10.4.6.

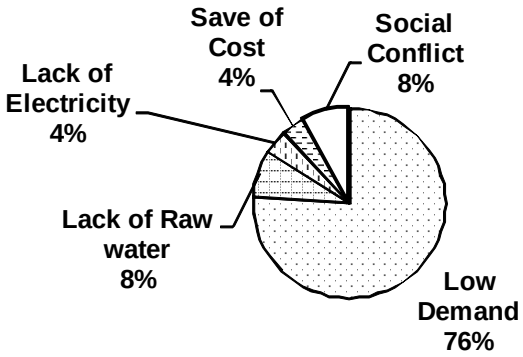


Source: JICA Study Team 2010

Figure 10.4.6 Operating Hours of the Facility

For the main reasons to operate by time regulation water supply, interview results are shown in Figure 10.4.7.

- In 76% of SPAM IKK sites demand is not reached the capacity of WTP due to the delay in laying of distribution network.



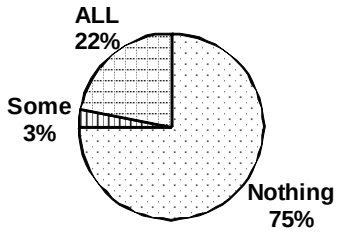
Source: JICA Study Team 2010

Figure 10.4.7 Time limited operation reason

(d) Implementation status of transferring constructed facilities to PDAM/BLU

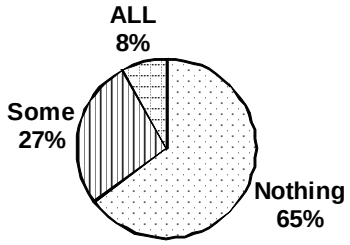
The technical transfer from the contractors to SAPM IKK operators (PDAM/BLU) are not sufficient concerning operation and maintenance of WTP. This is evident from the status of takeover situation of the design plans and operating manuals, and training for facility operations are shown in Figure10.4.8 and Figure10.4.9.

- No takeover of design plans and equipment operating manuals : 75%
- No training for PDAM staff on facility operations : 65%



Source: JICA Study Team 2010

Figure 10.4.8 Takeover of the design plans and equipment operating manuals



Source: JICA Study Team 2010

Figure 10.4.9 Training for PDAM staff on facility operations

Presently, there are only 8% of the sites where WTP manufacturers conduct briefings to PDAM staff as shown in Figure 10.4.9. The above results confirm show that there are many sites to be operated only through the experience of PDAM staff. However, operations are not appropriate for lack of technical knowledge.

(e) Material of WTP

Most WTPs are made of steel materials while FRP is employed in 18% of the sites as shown in Figure 10.4.4. In most sites of FRP plant are not functioning because of water leakage at joints of FRP pannels and some defects occurred during commissioning test.

2) Slow sand filtration system

About 4% of SPAM IKK sites is employed slow sand filtration systems as shown in Figure 10.4.2 with capacities of 10 L/s and 20 L/s. This system is installed at high

annual average turbidity of raw water that is about 400 NTU. In addition, the PDAM staff does not know how to maintain slow sand filtration, especially the frequency of scraping the filter surface. Therefore, water turbidity is generally not reduced to the satisfaction of consumer.

(4) Distribution Facilities

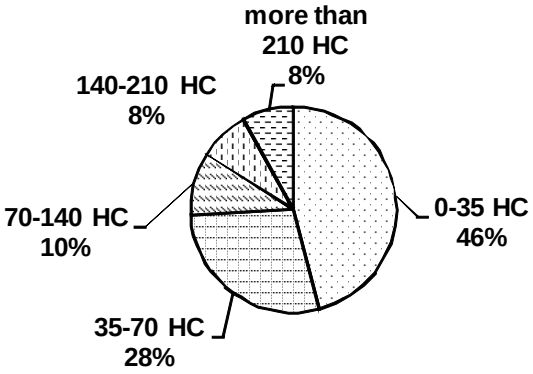
In about 70% of SPAM IKK sites, water is distributed by pump. A configuration of distribution facility generally comprises the pumping plant and the reinforced concrete type ground reservoir having capacity of between 50 and 200 m^3. Three types of pipes are mainly used, namely: PVC, GIP, and HDPE. PVC is mainly used for transmission and distribution pipes. GIP and HDPE are also applied for some transmission pipes as pumping main from intake facilities.

About 54% of SPAM IKK sites are not operated 24 hours. Therefore, the water pressure in the distribution pipes change every day when distribution pumps start and stop, which could lead the water leakage from distribution pipes.

(5) Water Service Facilities

Piped water of SPAM IKK project is conveyed from distribution pipes to water tap of household (house connection) through water service pipes. Water meter is installed at each house connection to collect the water fee. Therefore, water meter maintenance is important aspects in the management of the water supply system. But for most PDAMs, the water meter installation and maintenance has not been recorded properly. According to the guideline, water meter should also be changed every four years. However, regular meter replacements have not been done by some PDAMs.

As shown in Figure 10.4.7, one of the limited time operation reasons is the low demand in the service area for each system capacity. This is caused by the construction delay of the distribution network and the house connection. The number of the house connection per system capacity (1L/s) in each SPAM IKK site is shown in Figure 10.4.10. Appropriate number of house connection (HC) is 70-140 HC per L/s. It is equivalent to 125-250 lcd. However, 70-140 HC per L/s is only 10% of SPAM IKK. In addition about 74% sites show the less than 70 HC per L/s. This indicates that the progress has been delayed development of the house connection.



Source: JICA Study Team 2010

Figure 10.4.10 Number of HC per System Capacity (L/s)

The 10L/s capacity of WTP in SPAM IKK could be supplied an amount of water for about 1,000 house connections per day. It is used as target figure for daily water demand per WTP with 10L/s capacity. According to the site survey, about 50 % of SPAM IKK with expansion projects has more than 1,000 house connections, while about 20 % of SPAM IKK with expansion projects has less than 250 house connections. Alternatively, about only 10 % of SPAM IKK with new project has more than 1,000 house connections, and about 40 % of SPAM IKK with new project has less than 250 house connections due to delay of distribution work.

(6) Water Leakage

The UFW of SAPM IKK systems are estimated by the amounts of “production” and “metered use” of each system that are recorded in facility operation reports by PDAM. It is assumed that the present UFW is 20-40% in most sites of SPAM IKK (about 58%) , based on the PDAM’s data. Alternatively, about 23 % of SPAM IKK estimates to range more than 40% UFW. All PDAMs have strong interest in the water leakage reduction due to high rang of UFW.

10.5 Outline of PDAM/BPAM/BLU (Operation and Finance)

(1) Operating Conditions

1) Number of water supply management bodies and year of establishment

50 SPAM IKKs are managed by 45 water supply bodies such as PDAMs, BPAMs and BLU as shown in Table 10.5.1.

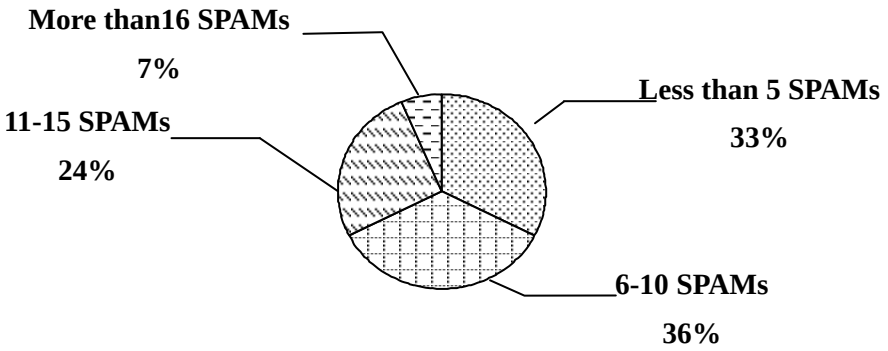
Table 10.5.1 Composition of Water supply bodies

Name of Bodies	No. of Bodies	Name of Sites
PDAM	41	Refer to Table 10.1.1
BPAM	3	Rokan Hulu, Kuantan Singingi, Bone Bolango
BLU	1	Gorontalo Utara
Total	45	

Source: JICA Study Team 2010

2) Number of SPAM IKKs

A water supply body (PDAM, BSPAM or BLU) of each district is managed all SPAM IKKs in his district. Approximately one third (33%) of water supply bodies manage less than five SPAM IKKs. However, more than 60% of water supply bodies manage six or more projects (refer to Figure 10.5.1). It can be seen that the districts and cities where there are numerous SPAM IKKs are concentrated mainly in Java Island in areas of high population density (more than 1,000 persons/km^2).

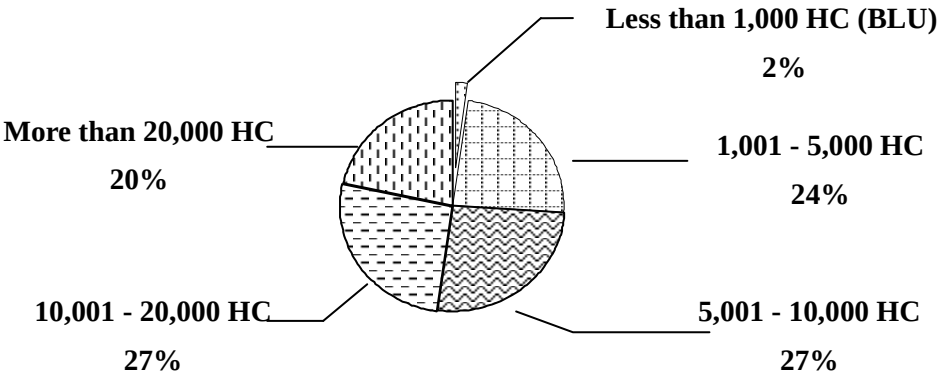


Source: JICA Study Team 2010

Figure 10.5.1 No. of SPAM IKK per Water Supply Body

3) Number of house connections

Water supply bodies of site survey has the number ranges from approximately 1,000 to 90,000 house connections with the exception of BLU (Gorontalo Utara) has small number of house connections with 1,000 or less (refer to Figure 10.5.2). Water supply bodies of site survey has about 13,800 house connections in average. This average number of house connection is less than 21,500 customers per PDAM in average, in accordance with the data of BPP-SPAM (PDAM Performance Assessment in Indonesia 2009).

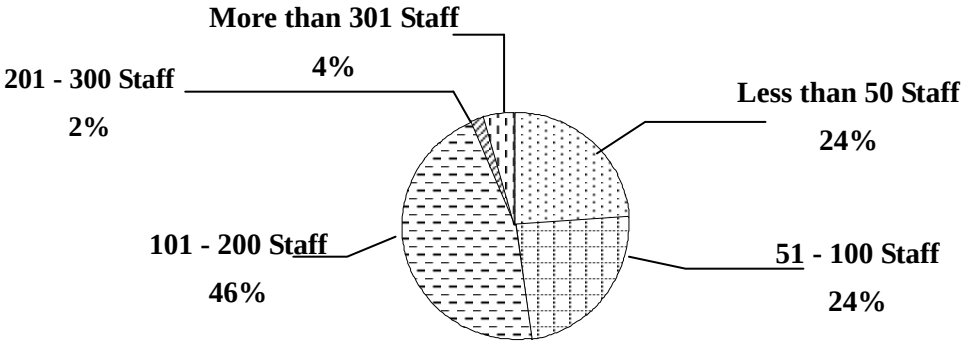


Source: JICA Study Team 2010

Figure 10.5.2 No. of House Connections per Water Supply Body

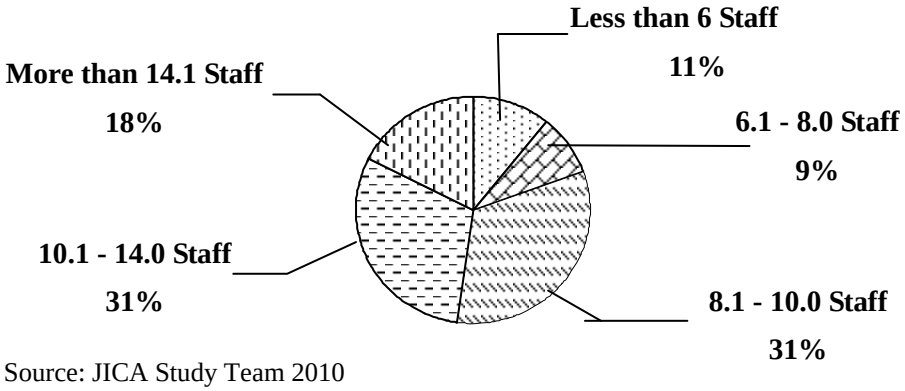
4) Number of staff

The average number of staff in all the surveyed PDAMs is 109. Almost half of water supply bodies has 101-200 staff (refer to Figure 10.5.4). The average number of staff per thousands connections is a management indicator of water supply organization. BPP-SPAM sets the efficiency number of staff per 1,000 house connections at 8.0 as the guideline figure. The overall staffing level for surveyed PDAMs is 11.2 but 20% of water supply bodies is less than a guideline figure of 8.0 (refer to Figure 10.5.4).



Source: JICA Study Team 2010

Figure 10.5.3 Number of Staff per Water Supply Body



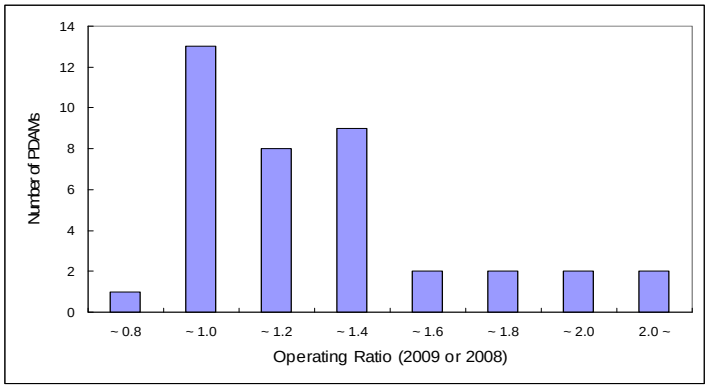
Source: JICA Study Team 2010

Figure 10.5.4 Staff Ratio (Ratio=No. of Staff/1,000 HC)

(2) Financial Conditions

During the on-site review, 45 water supply operators were surveyed. Four of these are operated directly by district governments in the form of BPAM or BLU. Accounting and financial managements of BPAM/BLU are not completely separated from those of the district governments.

The remaining 41 operators are all PDAMs. As discussed in Chapter 6, the surveyed PDAMs also show their financial vulnerability as a whole. The average operating ratio is 1.23, which is the ratio of operating cost to revenue. This is worse than the nationwide average of all PDAMs of 1.03 (2008), indicating that many PDAMs with SPAM IKK are consistently recording an operational deficit. Among the samples, 25 PDAMs (64%) have recorded operating deficits with ratios over 1.00. Meanwhile, the minimum ratio of 0.74 is slightly higher than 0.7 as the evaluation criterion of BPPSPAM (Figure 10.5.5). As a result, the average return on asset is -5.1%. As for the efficiency of tariff collection, the receivables collection period ranges around 100 days while some PDAMs have recorded more than 200 days.



