



# PDAM TIRTA KAHURIPAN KABUPATEN BOGOR: FINANCIAL FEASIBILITY BOND OFFERING

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# PDAM TIRTA KAHURIPAN KABUPATEN BOGOR: FINANCIAL FEASIBILITY BOND OFFERING

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# EXECUTIVE SUMMARY

## INTRODUCTION

This financial feasibility assessment of the medium-term investment program of PDAM Kabupaten Bogor has been prepared by the Environmental Services Program (ESP), with funding by the United States Agency for International Development (USAID). It serves as a basis for mobilizing financing for the investment under a guarantee facility to be provided by the Development Credit Authority (DCA).

The reference document for the report is the Sub-Project Appraisal Report (SPAR) for Kabupaten Bogor, prepared under the Water Supply and Sanitation Project (WSSP) funded through ADB TA 441 I-INO. The SPAR encompasses three major investment packages (one each for West Bogor, Central Bogor, and East Bogor). The coverage of this assessment is, however, limited to the packages for Central Bogor and East Bogor as these are the ones to be provided with a DCA guarantee.

A preliminary financial feasibility assessment was submitted in February 2006. This became the basis for discussions with potential domestic financiers, as a result of which a corporate bond issue was identified as the most feasible option for PDAM instead of a domestic commercial bank loan, as previously contemplated. This change is due to the longer term of the bond issue and the comfort of a fixed interest rate. PT Danareksa, a state-owned investment house, would act as underwriter.

It is worth noting that the concept of financing through a partially securitized, domestically mobilized bond issue has met with considerable enthusiasm by concerned central government ministries, especially the Ministry of Finance where the Minister regards a successful outcome at PDAM Kabupaten Bogor as a precursor toward resolving the problem of long-term financing for the more robust PDAMs.

## INVESTMENT PROGRAM OVERVIEW - SOURCES AND APPLICATIONS OF FUNDS

*Attachment A* provides an indicative schedule for implementing the investment program. The bulk of the projected expenditure will be executed over the period 2007-09 with small components of the aggregate program, for example, applying to a household connection program extending well beyond the aforementioned period.

### Applications of Funds (In Rp Million Nominal)

Description	Estimated Costs by Category, 2007-13	% of Total
Base Engineering Costs plus Interest During Construction	130,273.4	74.0%
Financial Costs	45,731.3	26.0%
Total Applications for proposed program (Except Ciburial Main programmed for FY 2006/07)	176,004.7	100.0%
Replacement of Ciburial Main Transmission Line	9,200.0	----

Total application of funds can be segregated into three areas: (a) estimated base engineering and construction costs plus interest during construction (Rp 130,273.4 million); (b) financial costs (Rp 45,731.34 million) to include liquidity standby reserves and other normal expenditures; and (c) replacement of the Ciburial transmission line, currently the source of considerable water loss (Rp. 9,200 million).

Of the total base engineering and construction cost, Rp 79,934.3 million will address the expansion program in East Bogor and Rp 46,746.0 million in Central Bogor. The remainder, specifically those pertaining to the generation of new connections beyond 2009, will be derived from the PDAM's internal cash generation. Financing costs – which consist of reserve funds, arrangers' fee, bond issuance costs, credit rating fee, and enhancers' fee – as mentioned, amount to an additional Rp 45,731.3 million. Trustee costs are not yet included in the projections but may not have a significant impact on overall outcome.

In East Bogor, two production units with a combined capacity of 150 l/sec will be installed. An extension of the distribution system will yield 11,750 new connections. Another production facility, also with a capacity of 150 l/sec, will be built in Central Bogor. The extension of the transmission and distribution network will generate 9,000 new connections. These new connection forecasts in both areas are based on the PDAM waiting list which amounts to 35,772. In addition, the PDAM plans to install almost 33,000 new connections through its regular connection program.