Source: JICA Study Team 2010

Figure 10.5.5 Operating Ratio

The debt to asset ratio, which is the ratio of debt burden to the total asset, is 0.75 on average, which is still higher than the BPPSPAM evaluation criterion of 0.45. It is noteworthy that there are 10 PDAMs (27%) with ratios over 1.00 indicating negative net worth. Majority of the PDAMs have moderate debt ratios less than 0.70; however, their financial sustainability is still considered weak because of the low profitability.

10.6 Interview Survey with Beneficiaries

Interview survey was done with households in the 50 SPAM IKKs, with total respondents of 750 households. The survey was done by visiting beneficiaries' houses. Since domestic water is a gender-sensitive issue, the survey included female and male respondents. Among 750 respondents, 380 are female and 370 are male.

(1) Family Size and Age Structure

The mean number of residents per household is 4.6 persons, ranging from 3.1 to 6.1. A household size of 4 is found in 28.8% of the total surveyed households, followed by a household size of 5 in 20.8% of the total surveyed households. For the region as a whole, age of >12 years share 74%. The proportion of those aged under 12 years was 26%, of whom 8% are children under 5 years old.

(2) Education

In terms of education, about 63% of beneficiaries have education level of junior high school or lower. Comparing the level of education between husbands and wives in households, 35% of the wives have primary school level of education while only 30% of the husbands have same level.

(3) Livelihood and Household Income

As many as 22.86% of the respondents are traders, 21.50% are farmers and 17.55% are civil servants. These figures show that the locations of SPAM IKK are mostly semi-urban areas with the characteristics of "IKK" as targeted by SPAM IKK. Most traders, civil servants and permanent employees have incomes above the poverty line while farmers are mostly in the low-income categories as summarized in Table10.6.1.

Table 10.6.1 Beneficiaries' Occupation by Income Categories

Income		Kind of occupation							
Category	Million Rp.	Trader	Farmer	Civil servant	Permanent Employee	Pension	Temporary Worker	Labor	Total
		% HHs							
Very Low	< 6	0.68	3.27	0.14	0.54	0.41	0.27	0.41	5.71
Low	> 6 - 12	2.86	4.63	0.27	2.31	0.95	1.50	2.45	14.97
Lower Middle	> 12 -18	3.54	4.76	0.82	1.90	1.09	2.31	2.04	16.46
Upper Middle	> 18 -24	3.81	2.72	1.50	1.90	1.36	0.82	0.54	12.65
High	> 24- 36	3.67	2.18	4.22	2.59	2.04	1.50	1.09	17.28
Very High*	> 36	8.30	3.95	10.61	5.17	3.27	1.22	0.41	32.93
Grand Total		22.86	21.50	17.55	14.42	9.11	7.62	6.94	100.0

Source: JICA Study Team 2010

Note: *: Above the poverty line of 2 USD/day/capita (Rp.36 million/year)

Average annual income of households is Rp. 45,000,000. This average is above the poverty line of 2 USD/day/capita (Rp. 36,000,000/year) set up by the World Bank (2006). However, most of the beneficiaries (67%) live under the poverty line.

(4) House Connection

There are 12% (6 out of 50) of SPAM IKK service areas that do not have house connections yet. The main reason is the delay of distribution pipe construction work caused by the unavailability of shared fund from the district (APBD). 40% of beneficiaries of operational SPAM IKK samples receive water continuously for 24 hours. Most problems in water quality are caused by turbid water especially in the rainy season. Nevertheless, 50% of the sample locations supplied good water quality except for several locations that deliver very low quality of water.

(5) Water Use Condition before Piped Water

Before getting water from SPAM IKK, most of the beneficiaries utilized shallow wells

or tube wells. In case groundwater is not available or the quality is low, people must fetch water from other places, mostly from river, lake and spring, or collect rain water. However, the distance to water source of sampled SPAM IKK is generally not so far, average of about 30 minutes on foot.

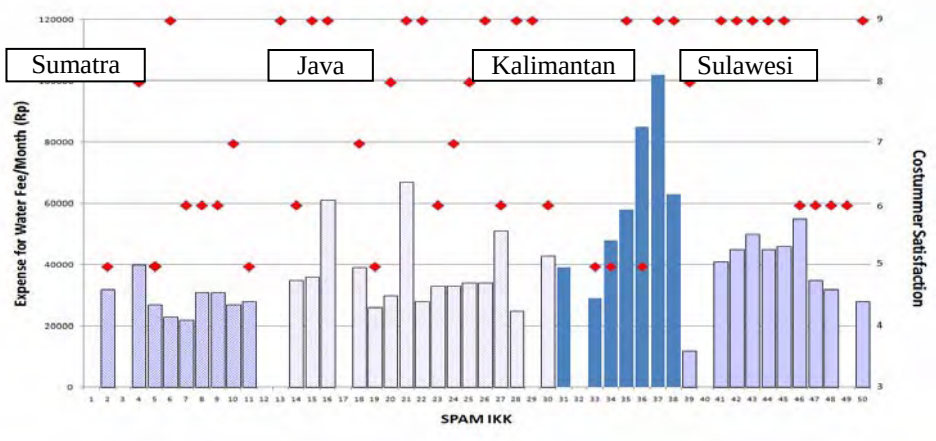
(6) Domestic Use of Water

All respondents (except one or two HHs) boiled the water before using it as drinking water. The result shows that 16% (7 out of 44) of the operational SPAM IKKs delivered water which is not considered as drinking water by the beneficiaries. For the beneficiaries, the water is only valuable for laundry, bath and toilet. Several households still use existing shallow or tube wells in the house or nearby.

(7) Beneficiaries Satisfaction

Beneficiaries' satisfaction is rated based on their satisfaction for water quantity, water quality and water supply system including services of PDAM/BLU or SPAM IKK management staff. Each indicator is rated as good (value = 3), fair (value = 2) and poor (value = 1). On average, satisfaction for water quantity is rated at 2.7. Total satisfaction is the sum of the three indicators and these ranges from 3 to 9.

The result of the rating shows that almost 50% of the operational WTPs (21 out of 44) are successful in delivering good services to the beneficiaries. They obtain satisfactory rate between 7.0 and 9.0 as shown in Figure 10.6.1. The beneficiaries' satisfaction is closely related to water quality rather than quantity.

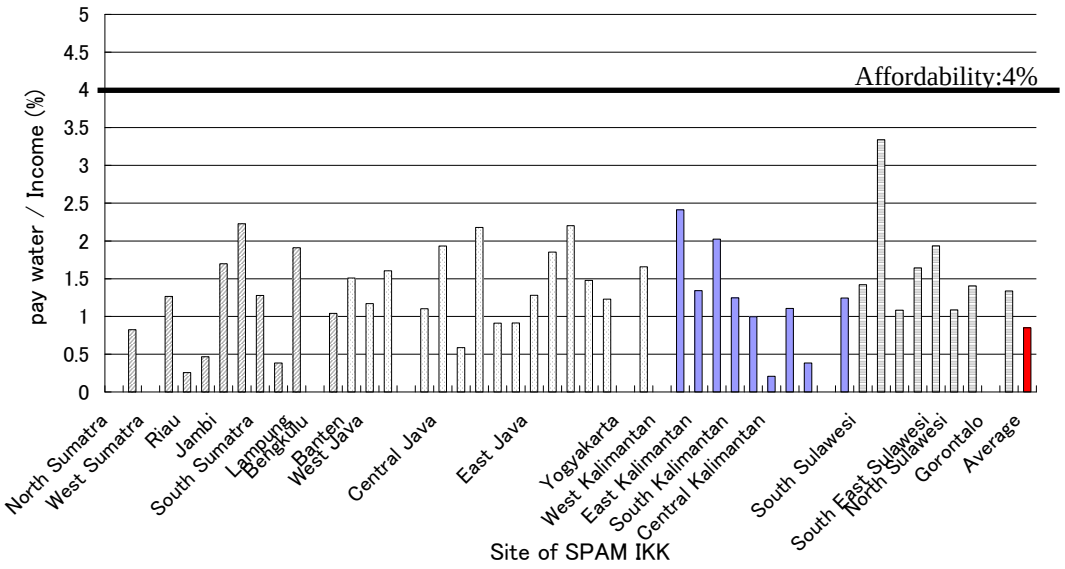


Source: JICA Study Team 2010

Figure 10.6.1 Beneficiaries' Satisfaction Rate and Household Expense for Water Bill in 50 SPAM IKK Areas

(8) Household Expense for Water Bill and Affordability

On average, each household spent Rp. 40,500 per month for water bill, which is only about 1% of its mean income. The highest rate paid is in B-31 Kareng pangi (Rp.73,000) and the lowest amount paid is in B-33 Binanga (Rp. 12,000). Even though, monthly water bill shows less than 4 % of its mean income as shown in Figure 10.6.2.

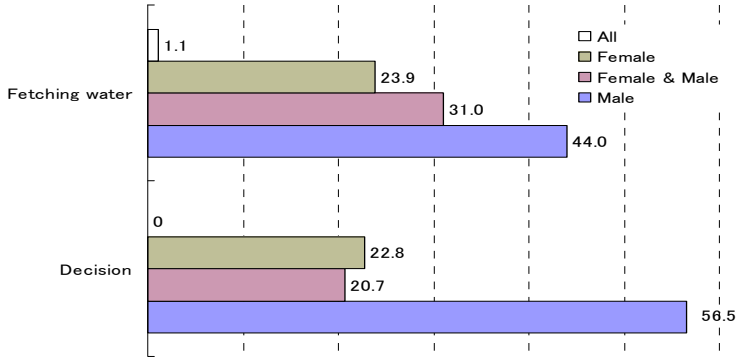


Source: JICA Team 2010

Figure 10.6.2 Comparison of Household Expense for Water Bill in 50 SPAM IKK Areas

(9) Gender Related Issue

Aside from the fact that men are significantly dominant in decision making regarding piped water connection (About 60% of decision making is carried out by male), they also took responsibility for fetching water as shown in Figure 10.6.3. The main reason is because they can drive a motorcycle to the water source. Fetching water is the responsibility of both gender and even all family members including children as shown in Figure 10.6.7. Most of the households own a motorcycle.



Note: M= Male and F=Female; All= all Household members including children
Source: JICA Study Team 2010

Figure 10.6.3. Comparison of Decision Making and Responsibility of Fetching Water by Gender in 50 SPAM IKK areas

10.7 Social Baseline Data

(1) Area

Average area of sub-districts is 809 km^2 but it varies by island. In Java Sub-district, areas are relatively small; most sub-districts are about 50 km^2 and the largest is 112.37 km^2 (B-20 Bancar). In Sulawesi, larger areas are dominantly in Central Sulawesi Province with the largest having an area of 601 km^2 (B-35 Sabang). Sub-districts in Sumatra and Kalimantan are mostly larger than 200 km^2. The largest in Kalimantan is 1,373 km^2 (B-27 Sepaku) and the largest in Sumatera is 957 km^2 (B-8 Lubuk Ruso).

(2) Demography

Population of sub-districts varies from 6,600 (B-32 Tumbang Talaken) to 76,862 (B-24 Kepung). On average, female population is slightly higher (50.3%) than male. Population density is related to the effective distribution of water. Average population density is 788 persons/km^2. Population density of sub-districts in Java Island is very high. The highest is 3,783 persons/km^2 (B-16 Palasari). The lowest density is in Kalimantan at 5 persons/km^2 (B-32 Tumbang Talaken). B-32 Tumbang Talaken is the second largest sub-district with the lowest population.

10.8 Environmental and Social Consideration

(1) Natural Environment

In most of the projects, environmental problems are not reported. Among the 50 sampled SPAM IKK projects in this study, there are two cases wherein the water supply facilities fell into a protection forest (Hutan Lindung) area, i.e., in A-1 Sumbul IKK in Dairi, North Sumatra and B-41 Suwawa IKK in Gorontalo. The facts were

found after implementation and agreements with the Ministry of Forestry were closed for the land use under the condition that disturbance to the forest/fauna should be minimized (No tree cutting). There is no Environmental Assessment Report (ANDAL) based on the AMDAL in all sampled projects due to the small scale of the projects.

(2) Social Environment

In most of the projects, social environmental problems are not reported. In all sampled projects, there were no involuntary resettlements. Majority of the projects had successfully procured the lands where the facilities were installed. (In majority of the projects, lands were bought by PDAM.)

CHAPTER 11 ANALYSIS OF THE PROGRAM ACCOMPLISHMENTS AND ISSUES

11.1 Stage of Occurrence of Issues (Planning, Construction, Operation)

As a result of the survey, SPAM IKK issues are summarized and categorized under planning, construction and operation stages as follows:

(1) Planning Stage

1) Idling capacity of treatment plants

Construction of distribution network is delayed or uncompleted even though construction of the intake and WTP (APBN parts) is completed, because APBD allocation for distribution network is slow and insufficient. The system can not work on full capacity. Construction of distribution network is delayed or incomplete in 59% of SPAM IKK (new systems) regardless of the guidelines (APBD part must be constructed within two years).

2) Inadequate technical design and review

The plan and design for the SPAM IKK system is carried out by the district PU/PDAM or central Satker. However, several problems found in some SPAM IKK sites due to inadequate technical design and review of the development plan. For example, water shortage and high turbidity problems occurred at the WTP draw from surface water sources. In addition, it is found issues of inappropriate elevation for each facility and electricity shortage area include unelectrified area for WTP location. Because, some planning and design of SPAM IKKs are carried out by limited site information with a little experience.

3) Limited consultation with stakeholders

Most residents and concerned parties did not receive adequate announcements of new piped water supply by SPAM IKK system before implementation of the project. Especially, It is important that local government should be carried out demand needs survey in planned area. Because, many residents in several sites are taken clean water from own existing shallow well. In that case, they did not wish to use the piped (paid service) water instead of existing shallow well.

(2) Construction Stage

1) Leakage from FRP tanks

No major deficiencies in construction quality in reviewed 50 SPAM IKKs. However,

seven sites of WTP tanks made of FRP are leaked at commissioning test except one case, based on the on-site review. Therefore, those FRP made tanks could not used for water supply facility of SPAM IKK system due to low in intensity of the material for WTP.

2) Insufficient coordination in the construction of the APBN and APBD part

The construction of one sub-project is conducted with separated contracts in APBN and APBD part respectively. The APBN part is constructed under the provincial SatKer and the APBD part is constructed under the District PU. This situation has affected the construction schedules, contract conditions and specifications for each part. Consequently, these differences make an influence on the whole water supply system of the SPAM IKK project.