Replacement of the 10 km Ciburial main is expected to be completed in 2007, financed through an equity contribution by the PDAM. This component is already inserted in the PDAM medium-term investment plan, the cost of which is therefore excluded from the borrowing requirements further below.

Using PDAM's customer classification, 14.5% (3,000) of the 20,750 new connections in the two targeted service areas will fall under the low-income household category I. See *Attachment B* for a comprehensive breakdown of the income profile of households expected to be served by the investment program.

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<sup>1</sup> The ADB SPAR uses official data to show that 12.0% of the 2002 Kabupaten Bogor population fall below the national poverty line, but only 4.5% in the service area. It is assumed that the continued economic recovery in Indonesia will have reduced these percentages significantly. Nevertheless, although poverty reduction is not a major issue within the overall context of this project, the investment will benefit a substantial percentage of the service area poor.

## SOURCES OF FUNDS (IN RP MILLION NOMINAL)

Except for land acquisition and new connections, the investment program will be implemented as a turnkey project, under a fixed price, fixed term performance contract with a first-class contractor. Implementation will be financed by the contractor, with take-out in 2009 through a bond offering to be underwritten by Danareksa, expected to be mobilized in the second semester of 2009, at prevailing market interest rate assumed in the attached projections to be 14% per annum.

### Sources of Funds (In Rp Million Nominal)

Description of Bond Offering Structure	Estimated Amount, by Category of Funding	% of Total
Facility A Credit Enhanced Bond Offering Not to exceed:	140,854.2	80.0%
Facility B Non-Credit Enhanced Or as otherwise agreed	35,150.5	20.0%
Total Bond Offering September 2009	176,004.7	100.0%
Equity Increase By Owner – for Ciburial Main	9,200.0	----

Two Facilities will need to be underwritten. It is proposed that Facility A, in an amount not to exceed Rp 140,854.2 million, will be supported by a DCA guarantee for up to 35% of principle (Rp 49,299.0 million); whereas Facility B will not be credit enhanced. Apart from the credit enhancement, both Facilities A and B have similar security arrangements. Nonetheless, each Facility will have a different rating and, presumably, a different yield. Facility A amounts to 80.0% of the total offering; while Facility B is equal to 20.0%, based on current estimates of turnkey cost – which will not be pinned down precisely until the construction contractor is selected. At this time, a premium has been added to estimated base engineering costs to cover the risk element to the contractor for the type of contract proposed.

Facility A will have two tranches with the following respective maturities: a 5-year bullet and a 10-year bullet maturity. The 10-year bullet covers all engineering and construction costs, amounting to Rp 130,273.4 million; whereas the 5-year bullet will cover the balance, amounting to Rp 10,580.7 million of finance-related costs, for a total exposure not to exceed Rp 140,854.2 million.

Facility B has only a 5-year bullet covering the liquidity standby reserve up to a total of Rp 35,150.5 million.

<b>Facility A</b>	<b>140,854.2</b>	<b>80.0%</b>
10-year bullet	130,273.4	
5-year bullet	10,580.7	
<b>Facility B</b>	<b>35,150.5</b>	<b>20.0%</b>
5-year bullet	35,150.5	
<b>Total</b>	<b>176,004.7</b>	<b>100.0%</b>

Both Facility A and B, however, have sinking fund requirements, to be agreed with the underwriter. A much more detailed description of the proposed transaction structure including its security arrangements is available in *Attachment C, The Indicative Term Sheet* (already in process of discussion with Borrower); whilst an outline of all required documents is identified in *Attachment D, Legal Agreements Required for Closing*.

## HISTORICAL PERFORMANCE (2001-2005) AND BUDGET FOR 2006

The historical track record of the PDAM and its budget for 2006 were reviewed to establish the basis for projecting its future performance.

### Strengths

The PDAM's principal strengths can be summarized as follows:

- It is one of the few PDAMs to have consistently maintained profitable operations - the main reason why it has been selected, through a stringent screening process, as the priority target for ESP's alternative investment financing program with DCA guarantee.
- PDAM has been able to charge a full-cost recovery tariff throughout 2001-2005, and will do so again in 2006. (9-12)
- Connections have grown annually by 7% since 2001 to more than 96,000 in 2005. Nevertheless, domestic service ratios are only 14% of kabupaten population and 25.0% of service area population. Thus, a huge potential demand remains to be met, as exemplified by a customer waiting list of almost 36,000 households. (7-8)
- PDAM has always met its debt service liabilities punctually. Its 2005 debt service coverage ratio was 7.6, while the proportion of debt to total capitalization was only 13%. (14-15)
- Improvements will continue to accrue in 2006: 2,000 new connections will be installed; NRW will decline significantly to 32.0% from 36.9% in 2005, due to a substantial meter replacement program; and net profit will increase by 34.8% to Rp 4.7 billion from Rp 3.5 billion in 2005 as a consequence of the substantial tariff increase during the last quarter of the previous year. (18-20)

### Points to be Noted

The following potential risks are catered for in the investment program or may otherwise require mitigation measures as described below: (9-12)

- In October 2005, the national government raised fuel prices by over 100%. In November 2005 the PDAM implemented a new tariff with an average 74% increase. Further reductions in fuel subsidies will require prompt compensating tariff intervention instead of adhering to the practice of adjusting the tariff every three years. Government regulation PPI 6/2005 provides for this.
- PDAM's production capacity has faced constraints in recent years. Up to 2005, some areas received water for only 12-18 hours per day, until PDAM introduced remedial measures. The 300 l/sec additional capacity included in the investment program and NRW reduction program will further alleviate the situation and sustain unit demand. (3-6)

See  
Main  
Text  
Pp  
(8-9)

- NRW was 42% in 2001. Since 2003 onward, the PDAM has implemented a sustained program of water-loss reduction measures, which progressively reduced NRW (physical and non-physical) to just below 37% by the end of 2005. Substantial reduction requires replacement of the 80 year-old 10 km transmission main from the Ciburial production facility. These works have been included in the PDAM's medium-term investment program as an equity contribution, to be undertaken in 2006 and 2007. The PDAM expects to reduce NRW (including production losses to 27.5% by 2014). (3-6)

## LEADING RESULTS AND PERFORMANCE INDICATORS FROM PROJECTIONS 2007-25

The assumptions used in the projections are summarized in *Attachment E, Assumption Sheet*.

- The proposed investment programs, individually and consolidated, are feasible. Using the weighted average costs of capital (WACCs) of the bond coupon of 14% and return on equity of 16% as hurdle rates, they yield positive NPVs and FIRRs of: (32/34)

	<b>WACC</b>	<b>NPV2</b>	<b>FIRR</b>
East Bogor	14.27%	28,373	8.67%
Central Bogor	14.30%	27,631	20.32%
Consolidated	14.28%	55,170	19.36%

Moreover, they all survive the adverse scenarios used in the sensitivity analysis, to wit: 10% increase in investment and incremental O&M costs, 10% decrease in incremental revenue, a combination of a 10% increase in costs and 10% decrease in revenue, and one-year delay in the realization of incremental revenue.

- From 2007 to 2019, operating revenue per m<sup>3</sup> of water sold will range between 101% and 153% of full cost based on assumed adjustments to average tariff of 47.5% nominal in 2008, and every two years thereafter in accordance with a compound of annual inflation plus a 4% per annum real increase. (32-33)
- In spite of the tariff increases, water tariff will remain affordable to PDAM customers. The average monthly water bill at constant 2005 prices will range between 2.5% and 3.2% of average household income (compared to the generally accepted ceiling of 4.0%), whilst permitting a demand well above basic human needs levels. (32-33)
- Production constraints ease as the additional 300 l/sec capacity comes on stream. (28-29)
- The PDAM will consistently generate positive and increasing yearly net income. Cash flows will allow a comfortable DSCR (lowest levels at 3.3 in 2014 at the maturity of the five-year bullet and at 3.2 in 2019 at the maturity of the ten-year bullet). This leaves ample room for further investment, of existing systems and further expansion. (34-37)