And hence, the construction border line of APBN and APBD part are different at construction stage from that stated in the contract in several cases. Therefore, the construction border line has to be confirmed clearly between APBN part and APBD part contracts. According to the on-site review, the WTP had not connected with the distribution pipe and could not start operation due to the unclear construction border line between APBN and APBD part in one SPAM IKK.

(3) Operation Stage

1) Small number of house connections

70-140 household per 1 L/s of system capacity are connected appropriate level for the SPAM IKK system. However, only 10 % of reviewed 50 SPAM IKKs archived this target. 74 % is less than 70 house connections. Few connections were requested by households and the number of house connections do not increase, due to limited distribution network and also availability of existing shall well and high connection fee.

2) Low treated water quality

Rapid sand filtration requires highly skilled operators. However, most WTPs are operated by unskilled operators without technical transfer of WTP from the contractor. Therefore, treated water has not been removed turbidity properly based on the on-site review results.

3) Low profitability of water works

Average operating ratio (operating cost to revenue) is 1.23 on sample PDAMs in reviewed 50 SPAM IKKs which is worse than national average (1.03). Most

PDAM-operated SPAM IKKs gave low water tariff and high operation cost. In addition, customer number is not increased because of small number of house connections. Therefore, PDAM could not recover the cost.

11.2 Sources of Issues（Central Government, Local Government, PDAM/BLU）

The above mentioned issues can be divided according to the sources, namely: central government, local government and PDAM/BLU.

(1) Central Government

The central government, which includes Dir PAM, PMU, central SatKar of Cipta Karya and provincial SatKar, implemented and arranged the project selection and bidding and construction supervision for the APBN portion. The provincial SatKar basically arranges the project with the local government but some SPAM IKKs are arranged under the central SatKar. In the latter case, the central SatKar contracts the supplier and the provincial SatKar only does the construction supervision work. They are mainly responsible for the following issues.

1) Project selection procedure is not clear

The project is selected based on the submitted proposal of the local government considering the criteria of SPAM IKK guideline. The average range of successful proposal is only 50%. However, the local government does not know the reasons for unsuccessful proposals.

2) Disbursement of APBN is not considered disbursement of APBD

APBN portion covers the intake facility, transmission pipeline, WTP and reservoir (sometimes including a part of distribution pipeline). However, sometimes production water could not be supplied to the local residents due to the delay of the APBD portion even though the WTP have already been constructed. The central government should monitor the disbursement of APBD portion for distribution network. The disbursement of APBN portion should be considered the distribution network development by the local governments.

3) Inadequate supervision for construction work

The provincial SatKar conducts the construction supervision of the SPAM IKK project of the APBN part. However, they could not find the FRP tank problems until commissioning test. As-built drawings, operation manuals and related documents for operation and maintenance of WTP are supposed to be handed over by contractors through the provincial SatKer and Dinas PU to PDAM/BLU. However, in most cases,

PDAM/BLU has not received such documents from Dinas PU and cannot perform proper operation and maintenance.

4) Lack of basic training for WTP operation staff

MPW conducts PDAM/BLU staff training programs at the Bekasi and Surabaya training centers and BPP SPAM. However, participants in these training programs are limited because of the budget constraints of PDAM/BLU. Especially, the training at the Bekasi center is mostly participated by Dinas PU officials and not utilized by PDAM/BLU. The basic training opportunity for PDAM/BLU staff should be amplified. Especially, the training on rapid sand filtration system is necessary develop the skills of the operator in order to improve treated water quality as most SPAM IKKs adopted such for WTP.

(2) Local Government

The organizations concerned with the SPAM IKK on the local government are Dinas PU district and BAPPEDA. They implemented and arranged the project planning and design, coordination, and bidding/construction supervision for the APBD portion. They are responsible for the following issues.

1) Inadequate project planning and design

In the planning of the project, BAPPEDA is responsible for the financial aspect using RPIJM while Dinas PU district is responsible for the technical aspect. Few technical staff of Dinas PU district conducted the design in some SPAM IKKs. In this case, it is effective for the provincial SatKar to support them. The provincial SatKar staff should visit the site for plan and design during planning stage to get local information. And it is important that PDAM/BLU should consider this in the project planning for the success of the project.

2) Delayed disbursement of APBD

APBD portion covers the distribution pipeline. Most SPAM IKKs could not operate at full capacity due to the small area or non existing distribution network.

3) No explanation on the project to local residents in the project area

Before starting the project, it is necessary to conduct socialization. Then, the project can be implemented smoothly and house connection can proceed easily.

4) Small number of house connections

The project targets to increase the number of house connections. The local government should cooperate with PDAM/BLU to do need survey and socialization for house

connection campaign in planning stage. Moreover, the local government should arrange and submit required data to the provincial SatKar for monitoring of the SPAM IKK projects...

5) Insufficient distribution network

In some cases of the on-site review, the planned distribution network by APBD has been insufficient against the capacity of the production by APBN. Therefore, the local governments and the PDAM/BLU need to arrange the expansion of the distribution network.

6) Low water tariff

District government takes initiatives to develop tariff price increase for resolution of the low profitability of water works. Because, present tariff level is generally lower than operation costs.

(3) PDAM/BLU

PDAM/BLU implemented and arranged the planning, design, and O&M for the SPAM IKK project. They are responsible for the following issues.

1) Limited project planning and design

The current process of project planning and design is not follow the guideline of SPAM IKK project, so that many problems found in the existing SPAM IKK sites. For the success of the SPAM IKK, it is important that the suitable water supply area is selected based on the guideline. When the local government prepares the proposal for SPAM IKK, PDAM/BLU should propose the water supply area together with the O&M plan as well as house connection plan. The staff should visit the site for plan and design during planning stage.

2) No explanation of the project to the local residents in the project area

The small number of connection is one of the most serious problems in SPAM IKK project. Because, most of local residents have own shallow well in there compound for domestic use. However, during the planning stage, local government planned SPAM IKK projects without explanation to the local residents in the project area. Therefore, before starting the project, it is necessary to conduct socialization for piped water supply. Then, the project can be implemented smoothly and house connection can proceed easily.

3) Lack of O&M technology

At present most of SPAM IKK operators (PDAM/BLU) have no O&M documents due

to poor coordination of provincial SatKer and local government. PDAM/BLU should be received the as-built drawings, manuals and related documents from contractor through concerned organization to conduct proper O&M.

4) Small number of house connections

The most important indicators for project evaluation are the number of house connections and service ratio on the planning area. However, most of SPAM IKK sites have small number of house connection, because the local resident has existing own shallow wells and they also feel connection fee is high. PDAM/BLU should take effort proceed to connect to the households.

5) Unskilled operator

The training on rapid sand filtration system is necessary to develop the skills of the operator in order to improve treated water quality as most SPAM IKKs adopted such system for WTP. However, training center of Bekasi and Surabaya has limited capacity for operators of PDAM/BLU. In addition to above trading center BBSPAM and the YPTD under the PERPAMSI, which is the association of PDAM/BLU, has training course for PDAM/BLU staff.

CHAPTER 12 PROPOSED COUNTERMEASURES

Chapter 11 discussed the issues being faced by the present SPAM IKK program in the planning, construction and operation stages of the implemented projects. These issues will seriously hinder the feasibility of the proposed sector loan project unless the current SPAM IKK implementation is improved in the respective aspects. From the point of view of the formulation of donor assistance, it is highly recommended to positively intervene in the SPAM IKK program implementation through the provision of sufficient technical assistance besides the financial assistance. The donor should also take into account further improvement by the Indonesian side upon consideration of the ODA loan. This chapter presents the proposed countermeasures to be taken for the improvement, and the concept of the proposed sector loan.

12.1 Proposed Countermeasures

Tables 12.1.1 through 12.1.3 below summarize the issues on the current SPAM IKK program and their causes, including the detailed countermeasures in the planning, construction and operation stages of SPAM IKK projects. The proposed countermeasures are also discussed below.

Table 12.1.1 Problems, Causes and Countermeasures (Planning)

Problem	Cause	Countermeasure	Responsibility
(1) Idling capacity of completed treatment plants.	(1-1) Distribution network capacity is insufficient compared to treatment plant capacity.	Responsibility of provincial SatKer in design review should be increased. Capacity development of provincial SatKer staff is required.	Provincial SatKer
	(1-2) APBD allocation for distribution network is slow and insufficient. (Delayed construction of distribution network by APBD)	It is required to closely monitoring and strictly appraisal on distribution network development by APBD on planning and construction stages.	Central Government Provincial SatKer
	(1-3) District government's financial burden in distribution system of SPAM IKK is still heavy (50% to 60% of total project cost)	APBN project scope should be amplified to partially distribution network (Joint implementation of distribution facilities by central and district governments)	Central Government
(2) Unpredictable selection results of proposal	(2-1) Weak performance in project identification, screening and execution at provincial and local levels	Responsibility of provincial SatKer in project screening should be increased at local level. Capacity development of provincial SatKer and district government staff in project planning is required.	Provincial SatKer District Government
	(2-2) Limited consultation with stakeholders	It is important that local government should carry out demand needs survey and do more consultation with stakeholders in planned area.	District Government
	(2-3) Unclear selection indicator of the current SPAM IKK Guidelines do not allow the proper screening by the provincial SatKer and district government.	Clear indicators under the selection criteria should be defined in the SPAM IKK Guidelines. Coordination among provincial SatKer, local government and stakeholders should be improved in the selection process including socialization.	Central Government
(3) Weak design quality	(3-1) Design capacity of district governments/PDAM is limited due to lack of experience on limited site information	Capacity development of district government/PDAM staff in project planning and design is required	District Government PDAM
	(3-2) Review and supervision capacity of provincial SatKer for facility design is weak	Responsibility of Provincial SatKer in design review should be increased. Henc, capacity development of provincial SatKer staff is	Provincial SatKer

Source: JICA Study Team 2010

Table 12.1.2 Problems, Causes and Countermeasures (Construction)

Problem	Cause	Countermeasure	Responsibility
(1) Leakage from fiberglass reinforced plastic (FRP) tanks	(1) The material of FRP is low in intensity for tank of WTP	Provincial SatKer's function in construction supervision and inspection should be reinforced. It is necessary to do material supervision and guidance before construction process.	Provincial SatKer
(2) Insufficient coordination in implementation between APBN and APBD portions	(2) Provinicial SatKer and district government could not try to coordinate the construction work each other.	Provincial SatKer's responsibility should be extended to monitoring and coordination including APBD portion (distribution facility construction).	Provincial SatKer District Government

Source: JICA Study Team 2010

Table 12.1.3 Problems, Causes and Countermeasures (Operation)

Problem	Cause	Countermeasure	Responsibility
(1) Small number of house connections	(1-1) High connection fee is lead to difficulty with house connection for beneficiaries (Average Rp. 850,000)	Connection fee plan should be improved (monthly payment, discount campaign, etc.)	PDAM
	(1-2) Residents in the service area are not required the house connections, because they utilize the shallow well in their compound for domestic use without charge.	It is required to do strict project screening based on needs survey and socialization during planning stage as a selection criterion of SPAM IKK sites.	Central Government Provincial SatKer District Government
	(1-3) Low quality service of piped water (water shortage and high turbidity water) is not accepted by beneficiaries.	Operator training to improve water service quality is required.	PDAM
(2) Low treated water quality	(2-1) Inappropriate operation is carried out by unskilled operator due to lack of technical knowledge for plant operation. The contractor does not hand over the operation manual to PDAM after completion of the WTP.	Provincial SatKer should ensure technical transfer from contractor to PDAM during the construction stage.	Provincial SatKer PDAM
	(2-2) Shortage of skilled operators of water treatment plant.	Training programs for PDAM staff by utilizing MPW training centers and PERPAMSI trainings should be reinforced.	Central Government PDAM
(3) Low profitability of water works	(3-1) Production cost per production volume is high due to inefficient design. (PDAM average water production cost: Rp.2,553/m3)	Capacity development of district government/PDAM staff in project planning and design is required to ensure energy-efficient design.	District Government PDAM
	(3-2) Inefficient daily O&M of PDAM staff	Capacity development of PDAM staff in O&M is required.	PDAM
	(3-3) Total revenue from water tariff does not meet production cost. (PDAM average water tariff: Rp.2,158/m3)	PDAM should increase the number of customers with house connections.	PDAM
		District governments should take initiatives to develop tariff increase plan .	District Government

Source: JICA Study Team 2010

(1) Planning Stage

1) Idling capacity of treatment plants

Sluggish development of distribution networks due to limited APBD funding is one of the most serious issues in the SPAM IKK program. Financial assistance by APBN should be extended to a part of the distribution network which is currently under the sole responsibility of APBD. The improvement will be made through expansion of the APBN project scope.

In the current setup, the provincial SatKer's responsibility regarding distribution network development under APBD is unclear. In order to ensure the project outcome, SatKer's functions should include appraisal and monitoring of the network development plan by districts. A certain mechanism to ensure APBD execution will also be necessary, e.g., making APBD budget decision/implementation the trigger for APBN execution. Also, APBN funding should be extended to partially cover distribution network to ease the financial burden of the local governments by amplifying the APBN portion's project scope.

2) Unpredictable selection results of proposal

The provincial SatKer's functions in project identification, screening and execution should be enhanced. In some provinces, SPAM IKK projects approved by Cipta Karya are only around 50% of the projects proposed by the SatKer, indicating its weakness in screening and facilitation of project planning. Each provincial SatKer has to proactively intervene and screen candidate projects in each province to ensure efficiency of process, not merely compiling the proposal requirements upon the districts' requests. It is also necessary to reinforce coordination and capacity development in project planning among the provincial SatKer, Dinas PU and PDAM at the provincial level as well as between the central government and provincial SatKers at the central level.

At central level, unclear indicators for project selection criteria of the current SPAM IKK guidelines (the guidelines mentioned only selection criteria) cause unpredictable selection results and do not allow the provincial SatKers and district governments to do proper project screening beforehand. The central government should establish clear selection criteria with definite indicators as reference values in the guidelines for qualified project proposals. For example, it is important that local government should carry out demand needs survey in the planned area.

3) Weak design quality

To cope with the low design quality that causes ineffective operation such as raw

water shortage, capacity development of district government and PDAM staff is required in project planning and design works. Responsibility of provincial SatKers in design review should also be enhanced along with relevant capacity development.

(2) Construction Stage

1) Leakage from FRP Tanks

To cope with quality problems such as leakages from the fiberglass reinforced plastic (FRP) tanks, the provincial SatKer must perform appropriate inspection works on design and construction works. The central SatKer, at the national level, should collect and disseminate such technical information among the provincial SatKers.

2) Insufficient coordination in implementation between APBN and APBD Portions

Present constrcution work of SPAM IKK is carrid out by APBN and APBD portions respectively based on the budget source even though one water supply system. Sometimes production water could not reach to the designated distribution networks due to poor coordiantion between prvincial StaKer (APBN portion) and local government (APBD portion). Coordination by provincial SatKers should be enhanced to increase linkage of implementation between APBN and APBD portions.

(3) Operation Stage

1) Small number of house connections

Many households do not request for house connections because of the high connection fee. Innovations on the connection fee plan such as introduction of monthly payments should be considered. There are instances that residents have existing water sources such as shallow wells and tube wells at their residences. It is therefore necessary to initiate a needs survey or resident consultation in the planning stage to determine the real demand in the project area. Low water service quality should be improved through training of operators to meet the residents' needs.

2) Low treated water quality

Provincial SatKers should ensure technical transfer from contractor to PDAMs in construction stage. Training of operators and technical transfer from the contractor will be necessary to improve treated water quality. Before the commissioning test, PDAM operators should take basic training on water treatment operation by rapid sand filtration. To increase the skilled operators, staff training should be reinforced by utilizing the existing MPW training centers and PERPAMSI training programs.

3) Low profitability of water works

Capacity development of district government and PDAM staff is required to avoid

inefficient system design causing high production cost. Also, capacity development in management and operation is necessary to improve PDAMs' financial status and management.

Low tariff level is another issue that hinders profitability of water works. District governments should take initiatives to develop tariff increase plan.

12.2 Project Concept for the Proposed Project (IKK Water Supply System Development Sector Loan Project) and Necessary Technical Assistance

Presented below is the project concept of the proposed sector loan reflecting the recommended countermeasures discussed in the previous section. As earlier mentioned, the provision of financial assistance should be considered on the condition that the Indonesian side takes proper countermeasures against the issues surrounding the present SPAM IKK program. Moreover, it is emphasized that the proposed technical assistance is highly important to improve the SPAM IKK program and enhance the feasibility of the sector loan project. The detailed plan of the sector loan including sub-project selection criteria, as well as the technical assistance, will be described in Chapters 13 to 18.

(1) Implementation Setup

1) Central level

The implementing organization is MPW (Cipta Karya) as the counterpart to the donor.

2) Provincial level

Several provinces will be selected for the financial assistance by the sector loan. Provincial SatKers will be responsible for the identification, planning, implementation and monitoring of SPAM IKK projects in the selected provinces. Their role includes facilitation and screening of candidate project plans proposed by districts. Their responsibility should also be extended to the monitoring and facilitation of distribution network development funded by APBD. District governments (Dinas PU) and PDAMs are involved in the earlier stage of project planning and implementation.

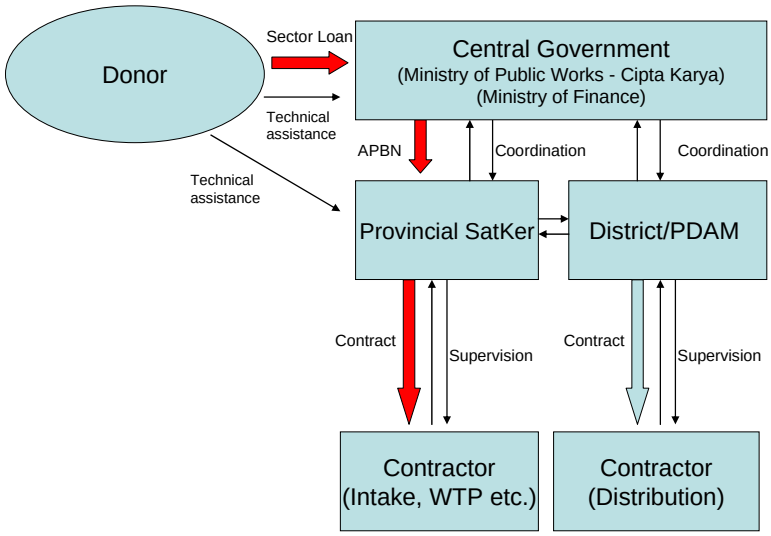
(2) Project Structure Options

How to implement and fund the distribution network development is the key to ensure the project outcome. Presented below are options for the funding structure and the demarcation of responsibility between the central and local governments.

1) Option 1: Present structure with sector loan funding

In this structure, the funding source of the APBN portion is replaced by the financial assistance. Project scope and implementation are the same as the present conditions.

The structure is still highly weak in terms of the development of distribution networks because there is no APBN investment for distribution to ease the financial burden of local governments; and the provincial SatKer's function remains limited to the implementation of APBN portion.

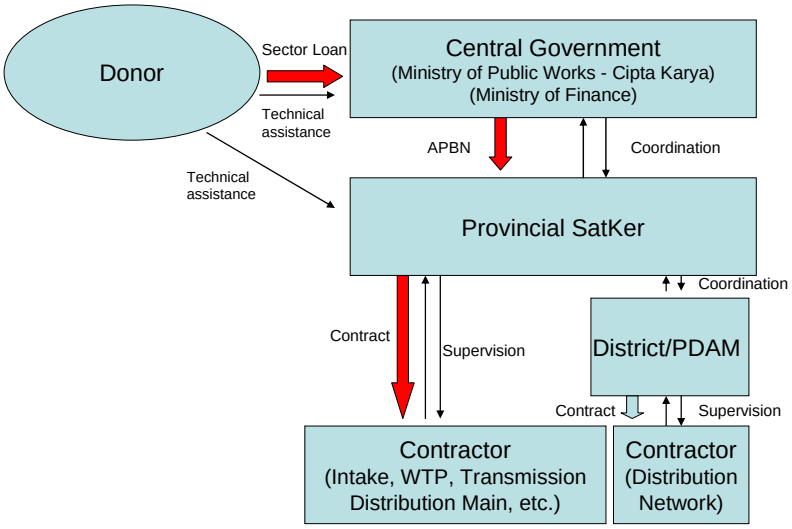


Source: JICA Study Team 2010

Figure 12.2.1 Present Structure with Sector Loan Funding

2) Option 2: Expanded APBN project scope

The project scope funded by APBN is expanded to a certain part of the distribution network to reduce the financial burden of the districts and PDAMs. Provincial SatKers will be responsible to coordinate the implementation of the whole project scope. The APBD part is separately implemented by districts and PDAMs but the scope is limited to smaller-scale networks or only house connections. Some adjustments in the current regulations are thus required to be carried out to expand the project scope under APBN. On the other hand, the reduced financial burden of the district and PDAM for the distribution network will ensure smooth and timely implementation of the APBD project scope. From the district's point of view, participation in the sector loan project is also regarded as an incentive to local governments. The enhanced function of the provincial SatKer is also necessary for the central government to ensure the effective outcome of SPAM IKK program i.e. actual water supply to connected households, through the provincial SatKer's monitoring and coordination over the district's project scope in distribution.

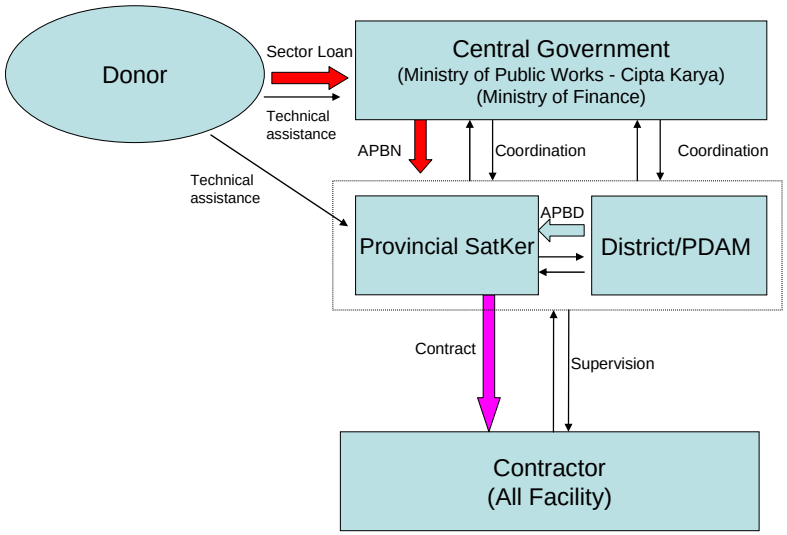


Source: JICA Study Team 2010

Figure 12.2.2 Expanded APBN Project Scope

3) Option 3: Single contract with mixed funding

Both the APBN funded by the sector loan and APBD are pooled in the provincial SatKer's account. Provincial SatKer is responsible for the whole project scope in coordination with each district/PDAM. In this structure, the project implementation commences after the APBD disbursement by the district to avoid any funding shortage for the distribution. A single contractor constructs all the necessary facilities so that problems concerning the linkage between treatment and distribution are not encountered. Contribution by the APBD is determined by a certain percentage and the total required project cost. Since the responsibility for the district's entire project scope is transferred to provincial SatKer, it will be required to make regulatory adjustment to a greater extent than Option 2 (expanded APBN project scope). New institutional setting will be also necessary to form a committee participated in by the provincial SatKer and the subject district government and PDAM for each sub-project to manage planning and implementation. On the other hand, the provincial SatKer can have direct control over the whole project scope so that smooth and timely implementation will be ensured.

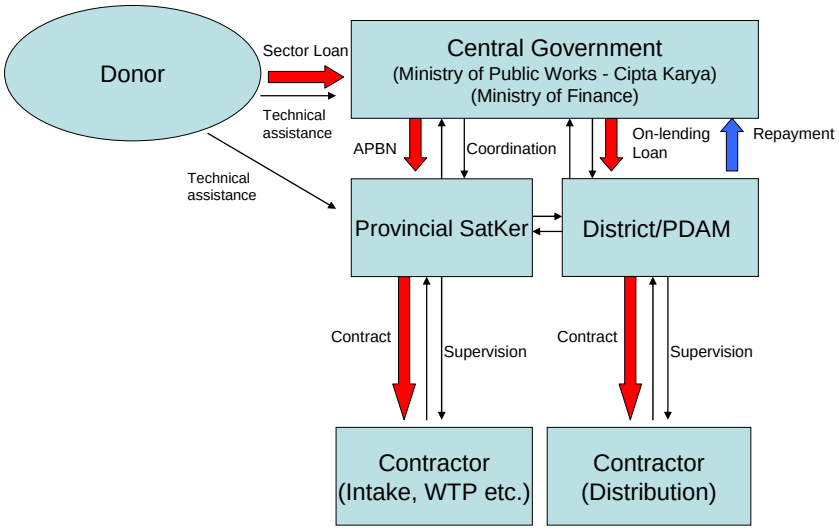


Source: JICA Study Team 2010

Figure 12.2.3 Single Contract with Mixed Funding

4) On-lending loan for distribution

In this structure, the sector loan fund finances both APBN and APBD portions. Besides the APBN part constructed on a grant basis, the fund for APBD will be on-lent to PDAM through the central government (Ministry of Finance). Since the entire project scope is financed by the sector loan, the secured funding will ensure the timely implementation of sub-projects after approval. The on-lending funded by the sector loan for PDAM to implement the district network may also be an incentive for their participation in the project. However, the repayment requirement for the on-lending loan will greatly limit the number of PDAMs eligible for assistance considering the current financial conditions of PDAMs involved in SPAM IKK projects.



Source: JICA Study Team 2010

Figure 12.2.4 On-lending Loan for Distribution

(3) Recommended Project Structure

Table 12.2.1 summarizes the comparison of the advantages and disadvantages of the options discussed above. Among the four options, Option 2 (Expanded APBN Project Scope) is recommended to be adopted as the project structure for the proposed sector loan because it secures more funding for distribution facilities and increases control over the project scope. It is likewise more adaptable to the present SPAM IKK program framework due to its moderate requirement for regulatory/institutional adjustments.

Table 12.2.1 Comparison of Project Structure Options

Options		Option1 Present Structure with Sector Loan Funding	Option 2 Expanded APBN Project Scope	Option 3 Single Contract with Mixed Funding	Option 4 On-lending Loan for Distribution
Advantages	Adaptability to present SPAM IKK program	✓✓	✓✓	–	✓
	Secured funding for distribution facilities	-	✓	✓	✓✓
	Control/ coordination over entire sub-project	-	✓	✓	-
Disadvantages	Risk of incomplete distribution facilities	XX	X	-	-
	Regulatory Adjustment Required	-	X	XX	-
	New institutional setup required	-	-	X	-
	Limited number of eligible PDAM	-	-	-	XX
	Weak monitoring	XX	-	-	X
Total Score		**-2**	**+2**	**-1**	**+/- 0**

Source: JICA Study Team 2010

12.3 Spread-out Strategy of the Project Concept

Apart from the financial assistance of the sector loan, its concept can be adopted to other SPAM IKK projects. Especially, the reinforcement of the provincial SatKer's functions should be prioritized to improve the whole SPAM IKK program. The proposed institutional setup at the provincial level may also be duplicated in other provinces to ensure more involvement of Dinas PU and PDAMs in SPAM IKK projects from the planning to implementation stages. During the implementation of sector loan project, technical assistance through consulting services should disseminate the lessons learned to other provinces.

CHAPTER 13 PROJECT SCOPE

13.1 Overall Objectives of the Proposed Project

The proposed sector loan project has been planed according to the SPAM IKK Development Plan 2010-2014 under the Five-Year Mid-term National Development Plan 2010-2014(RPJMN 2010-2014).

The project period is assumed to be three years from 2012 to 2014.

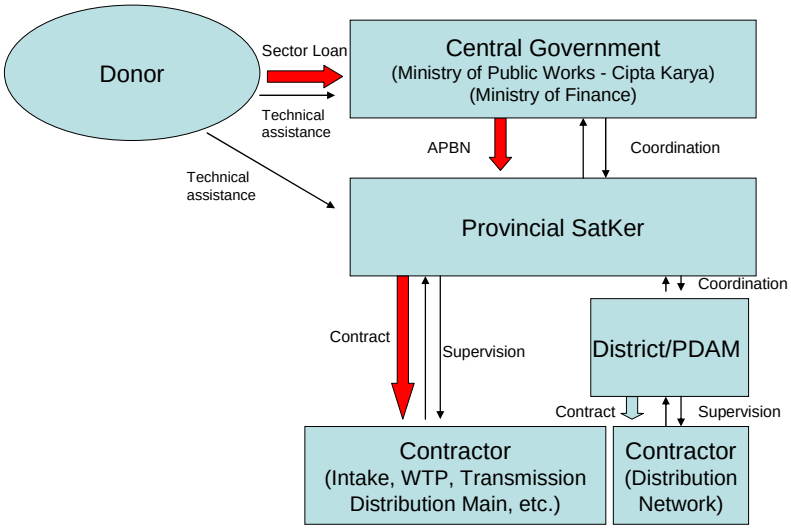
The objectives of the proposed project are:

- Implementation of water supply facility implementation for IKK.
- Increasing water supply house connections to achieve the MDGs

13.2 Necessity and Justification of the Proposed Project

The Government of Indonesia has encouraged the development of the water sector for achieving the MDGs. The SPAM IKK program is an effective program for the development of the water sector on sub-urban areas and hence, MPW has planned the implementation of 820 SPAM IKKs in the whole Indonesia under RPJMN2010-2014.

13.3 Rational of the Project Design



Source: JICA Study Team 2010

Figure 13.3.1 Expanded APBN Project Scope (originated in Figure 12.2.2)

As a result of the on-site review, it is found that the limited house connection against system capacity is caused by slow progress of the distribution facility funded by the district government (APBD portion), notwithstanding the fact that the APBN portion is in good progress. Therefore, the project scope funded by APBN should be expanded to

certain parts of the distribution network to reduce the financial burden on the districts. Furthermore, the scope of the provincial SatKer is expanded to include that of the central government to manage and monitored the whole the Project as Figure 13.3.1.

13.4 Project Scope and Location

On the sub-project structure presented in Figure 13.3.1, the provincial SatKer manages one sub-project for both APBN and APBD portion. Therefore, the location of the sector loan project should be two provinces in the Region I (Sumatra and Java Island) and one province in the Region II (Sulawesi and Kalimantan Island) considering the population and population density.

The selection of the province is made based on the basis of following criteria.

- Population density (High density > Low density)
- Access to safe water (Poor access > Normal access)
- Number of districts (Great number > Small number)
- Number of existing SPAM IKK projects (Great number > Small number)
- Number of planned SPAM IKK projects (Great number > Small number)
- Number of healthy PDAM (Great number > Small number)
- Capacity of SatKer (High potential capacity > Low potential capacity)

The population density, access to safe water and number of districts are indicators of necessity for water supply systems. The number of existing SPAM IKK projects and capacity of SatKer are the indicators of the potential capacity for implementation of sub-projects under the sector loan project. The number of planned SPAM IKK projects and number of healthy PDAMs, meanwhile, are indicators of validity.

Based on the selection result, the provinces for the sector loan project should be Central Java and East Java in Region I and South Sulawesi in Region II.

From 2010 to 2014, implementation of 632 SPAM IKKs is planed in Sumatra, Java, Kalimantan and Sulawesi Islands. On the average, there are six SPAM IKK programs implemented in one province per year. Finally, 60 SPAM IKKs programs are implemented in the three selected provinces (Central Java, East Java and South Sulawesi) in three years as shown in Table 13.4.1.

Table 13.4.1 Number of Planned SPAM IKK in the Sector Loan

	Number of Planned SPAM IKKs (2010-2014)	Number of Planned SPAM IKKs in the Sector Loan (for three years)	Number of Planned SPAM IKKs in the Sector Loan per year
CENTRAL JAVA	65	27	9
EAST JAVA	39	18	6
SOUTH SULAWESI	34	15	5
TOTAL	138	60	20

Source: JICA Study Team 2010

The sub-projects in the sector loan should be planned with the size of 10L/s and 1,000 house connections as the target number of connections.

13.5 Sector Loan for SPAM IKK sub-components

(1) Outline of the Sector Loan for SPAM IKK Sub-Components

The sub-projects are assumed as the following:

- Capacity of Sub-project size: 10L/s
- Water source: Surface water and groundwater
- Water treatment plant(WTP): Rapid sand filtration type, made of steel for surface water only, not applied to groundwater and spring water source,
- Distribution system: Using distribution pump
- Target number of house connections：1,000 nos. (around 5,000 people)

(2) Eligibility of Sub-district Area for Sector Loan

The eligibility of sub-districts area is defined in the chapter five of the Guideline for Development of SPAM IKK on 2008. Therefore, the Guideline is applied to the eligibility of sub-district for sector loan as shown in Table 13.5.1.

Table 13.5.1 Eligibility of sub-district for the Sector Loan

1. Condition of IKK	There are potable water problems. (Using poor quality shallow well or contaminated surface water)
2. Status of IKK	Candidate location for SPAM IKK is not proposed by other programs funded by the local budget, national budget and/or loan/grant from outside the country.
3. Commitment of District	To be accompanied with the confirmation letter of the fund for development of distribution network and house connection signed by the head of the local government and DPRD.
	New system management by PDAM. Fiscal health of management organization (whether healthy or unhealthy by BPP SPAM evaluation).
	Availability of the fund for O&M and connection of house hold for new system.
	The meeting for household connection should be held in the residence to understand the necessity for water supply system.

Source: JICA Study Team 2010 based on the guideline for development of SPAM IKK 2008

(3) Criteria and Process of Proposal Selection

The proposal selection of sector loan will be carried out following criteria and process. The evaluation criteria are prepared based on the guideline for development of SPAM IKK in 2008 as shown in Table 13.5.2.

Table 13.5.2 Evaluation Criteria for Sub-projects in the Sector Loan

Article of Proposal	Evaluation Criteria
1. Availability of Land	Yes / No Necessary area and elevation, topographic conditions
2. Acceptance of Plan and Design	- Matching demand and development size - Design of distribution system - Pressure into pipeline - Location and structure of intake facility - Pipeline material - Purification process - Electrical and mechanical facility - Using PLN power supply (Approved by Provincial SatKer)
3. Acceptance of annual development program and execution schedule.	- Conforming to the guideline - Matching other plan (Confirmed by Provincial SatKer)
4. Acceptance of O&M plan and cost.	Operating ratio(Operation cost/Revenue) < 1.0
5. Acceptance of technique and costs according to RPIJM (Medium-term Investment Program)	- Check of cost estimation - Confirmation of RPIJM
6. Statement of Regent/Mayor and district assembly chairman	Yes / No

Source: JICA Study Team 2010 based on the guideline for development of SPAM IKK 2008

The proposals for sector loan will be prepared by district governments in the three provinces (Central Java, East Java and South Sulawesi) and submit to their provincial

SatKer. The provincial SatKer will conduct the evaluation and selection of proposals by evaluation criteria for sub-project on sector loan. The selected proposals will send to the Cipta Karya of MPW from provincial SatKar. Finally, Cipta Karya and PMU for IKK will evaluate and decide the SPAM IKK projects for sector loan based on the guideline.

(4) Financial Flow

Overall financial flow of the proposed sector loan is explained as follows. GOI (MOF) receives the foreign sector loan from the donor and, after making the currency conversion, provides the loan proceeds in Rupiah to MPW. Then, MPW will transfer the proceeds to the respective provincial SatKer in-charge of each sub-project. The provincial SatKer will make payment to the concerned constructor. In addition, the concerned district government will bear the construction cost of the distribution system from its own sources.

(5) Particulars of the Sector Loan

The sector loan project will be part of the SPAM IKK Project. Thus, this will be undertaken in line with the Decision of Director General of Cipta Karya, MPW No.13/KPTS/DC/2009 outlining the guidelines for the implementation of the development program of SPAM IKK. The implementation procedure of the sector loan project will be in line with the government regulation No.2, 2006 regarding procurement procedure of foreign loan as well as the donor's ODA guideline.

(6) Procurement Methods (including packaging)

As mentioned in Section 13.4, the project area is distributed in the three provinces: Central Java, East Java and South Sulawesi, then procurement procedure is carried out by each province. Each provincial SatKer procures the contractor by several contract packages composed of several sub-projects every year.

(7) Project Effects/Impacts

The impacts of the project implementation are presented below and in the following Table 13.5.3.

Table 13.5.3 Effects/Impacts of the Project Implementation

Present Conditions and Problems on Selected Sub-project Area	Measures to be Taken in the Sector Loan Project	Efforts/Impacts of the Project Implementation
The sub-project area for SPAM IKK has drinking water problem. Therefore, unless the public water supply system is drastically improved or developed, the essential requirement for sustaining life and access to safe and sanitary water are not obtainable.	In order to provide sufficient amount of water for 24 hours, the intake, WTP, distribution main and distribution network facilities shall be provided in the SPAM IKK Program.	• The people in the each sub-project area will be able to obtain safe and sufficient water. • The number of house connection will be increased in the selected provinces.

Source: JICA Study Team 2010

Direct effect:

- The people in each sub-project area can obtain safe and sufficient water.

Indirect effect:

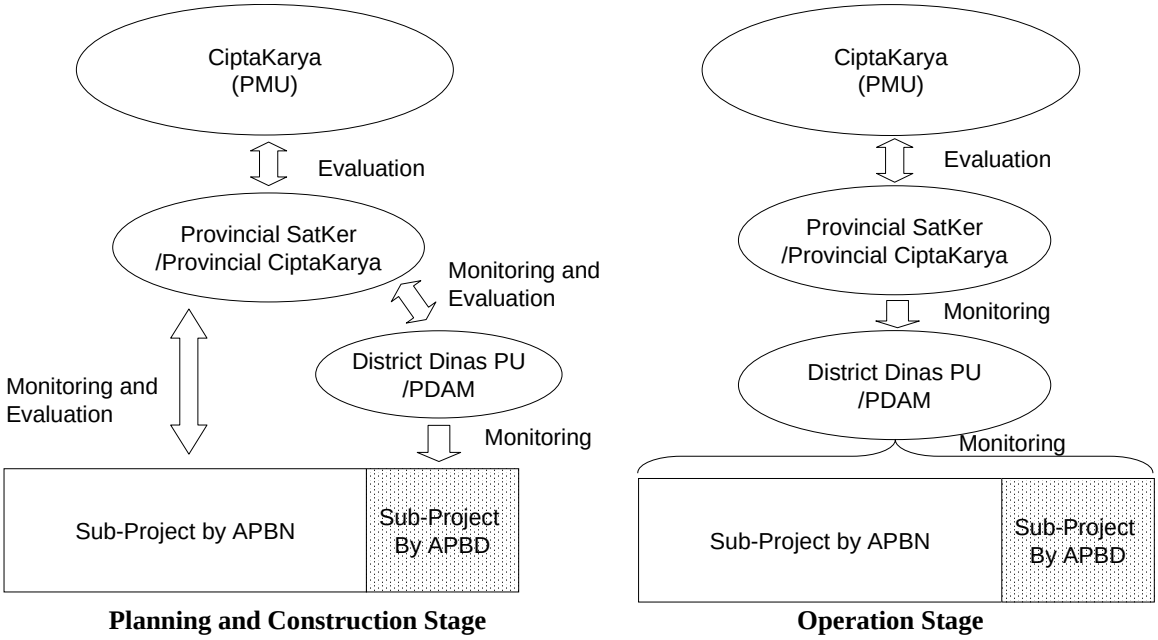
- Sanitary condition is improved in each sub-project area.

(8) Evaluation and Monitoring

Monitoring and evaluation should be conducted by the PMU and Cipta Karya. PMU bear part of responsibility for monitoring of SPAM IKK project. Dir BP of Cipta Karya is responsible for evaluation of SPAM IKK project. Subsequently, PMU's and Cipta Karya's capacity should be strengthened through the Technical Assistance (TA) program, as will be discussed in Chapter 18 of this report.

Evaluation and monitoring is carried out from planning stage through construction stage to operation stage.

The intake facility, WTP, and part of the distribution facility are funded by APBN. The distribution network is funded by APBD. Therefore, the provincial SatKer/provincial Cipta Karya should conduct the monitoring and evaluation of the APBN part during planning and construction stages. The District/PDAM should conduct the monitoring of the APBD part. However, monitoring of APBN part (mainly WTP) and APBD part in operation stage should be carried out by PDAM as operator of SPAM IKK. The provincial SatKer has responsibility to collect and arrange the monitoring data in all stages of SPAM IKK project. The evaluation and monitoring responsibility structures are shown in Figure. 13.5.1.



Source: JICA Study Team 2010

Figure 13.5.1 Responsible Organizations for Monitoring and Evaluation

13.6 Capacity Development for the Central and Local Functions

(1) Objectives and Targets

Cipta Karya is a responsibility stakeholder for MDGs, but capacities of current organizations and staff are not enough to achieve the MDGs target. Because, many problems are found in SPAM IKK projects during the sites survey. MDGs should be an achieved as results of acquiring ability to achieve voluntarily by Cipta Karya itself. Therefore, the Capacity Development (CD) of concerned organizations and staff of SPAM IKK are proposed to ensuring smooth implementation sector loan for the SPAM IKK projects.

(2) Concerned Organizations and Staff for CD

Concerned organizations for CD are divided into central and local organizational levels. Central level organization consists of MPW (Staff of PMU, Dir PAM, and Dir BP of Cipta Karya). Local level organizations divide into provincial SatKer and district PU and PDAM. Main character of local level organization is provincial SatKers. The main capacity of organizational level is panning and implementation

ability to perform the SPAM IKK projects. The capacity of staff is composed of technical skills, knowledge and experience of SAPM IKK projects.

(3) Central Level Functions (Cipta Karya)

1) Planning and implementation

The Guideline for Development of SPAM IKK in 2008 is clearly described the substance of work for implementation of SAPM IKK. However, implementation agency and related organizations of SPAM IKK are not indicated clear in the guideline such as selection criteria for sub-project, necessary documents for proposal, evaluation criteria. Therefore, practical guide for the guideline should be prepared by the PMU and Dir PAM, DirBP of Cipta Karya through work shop and on-the job training (OJT) by technical assistance

2) Proposal evaluation

Sub-projects of SPAM IKK by financed APBN are approved by Cipta Karya based on the proposal evaluation by DirPAM and PMU. However, many problems are found in present projects by 50 sites survey. This is indicated that proposal evaluation is not properly carried out. Therefore, capacity building of proposal evaluation procedure and individual knowledge are required to implement the proper evaluation through lesson learn from past failure projects and work shop by technical assistance.

3) Progress management and monitoring

Progress management and monitoring of SPAM IKK project is responsibility of Dir PAM and PMU. However, capacity of organizational level of DirPAM and PMU is not enough for progress management and monitoring, so that they are not grasped actual progress of SPAM IKK project. The progress of the SPAM IKK project should be managed by provincial SatKer under supervision of PMU. The report should include implementation progress, disbursement, event, problem and countermeasure etc based on the monitoring of individual sub-project. The capacity of PMU, DirPAM, and DirBP of Cipta Karya should develop organizational and staff levels through preparation of progress report and OJT by assistance of provincial SatKer.

(4) Provincial Level Functions (Provincial SatKer)

1) Assistance to preparation of proposal

There are times that the proposal is prepared by the district PU/ PDAM himself with the guidance of the provincial SatKer. However, some provincial SatKer has not enough capacity to assist the district PU/ PDAM for preparation of proposal. The

capacity of provincial SatKer should develop organizational and staff levels through work shop and OJT by technical assistance.

2) Selection of candidate sub-projects for APBN portion

The provincial SatKer conducts the selection of candidate sub-projects for APBN portion. However, only 50% of candidate sub-projects are determined as APBN projects. It is shown that the capacity of provincial SatKer for selection of candidate sub-projects for APBN portion is required to strengthen. The capacity of provincial SatKer should developed organizational and staff levels for selection of sub-projects through work shop and OJT by technical assistance.

3) Progress management and monitoring

At present, the actual progress management of the SPAM IKK is not carried out by any related organizations. The progress report of the sub-project both the APBN part and the APBD part should be arranged by provincial SatKer cooperation with district PU/PDAM. The progress of the SPAM IKK project should be managed by provincial SatKer under supervision of PMU. The report should include implementation progress, disbursement, event, problem and countermeasure etc based on the monitoring of individual sub-project. The capacity of provincial SatKer should developed organizational and staff levels through preparation of progress report and OJT by technical assistance.

(5) District Level Functions (District / PDAM)

1) Sub-project selection

At present, sub-project selection could not be carried out under satisfactory conditions due to lack of understanding of the guideline and lack of experience in the procedure. The district PU/PDAM selects a highly potential area which has high demand and good condition for the SPAM IKK program, in accordance with the guideline. After the project area is selected, socialization should be conducted, and the residential needs are confirmed immediately. Therefore, the capacity of district PU/PDAM for sub-project selection should develop organizational and staff levels through sub-project selection and OJT by assistance of provincial SatKer.

2) Preparation of proposal

Proposal of SPAM IKK sub-project is prepared by district PU/ PDAM. However, some district PUs/PDAMs have insufficient number of staff and knowledge to prepare

an appropriate proposal. These districts/PDAMs should be trained to prepare proposal according to the guideline and other documents. Therefore, the capacity of district PU/PDAM for proposal preparation should develop organizational and staff levels through preparation of proposal and OJT by assistance of provincial SatKer.

3) Coordination of APBN and APBD parts

At present, the district/PDAM conducts the preparation of tender documents, tender opening, and evaluation and contract with the contractor for the APBD part but they could not undertake the information of the contract of the same SPAM IKK project for the APBN part. Hence the interface between the APBN and APBD part of the construction schedule and component should be taken into consideration and adjusted as necessary. Therefore, the coordination capacity of Dinas PU should develop organizational and staff levels through OJT by assistance of provincial SatKer.

4) Progress management and monitoring

At present, the implementation progress report of the sub-project of the APBD is not prepared by district Dinas PU. The progress report of the sub-project of the APBD part should be submitted to the provincial SatKer. The report should include implementation progress, disbursement status, events, problems and countermeasures, etc based on the monitoring of individual sub-project. The management and monitoring capacity of Dinas PU should develop organizational and staff levels through OJT by assistance of provincial SatKer.

13.7 Expertise and Advisory Functions Required

Cipta Karya and provincial SatKer are provided with the required expertise and advisory function by the technical assistance, after confirmation of organizational capacities to perm the SPAM IKK projects, and individual capacities of technical skills, knowledge and experience concerned with SPAM IKK project. The district level is also provided it through provincial SatKer.

(1) Consulting Services for the Central Level (Cipta Karya)

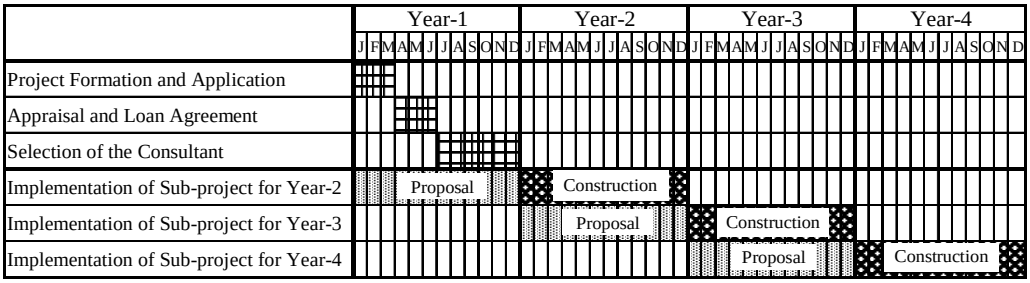
The consultant of technical assistance assists to the central level for the sector loan project. The counterpart is the PMU, Dir BP and Dir PAM in Cipta Karya. The PMU conducts the selection, implementation and monitoring works for sub-projects. On the other hand, Dir BP conducts the evaluation, analysis and feedback works for sub-projects. The Dir PAM, meanwhile, prepares the guideline and related documents.

(2) Consulting Services for the Provincial Level (Provincial SatKer)

The consultant of technical assistance assists to the provincial level for the sector loan project. The counterpart is the provincial SatKer and provincial Cipta Karya. The provincial SatKer conducts the preparation of the proposal for selection, implementation and monitoring work for the sub-projects. The provincial Cipta Karya conducts the monitoring for sub-projects mainly at the operation stage in cooperation with district PU/PDAM.

13.8 Implementation Schedule

The implementation schedule of the sector loan has been worked out based on the assumption that the Government of Indonesia is ready with its application for the project, after confirming present issues that needed to be solved through the implemented countermeasures. The implementation schedule of the outline is shown in Figure 13.8.1 below.



Source: JICA Study Team 2010

Figure 13.8.1 Outline of the Implementation Schedule

13.9 Procurement and Consultant

(1) Rationale Behind Contract Packages

In the past case of SPAM IKK project (FY 2008), several sub-projects were bundled as one contract package. Accordingly, sub-projects of the Sector Loan Project will be procured through several contract packages, in accordance with relevant Indonesian regulations.

(2) Consultant's Role (Draft Termes of Reference (TOR))

In order to support the project management of the Sector Loan Project by Cipta Karya, a consultant will be employed in accordance with the donor's guideline for employment of consultants. The outline of the TOR for consulting services will be as follows.

1) Objective

The objective of consulting services is to support Cipta Karya in the management of the sector loan project for securing:

- Proper and smooth implementation of the project in line with relevant Indonesian regulations, the donor's guidelines and the loan agreement
- Sustainable performance of project outcomes
- Planned project effects and benefits

2) Scope

Assistance to PMU in:

- Allocation of the sector loan fund for implementation of the selected sub-projects
- Coordination between Central Government and the provincial SatKers in the determination of implementation of sub-projects
- Monitoring of the progress of sub-projects
- Compiling the project completion report
- Monitoring of overall project performance

Assistance to the provincial SatKers in:

- Review of detail engineering design and cost estimate
- Entry of the sub-projects to the regional development plan (RPIJM)
- Confirming the commitment by the local government, allocation of the local budget, land acquisition, and availability of water source
- Setting up of a work control system
- Supervision of mechanical installation
- Supervision of commissioning and training
- Monitoring of overall project performance

CHAPTER 14 PROJECT COST AND FINANCE PLAN

14.1 Estimated Project Cost

(1) Estimate Condition

1) Price level : July 30, 2010

2) Exchange rate : USD 1 = Rp. 8,452 Rp. 1 million = USD 118.3
(Bank of Indonesia Buy Exchange Rate)
: Yen 100 = Rp. 9,768.84 Rp. 1million = Yen 10,237
(Bank of Indonesia Buy Exchange Rate)

3) Price escalation
Foreign currency portion : 2.4 % per annum (2000-2010: 26.2%)
Local currency portion : 4.3 % per annum (2008-2010: 8.98%)

4) Physical Contingency
Construction cost : 10 %
Consulting service : 3 %

(2) Estimated Project Cost

1) Project Cost

Estimated project cost is summarized in Table 14.1.1.

Table 14.1.1 Summary of the Project Cost

	FC (USD)	LC (mil. Rp)	Total Equivalent (USD)
1. Construction Cost (Sector Loan)	**0**	**341,214**	**40,365,666**
Base Cost	0	273,228	32,322,872
Price Escalation &Contingency	0	67,986	8,042,793
2. Construction Cost (APBD&PDAM)	**0**	**171,214**	**20,254,633**
Base Cost	0	137,100	16,218,930
Price Escalation &Contingency	0	34,114	4,035,703
3. Consulting Service (Sector Loan)	**1,672,516**	**18,678**	**3,882,166**
Base Cost	1,512,000	15,973	3,401,630
Price Escalation &Contingency	160,516	2,705	480,536
4. Land Acquisition	**0**	**0**	**0**
5. Administration	**0**	**25,621**	**3,031,015**
6. Tax	**0**	**57,087**	**6,753,348**
Total Project Cost	**1,672,516**	**613,815**	**74,286,826**
Sector Loan Portion	**1,672,516**	**359,893**	**44,247,831**
Interest and Commitment Charge	1,160,618	0	1,160,618
Total Loan Amount (USD)			**45,408,449**

Source: JICA Study Team 2010

2) Construction Cost

The base cost is estimated by the number of sub-project and unit cost of the sub-projects.

Table 14.1.2 Construction Cost (Base Cost)

	Q'ty	Unit Price		Total	
		FC (USD)	LC (mil. Rp)	FC (USD)	LC (mil. Rp)
Sector Loan					
Central Jawa	27	0	4,879	0	131,733
East Jawa	18	0	2,615	0	47,070
South Sulawesi	15	0	6,295	0	94,425
				Total	273,228
Counterpart fund (APBD/PDAM)					
Central Jawa	27	0	2,285	0	61,695
East Jawa	18	0	2,285	0	41,130
South Sulawesi	15	0	2,285	0	34,275
				Total	137,100

Source: JICA Study Team 2010

14.2 Project Finance (Counter Part Fund, Fund Flow, etc.)

The expected foreign loan will be provided in foreign currency in the form of the sector loan for water supply system installment along with SPAM IKK program in the selected provinces. Upon the receipt of loan proceeds MOF will exchange them into Rupiah currency and deposit in special account alloted for the project. GOI will receive the proceeds at six tranche on a semi-annual basis for three years. This disbursement schedule on a semi-annual basis would be synchronized with the payments from SatKer to contractors. MOF will on-finance the proceeds to MPW for the construction of upper stream part of the water supply system.

14.3 Annual Fund Requirement

The annual disbursement schedule is assumed as shown in Table 14.3.1 based on the proposed implementation schedule and project cost. The number of sub-project is same for three years of the project implementation period.

Table 14.3.1 Disbursement Schedule

(USD)

	Year-2	Year-3	Year-4	Total
Construction Cost	12,892,882	13,447,276	14,025,508	40,365,666
Consulting Service	1,250,104	1,293,516	1,338,546	3,882,166
Total	14,142,985	14,740,791	15,364,055	44,247,831
Interest during Construction Construction: 1.4% Consultant: 0.01%	180,625	369,017	565,508	1,115,149
Commitment Charge 0.1%	30,105	15,364	0	45,469
Disbursement	14,353,715	15,125,172	15,929,562	45,408,449

Source: JICA Study Team 2010

As shown in the above table, the total amount of loan is proposed at nearly USD 45,408,449.

CHAPTER 15 IMPLEMENTATION STRUCTURE AND MONITORING SYSTEM

15.1 Implementation

(1) Executing and Implementation Agencies

The executing and implementation agencies for SPAM IKK are composed of the related organizations at the central, provincial and district levels as shown in Table 15.1.1.

Table 15.1.1 Executing and Implementation Agencies

Organization		Directorate /Agency
Central Level		
Ministry of Public Works	Directorate General of Human Settlements DGHS (Cipta Karya)	Directorate of Programme Development (DirBP)
		Directorate of Water Supply Development (DirPAM)
		Project Management Unit (PMU)
		Central SatKer
	Cabinet Secretary	Support Agency for Water Supply System (BPP-SPAM)
		Bukasi & Surabaya Training Center
Provincial Level		
Dinas PU/ Cipta Karya		Provincial SatKer,
District Level		
Local Government		Development Planning Board for District Level (BAPPEDA)
		Dinas PU
Operator		PDAM (Regional Drinking Water Enterprise)

Source: JICA Study Team 2010 based on the present organization of SPAM IKK.

(2) Organization's Role

The role of the organizations relating to SPAM IKK is clearly mentioned in the SPAM IKK Guidelines (Guidelines for Implementation of Program for Development of Drinking Water Supply System in Cities in Sub District (SPAM IKK), Decision No. 24-/KPTS/DC/2008). The role of each organization is different at the stage of project planning, construction and operation of facility. The roles and responsibilities of the related organizations are shown in Table 15.1.2.

Table 15.1.2 Organization's Role

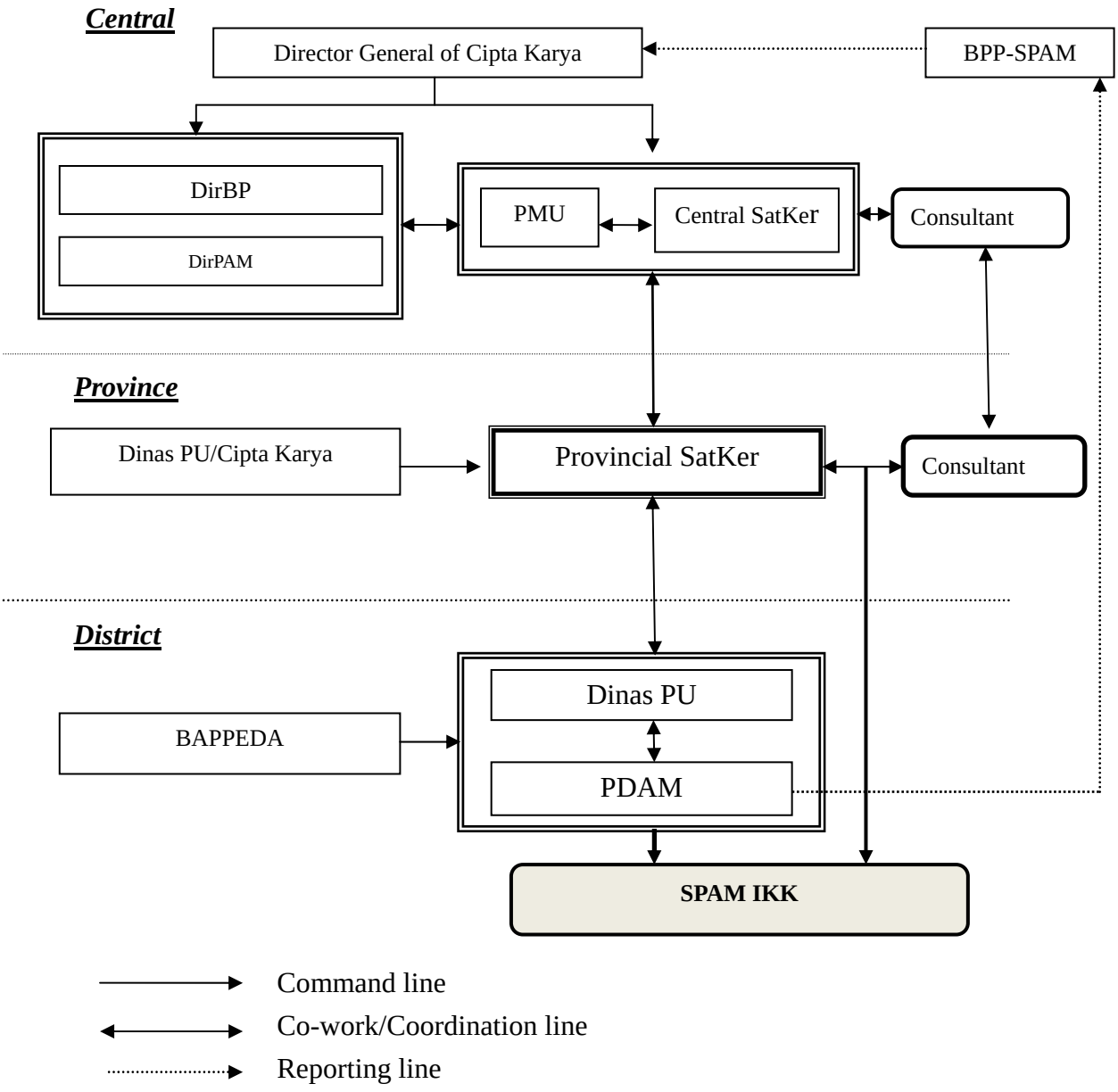
	Role	Responsible Organization							
		Central Level				Province Level	District Level		
		PMU	Central SatKer	Dir BP	Dir PAM	Provincial SatKer	BAPPEDA	Dinas PU	PDAM
1	**Planning Stage**								
	1) Preparation of Master Plan (M/P)						■	▲	▲
	2) Explanation and Socialization to							▲	■
	3) Implementation of Feasibility Study						▲	■	■
	4) Land Acquisition							■	
	5) Obtaining Water Right							▲	■
	6) Submission of Proposal						▲	■	▲
	7) Preparation of Detailed Design for APBD Portion							■	▲
	8) Review and Screening of Proposal					■			
	9) Preparation of Detailed Design for APBN Portion					■			
	10) Submission of Selected Proposal by Provincial SatKer					■			
	11) Selection of Sub-Project and APBN Budget Allocation	■	▲		▲				
	12) Allocation and Confirmation of APBD Budget					▲	■	■	
	13) Explanation to Residents							▲	■
2	**Construction Stage**								
	1) Selection of Contractors/Suppliers	▲	▲		▲	■		■	
	2) Approval of Construction Method & Schedule	▲	▲		▲	■		▲	
	3) Construction Supervision	▲	▲		▲	■		■	
	4) Staff Training					▲			■
	5) Approval of As-build Drawings & Operation Manuals					■		■	▲
	6) Commissioning and Trial Operation	▲	▲		▲	■		▲	■
	7) Explanation to Residents							▲	■
3	**Operation Stage**								
	1) Operation and Maintenance				▲	▲		▲	■
	2) Monitoring and Establishment of Database	■			▲	■			■
	3) Data analyzed and Evaluation	▲		■		▲			

Source: JICA Study Team 2010

■: Core player
▲: Co-player

(3) Organization Chart

According to the role of executing and implementation agencies mentioned earlier, the organization chart for implementation of SPAM IKK is shown in Fig. 15.1.1.



Source; JICA Study Team 2010 based on the present organization of SPAM IKK.

Figure 15.1.1 SPAM IKK Implementation Organization Chart

15.2 O&M and Management (Including Monitoring)

(1) Structure and the Number

1) Operation and Maintenance

No water supply facility area will be basically selected for the sub-project site. Therefore, the branch office of PDAM will be established for each sub-project except for those connected to the existing system. The target number of the connection is 1,000 in the capacity of 10 L/s system. The tasks include the operation for WTP for 24 hours; maintain the pipeline, meter reading, tariff collection and accounting. It is noted that the work inside the WTP needs the operator and water quality management.

The branch office should make the monthly report and submit to the head office of PDAM. The head office should submit the report to the PMU/ Cipta Karya and provincial SatKer/provincial Cipta Karya regarding the monitoring of works for the sub-project. The monthly report should be used as the base data of monitoring. The branch office should compile the data and submit to the head office of PDAM. The head office should deliver a copy of report to the provincial SatKer/provincial Cipta Karya.

Provincial SatKer should prepared the standard format of the monthly report based on the instruction of Cipta Karya (Dir BP) and PMU.

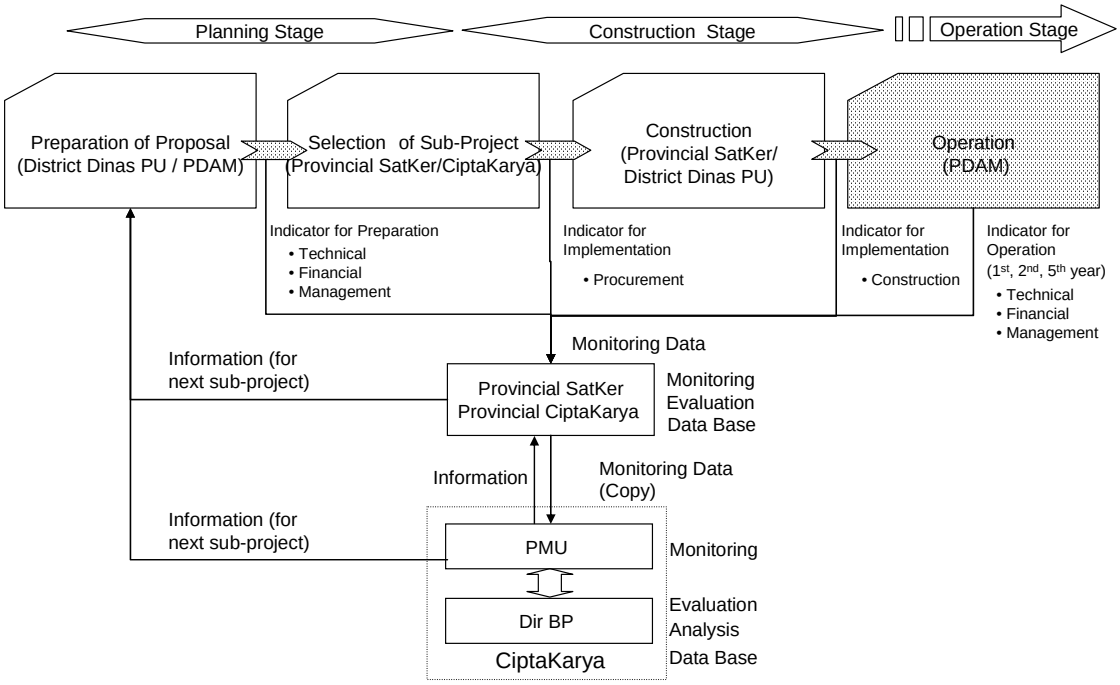
2) Monitoring

The monitoring structure is shown in Figure 15.2.1. The PMU and Dir BP, Cipta Karya should conduct collect and analyze the monitoring data submitted by the provincial SatKer/provincial Cipta Karya. The collection and compiling of the monitoring data shall be carried out by the PMU while the evaluation and analysis shall be done by Dir BP's their main task in term of monitoring system.

The current capacity of the PMU is very limited as it has a few staff and no experience, therefore; Therefore, the PMU should be strengthened to perform monitoring works. On the sector loan, PMU staff is proposed to consist of following:

Head: 1 staff
Monitoring manager for each province: 3 staff
Monitoring staff for each province: 3 staff

The data analyzed by Dir BP, Cipta Karya should be disclosed to the organization concerned (District Dinas PU, PDAM BAPPEDA and so on) within one year after data collection, to be used as basis for the execution of the next project.



Source: JICA Study team 2010

Figure 15.2.1 Proposed Monitoring Structure for sub-project

(2) Qualification and Skill of Staff

Cipta Karya is preparing the technical qualification system for water supply. This states that the new organization on the professional certification institute cooperated with PERPAMSI will issue the certificate to engineers upon meeting requirements. Moreover, PDAM shall employ at least one qualification staff at the head office. He shall monitor each branch office to maintain a certain level.

At least one operation staff of the branch office should be trained to the knowledge on rapid sand filter purification process the assuming that sub-project is planed to employ such system of WTP. He needs to participate in the technical seminars at least once a year.

(3) O&M Cost and Budget

1) O&M Cost

Annual O&M Cost per one SPAM IKK is estimated for determining the demand for the budget for operation. It is assumed that the facility capacity is 10 L/s and the operating time is 24 hours per day as shown in Table 15.2.1.

Table 15.2.1 O&M and Administration Cost

Item	Cost (Rp)	Remarks
1. Manpower	**160,600,000**	See Table 15.2.4.2
WTP & Pump operator	83,000,000	
Water quality control staff	41,600,000	
Pipe maintenance staff	38,800,000	
Water meter reader	38,800,000	
2. Electricity	**157,200,000**	See Table 15.2.4.3
Nomal time cost	78,800,000	
Night time cost	39,400,000	
Basic charge	39,000,000	
3. Repair	**59,400,000**	1% of Construction cost (5,940,000,000 Rp)
4. Chemicals	**8,500,000**	See Table 15.2.4.4
Sub-total	**385,700,000**	
5. Administration	**38,600,000**	10% of total O&M cost (1. - 4.)
Total	**424,300,000**	

Source: JICA Study Team 2010

2) Budget

The O&M cost estimated Rp.424,3600,000 /year as shown in Table 15.2.1. Therefore, the operation organization (PDAM) for sub-project considered that for the capacity of 10L/s, a yearly O&M budget of around Rp.425,000,000 is required.

15.3 Precautions (Points which require special attention in implementation Phase) and Countermeasure

The purpose of the sector loan project is achieving MDGs, i,e. increasing number of house connection. Therefore, the households shall be connected to the newly implemented system as soon as possible after the sub-project is completed. Moreover, it is important that the socialization activity is continuously carried out during the planning stage, as well as during the implementation stage.

CHAPTER 16 MONITORING AND EVALUATION INDICATOR

16.1 Quantitative Indicators

(1) Indicators for the Monitoring and Evaluation of the Entire Sector Loan Project

The PMU, Cipta Karya should perform monitor during the project period and Dir BP should also evaluate the monitoring data each year. The quantitative indicators for the sector loan should be proposed as shown in Table 16.1.1. The result shall be disclosed to the organization concerned including the foreign donor. Table 16.1.1 are assumed that 60 sub-projects are implemented with the sector loan.

Table 16.1.1 Proposed Quantitative Indicators for Sector Loan Project Monitoring

Quantitative Indicators	Targets
The number of 24 hours/day operated SPAM IKK systems.	50 out of 60 SPAM IKKs within two years after construction completed by APBN.
Total water consumption (L/s)	500 L/s (around 80% of total water consumption of sub-project)
Total house connection numbers	50,000 out of 60,000 number of house connection
Number of sub-project	60 nos.(100%)
Selection ratio of approved Sub-project	>90%

Source: JICA Study Team 2010

The provincial SatKer/provincial CiptaKarya should take the monitoring data from each responsible organization. Subsequently, the PMUand Dir BP, Cipta Karya should evaluate and analyze the background of successful and unsuccessful cases. The monitoring data will be taken for each stage, namely: planning stage, construction stage and operation stage. The planning stage data will be taken after the sub-project has been selected by the PMU. The construction stage data will be taken after completion of the tender opening and before facilities' handover to operation organization (PDAM) by the provincial SatKer or District. The operation stage data will be taken on the 1st, 2nd and 5th year after completion of the work by the provincial SatKer or provincial Cipta Karya.These data should be evaluated within three months after taking data on each stage by PMU and Dir BP..

(2) Indicators for the Monitoring and Evaluation of Individual Sub-Projects Implemented

The detailed quantitative indicators for sub-project monitoring in Table 16.1.2 are proposed.

Table 16.1.2 Proposed Indicator for Sub-Project Monitoring and Evaluation

Stage	Indicator			Evaluation				
				Responsibility	Description			
					1st year	2nd year	5th year	Target
Planning Stage	Technical	Water Sources	*River/Well/Spring*	*District*		-	-	-
		Actual Demand (connection)	*Nos.(HC)*	*District/PDAM*		-	-	>1000
		Design Review	*Yes / No*	*SatKer*		-	-	-
	Financial	APBN	*Rp.*	*SatKer*		-	-	-
		APBD	*Rp.*	*District*		-	-	-
	Management	Operation Organization	*PDAM/BLU*	*District*		-	-	-
		Land Acquisition	*Yes / No*	*District*		-	-	Y
		Water Right	*Yes / No*	*District*		-	-	Y
Construction Stage	Procurement	Tenderer, Contractor	*company*	*SatKer/District*		-	-	-
		Price (for APBN, APBD)	*Estimated price / Tender price*	*SatKer/District*		-	-	-
		Company Evaluation	*(Period/Quality/ Training/Drawing)*	*SatKer/District*		-	-	
	Construction	Construction Period (for APBN, APBD)	*Plan / Actual*	*SatKer/District*		-	-	-
		Price (for APBN, APBD)	*Construction price*	*SatKer/District*		-	-	-
		Documents	*Drawings/ Operation manual /Commissioning test result*	*SatKer/District*		-	-	-
Operation Stage	Technical	Production	*L/s*	*PDAM*				10 L/s
		Operation hours for WTP	*hour*	*PDAM*				24 h
		Supply hours	*hour*	*PDAM*				24 h
		Connection	*Actual/Plan（HC）*	*PDAM*				>1000
		Claim for water quality	*Nos.*	*PDAM*				0
	Financial	Cost/ Revenue	-	*PDAM*				<1.0
		Tariff Collection rate	*%*	*PDAM*				80%
		Tariff	*Rp./m3*	*PDAM*				-
	Management	Operation staff	*People*	*PDAM*				4
		Trained Staff	*People*	*PDAM*				1
		Documents	*Drawings/ Operation manual /Commissioning test result*	*PDAM*				all

Source：JICA Study Team 2010

16.2 Qualitative Indicator

(1) Monitoring and Evaluation Methods

The PMU and Dir BP, CiptaKarya should monitor and evaluate the sub-project using qualitative indicators, through the interview survey with provincial SatKer/provincial Cipta Karya. Provincial SatKer should take the necessary information from the district and PDAM. The monitoring with qualitative indicator should be carried out at each stgae.

- Planning Stage: Dir BP, CiptaKarya and PMU collect the information and evaluationon of the capacity of provincial SatKer and district at the end of the planning stage.
- Construction Stgae: Dir BP, CiptaKarya collect the information and evaluationon of the capacity of provincial SatKer and district at the end of the construction stage.
- Operation stage:Dir BP, CiptaKarya also collect the inoformation and evaluation of capacity of provincial Cipta Karya and district/PDAM on 1st year, 2nd year and 5th year after hand over the facility to PDAM.

(2) Qualitative Indicators of Stages

Monitoring and evaluation is carried out at three stages.The qualitative indicators of each stgae are shown below. Each indicator should be reviewed and revised after evaluation the capacity of organizations concerned for feedback of next program.

1) Planning stage

- Preparation of proposal
- Selection procedues for sub-project
- Realization of the Guideline
- Results of socialization

2) Construction stage

- Condition of construction and inspection for facility
- Progress of disbursement of APBN and APBD
- Performance of house connection

3) Operation stage

- Monitoring system
- Condition of supply service (water quantity, pressure and quality)
- Benefficiaries' satisfaction

- Issues of tariff and water fee collection
- Skill of operator
- Leakage management

16.3 Financial and Economic Evaluation (FIRR and EIRR)

This section presents the financial and economic evaluation of subprojects under the sector loan. Since the sub-projects have not been identified yet at the time of the study, it should be noted that the evaluation results are limited to a preliminary basis. Moreover, the analysis and evaluation presented below are elaborated for certain types of sub-projects envisaged for the future sector loan relying on a number of assumptions which can be greatly different from the actual sub-projects to be selected.

(1) Financial Evaluation

The financial evaluation aims at evaluating the sub-project's financial viability through calculation of average cost for the operation and the financial internal rate of return (FIRR) through cost-benefit analysis.

Cash flow projection is developed based on the aforementioned assumptions and estimates. FIRR by the sub-project type are calculated as per Table 16.3.1. Compared with the weighted average cost of capital of 3.44% calculated from foreign loan 1.4% per anum (weight: 60%) and local budget cost assumed as the government bond coupon rate of 6.5% per anum with over 10 year maturity (weight: 40%), the results show that the sub-projects under the current tariff level are not considered financially viable except for the type 1A with the least cost.

Table 16.3.1 Results of FIRR Calculation

Item	Sub-project Type			
	Type 1A	Type 1B	Type 2A	Type 2B
Distribution Main Length	1,000m	1,000m	5,000m	5,000m
WTP	Without WTP	With WTP	Without WTP	With WTP
FIRR	5.90%	3.18%	0.81%	-0.92%

Source: JICA Study Team 2010

(2) Economic Evaluation

The economic evaluation aims at measuring the economic benefits of the implementation of sector loan sub-projects to the national economy through cost-benefit analysis calculating economic internal rate of return (EIRR).

Cash flow projection is developed based on the aforementioned assumptions and estimates. EIRR by the sub-project type are calculated as per Table 16.3.2, ranging from 13.78% to 26.51%. Compared with the generally accepted opportunity cost of capital of 10 to 12%, the results indicate that the sub-projects under the

aforementioned assumptions are economically viable.

Table 16.3.2 Results of EIRR Calculation

Item	Sub-project Type			
	Type 1A	Type 1B	Type 2A	Type 2B
Distribution Main Length	1,000m	1,000m	5,000m	5,000m
WTP	Without WTP	With WTP	Without WTP	With WTP
EIRR	26.51%	20.73%	16.24%	13.78%

Source: JICA Study Team 2010

16.4 Precautions (Points which require special attention in considering Project's outcomes) and Countermeasure

(1) Monitoring and Evaluation

Monitoring and evaluation shall be conducted by the PMU, Dir BP, under the Cipta Karya, provincial SatKer/pProvincial Cipta Karya. and Consequently, database based on the evaluation results shall be established at provincial level and central level.

Basic information based on monitoring and evaluation is useful to in selecting and implementing for the sub-projects. Therefore, the PMU is required to collect the database complied by provincial SatKer about the actual conditions of sub-project. and, then, Dir BP then disseminates such database to other provinces and districts to raise for awareness of on the project implementation improvement of the sub-project.

(2) Review of Annual Performance by the Related Organizations

The role of the organizations relating to SPAM IKK is clearly mentioned by central, provincial and district level in the SPAM IKK Guidelines (Decision of Cipta Karya, No. 24-/KPTS/DC/2008). However, the present activity taken by the related organizations is not consistence with the SPAM IKK Guideline. The related organizations should obey the role and responsible mentioned in the Guideline said above.

1) At district level, Dinas PU in association with PDAM should compile performance records of APBD portion of SPAM IKK at the end of fiscal year. Countermeasures for new sub-project should be prepared based on the actual performance records and reported to Provincial SatKer.

2) At provincial level, provincial SatKer should compile performance records of APBN portion of SPAM IKK at the end of fiscal year. Countermeasures for new sub-project including APBD portion in the next year should be prepared based on the actual performance records and reported to PMU or central SatKer.

CHAPTER 17 ENVIRONMNETAL AND SOCIAL CONSIDERATION AND IMPACTS ON THE SECTOR LOAN PROJECTS

17.1 Preliminary Impact Evaluation of Proposed Sector Loan Projects (tentative)

In the projects of the SPAM IKK proposed in this study, the individual sub-projects which will be implemented in the project are still not identified. Here, this chapter tentatively presents the result of preliminary impact evaluation based on the currently available information based on the field survey of on-site review. In general, the large impacts in natural, social and public nuisance of the projects are not anticipated because of the scale of works. Here, the possible impacts are tentatively evaluated for enabling further confirmation on the environmental and social consideration to be required.

(1) Social Environment

1) Involuntary Resettlement and Land Acquisition

The involuntary resettlement is basically not expected and it may be avoidable at the planning. Generally the sites are selected by the local government consulting to community in the available land. While involuntary resettlement are not likely occurred, land acquisition is required almost all sub-projects. The acquisition process will be conducted by district government and PDAMs. Adequate compensation process should be confirmed at the planning stage.

2) Historical and Cultural heritage

Impact to the Historical and Cultural heritage is required to be confirmed at the application after determination of the site consulting those administrative governmental authorities. Same to the case of above involuntary resettlement, this may be avoidable prior to the project. At the planning stage of the each sub-project this might be confirmed.

(2) Natural Environment

1) Hydrogeological situation and hydrological situation

Hydrogeological situation and hydrological situation should be confirmed at the planning stage if new deep well or major water intakes are involved in the sub-project depending on the location and capacity of the water source. Although the capacities of the water treatment plants in the SPAM IKK are limited, the amount of the water intake should be considered depending on the capacity of the water resource.

2) Flora & Fauna and Protected Areas

Impact to the Flora and Fauna and protected area should be confirmed at the planning stage. The location of sub-project is not identified yet. At the application of the sub-project, impact to the important species and protected area should be identified consulting to the administrative authority in the province (provinsi) and district (kabupaten) in order to that the impact will be minimized.

17.2 Recommended Activities for The Environmental Confirmation in Proposed Sector Loan Project

1) Confirmation of Environmental process of sub-project (ANDAL, UKL& UPL requirement)

Some sub-projects among whole SPAM IKK in the country may require an environmental social consideration studies under the Indonesian law. Although the scales of the projects in SPAM IKK are comparatively smaller than the water supply projects which prescribed under the AMDAL regulation, the disturbance/impacts to the sensitive areas are still concerned. Also, regulation of Ministry of Public Works (MPW) provides the UKL/UPL requirement for the activities at infrastructure development. At the application, the provincial SatKer should encourage proponent to consider those sensitive areas for the site selection to be minimized.

2) Other required permission related to Environment

Besides the Environmental evaluation through the scheme under Ministry of Environment, the other permissions may require associated with the implementation of sub-project such as water use permit and lease permit for forest area use when those are involved in the sub-project.

3) Confirmation of Implementation of legally required process on the project

Related to the above mentioned confirmation on the requirement, the actual implementation on the process should be confirmed at the planning stage before the construction through the verifying official documents.

4) Construction operation following legal standard/UKL & UPL

At the construction, all construction works by contractors should follow the legal standards for the construction provided by MPW, provincial and district government, also stated in the UKL/UPL.

5) Operation following the legal standard/UKL & UPL

As the same manner to the above mentioned in the construction, operation works might be required to meet legal standard in the area and also statement in the UKL/UPL at the operation.

CHAPTER 18 TECHNICAL ASSISTANCE

18.1 Introduction of Technical Assistance

(1) General Description of Project Objectives and Outputs

Several issues were found in the planning, construction and operation stages of the SPAM IKK program. Hence, improvement of implementation capacity is required for the concerned organizations (MPW, provincial SatKer, district, PDAM, etc.). The technical assistance for capacity development is required for smooth implementation aside from the sector loan project. The technical assistance should be implemented through consulting services and with separate funding from foreign donor(s) during the consideration and preparation of the sector loan.

(2) Objectives

Capacity development in project planning, construction, and monitoring shall be carried out thereby ensuring smooth implementation of the SPAM IKK program and increase in piped water coverage among beneficiaries.

18.2 Major Scheme of Technical Assistance

(1) Overall Goal and Project Purpose

1) Overall goal

The water supply services by SPAM IKK become high coverage and good quality in Central Java Province, East Java Province and South Sulawesi Province.

2) Project purpose

The capacity of the Dir BP and Dir PAM of Cipta Karya and provincial SatKer staff in Central Java Province, East Java Province and South Sulawesi Province for the planning, construction and evaluation of the SPAM IKK project is improved.

(2) Outputs

- Selection procedure and criteria of SPAM IKK is improved.
- Capacity of provincial SatKer staff in project planning, design and screening of SPAM IKK is strengthened.
- Capacity in training of operation and maintenance function of provincial SatKer's is strengthened.
- Management capacity of Dir BP, Cipta Karya and provincial SatKer for SPAM IKK monitoring and evaluation is strengthened.

18.3 Outputs and Indicator for Technical Assistance

(1) Output 1

Selection procedure and criteria of SPAM IKK is improved.

1) Activities (concerned organizations: Dir PAM, PMU and provincial SatKer)

On-the-job training (OJT) is carried out to clarify the criteria for each proposal according to the existing SPAM IKK guideline in order to identify the project by a third party.

Preparation of the selection criteria for project proposals to local government is carried out in order to roughly understand the evaluation of project proposal by themselves before submitting.

2) Indicator

The selection criteria for project proposals of SPAM IKK have been developed, and the adoption rate of proposals has been 50 % at the present. It then becomes 75% at the end of first year and 90% at the end of the second year.

(2) Output 2

Capacity of provincial SatKer staff in project planning, design and screening of SPAM IKK is strengthened.

1) Activities (concerned organizations: provincial SatKer)

OJT is carried out on review of the guideline of SPAM IKK, and preparation of the administrative instruction manual for local government

2) Indicator

The comments on the guideline and administrative instruction and manual is prepared in the first year and the case-based knowledge report is then prepared in the second year.

(3) Output 3

Capacity in training of operation and maintenance function of provincial SatKer's is strengthened.

1) Activities （concerned organizations: provincial SatKer, District, PDAM）

The workshop/ seminars are carried out on the rapid sand filter process, plan and design of water purification system for concerned organizations.

OJT is carried out to technical aspect for PDAM staff to properly operate SPAM IKK facilities.

2) Indicator

Water Treatment Plant (WTP) is operated appropriately. The water quality complaints from customers are reduced.

(4) Output 4

Management capacity of Dir BP, Cipta Karya and provincial SatKer for SPAM IKK monitoring and evaluation is strengthened.

1) Activities (concerned organizations: Dir BP, PMU)

The workshop/ seminars are carried out on the monitoring and evaluation for SPAM IKK for concerned organizations.

OJT is carried out on project monitoring and evaluation of SPAM IKK, and preparation of the instruction manual of project monitoring and evaluation.

2) Indicator

The preparation of project monitoring and evaluation report is carried out in the first year and feedback system is also applicable in the second year.

CHAPTER 19 RECOMMENDATIONS

Steps toward the Sector Loan Project

1) In order to increase the access to safe water of semi-urban population and thereby achieve MDGs targets, the existing SPAM IKK program is deemed as one of the crucial national programs implemented by MPW. To cope with its fiscal and technical constraints, financial assistance through the sector loan project is considered necessary.

2) However, it is recommended that MPW take necessary actions to solve the issues described in this report before considering the sector loan project for SPAM IKK to ease the foreseen risks against efficient implementation of the future financial assistance.

3) After completion of the Study, MPW should prepare the capacity development plan to improve the current SPAM IKK program as proposed in this report. Technical assistance from donors should also be considered to support such efforts by MPW for its capacity development.

Capacity Development for SPAM IKK Program

4) Based on the existing framework and guidelines for the current SPAM IKK program, it is required to make (i) clearer standards for the site selection criteria and (ii) close coordination among the concerned agencies at the central and local levels. The latter is highly important to solve imbalanced investment between APBN and APBD portions and improve project monitoring.

5) The Cipta Karya, PMU, the selected provincial SatKer, and concerned districts/PDAM are the main subject agencies of the capacity development. As described in Chapters 1 and 6, Main Report Part 2 in detail, the emphasis should be put in the establishment of a firm process management and monitoring system to reduce uncertainty and unpredictability in the project selection and execution.

6) It is recommended that MPW enhance its human resources to implement the proposed capacity development especially for PMU.

Improvement of SPAM IKK Program

7) During the planning stage, the SPAM IKK site should be selected in view of operation efficiency. Especially, a needs assessment among beneficiaries is necessary to grasp the actual demand and should be one of the prerequisites for

the SPAM IKK application.

- MPW should establish clear selection criteria with definite indicators based on the existing SPAM IKK guidelines to increase predictability of site selection process for local governments to ensure their smooth implementation of APBD investment.
- APBN project scope should be amplified partially to cover investment in distribution network to reduce financial burden of local governments.
- Responsibility of provincial SatKers in project screening should be increased at local level. Close monitoring and strict appraisal by SatKers and MPW is required in project planning and construction especially on distribution network development by local governments.

8) Construction deficiencies are less observed by the on-site review than insufficient level of planning works and operation except several problems of construction quality in projects with FRP tanks.
   - It is recommended to reinforce provincial SatKer's function in construction supervision and inspection.

9) During the operation stage, the biggest issues are small number of house connections and low treated water quality.
   - High connection fee is one of the obstacles for beneficiaries willing to have tap water connections. Connection fee plan should be improved by PDAMs through introducing monthly payments, discount campaign.
   - Most household without water connections possess alternative water sources such as shallow wells attached to their residence. To ensure efficient investment based on the real demand for water connections, it is also required to do strict project screening based on needs survey and socialization on planning stage as a prerequisite of SPAM IKK site selection.
   - Lack of technical knowledge among PDAM staff causes inappropriate operation of the water works. No design plans or operating manuals are transferred in many SPAM IKK projects. Most projects do not follow five-day commissioning test requirement prescribed in the guidelines. Provincial SatKers should ensure technical transfer from contractor to PDAM in construction stage.
   - Training programs for PDAM staff should also be reinforced by utilizing

the MPW training centers and PERPAMSI trainings to increase skilled operators.

10) Strengthening of PDAM in the financial and managerial aspects is another factor for a sustainable SPAM IKK operation. It is recommended for district governments to consider more flexible tariff setting and connection fee plan to meet the financial burden borne by PDAMs that operate SPAM IKK. In general, the technical level of PDAM staff has to be enhanced also through other instruments such as the existing training system and other technical support.

- During the construction stage, proper inspection by the provincial SatKer and technical transfer from contractors to PDAM should be more emphasized for appropriate operation and service quality of SPAM IKK.