<sup>2</sup> In Rp million nominal

- The “without, Depok” scenario, should this service area be de-merged from Kabupaten Bogor, will have no influence on the financial feasibility indicators (WACC, NPV, and FIRR), since the incremental investment is entirely within the kabupaten, but will have a slightly negative effect on DSCR. The minimum DSCRs will be 2.4 in 2014 and 2.3 in 2019 at maturities respectively of the five-year bullet and the ten-year bullet. These DSCRs, however, are still deemed as robust levels. This favorable result is due to: a) an assumed purchase price equal to the difference between assets and liabilities and amounting to approximately Rp 100 billion by Depok to PDAM in final settlement of the transfer of assets and liabilities, b) the need for PDAM to supply more than 160 l/sec of treated bulk water to Depok, and c) the structure of the bond with balloon instead of annual principal payments. 38-44

## OTHER BENEFITS OF THE INVESTMENT PROGRAM

The investment program will provide clean piped water to 136,000 presently unserved persons (including 15,000 in low-income households) and better quality of service to 450,000 existing customers. It will facilitate social and economic growth by:

1. Providing basic urban infrastructure services to support sustainable social and commercial services
2. Rehabilitation of existing water supply facilities
3. Ensuring efficient utilization of urban infrastructure
4. Reducing water-borne and vector diseases and channeling improved health into productive activities, thus reducing urban poverty
5. Enhanced environment conditions and quality of life in low-income housing areas.

## LESSONS LEARNED

The preparation of this feasibility has brought about the following insights:

1. There is a real need especially among healthier PDAMs for access to financial resources priced at market rates that match the timing of their requirements.
2. There is, however, a corresponding need to develop awareness among the PDAMs on the availability of such alternative sources of funding.
3. Stakeholders, especially those that could influence ‘go’ or ‘no go’ decision, such as the Bupati and the DPRD should be made active participants at an early stage, before feasibility studies are initiated.
4. A clear, unequivocal commitment toward the achievement of time-bound operational improvements should be made a pre-requisite for the preparation process to proceed further as a condition to approach the bond markets. Experience in other countries has shown that improvements are best engendered by strict loan conditionality and, if necessary, enforcement.
5. Other forms of technical assistance to the PDAM should then be synchronized with the funds mobilization process.



## ATTACHMENT A – TIMELINE FOR PDAM KABUPATEN BOGOR

Estimated Timeline of PDAM Kab. Bogor Bond Issuance (as of Sept 7, 2006)

	Follow-up Activities	Resp.	2006					2007				2008				2009			
			Aug	Sept	Oct	Nov	Dec	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
1.	<b>Detail FS</b> to include loan structure, investment schedule, project financing (Completed)	ESP	—————																
2.	<b>Getting commitment from PDAM and LG</b> of Kab Bogor (DPRD approval, mandate letter of PDAM to Danareksa, Letter of Comfort) Change	ESP	—————																
3.	<b>Credit rating</b> agency appraisal			X															
4.	<b>Legal due diligence</b> (transaction structure, trustee, lock-box A/R, reserve fund of water utility and local government)	ESP		X															
5.	<b>Legal agreement of DCA guarantee:</b> i) USAID- PDAM Kab. Bogor, ii) USAID- Trustee/Bondholders	USAID, PDAM, Danareksa, ESP		—	.....	.....	.....												
6.	Completing <b>DCA Action Package</b>	USAID, ESP	—————																
7.	<b>Risk assessment &amp; calculation of subsidy cost</b>	USAID/ODC			X														

**PDAM TIRTA KAHURIPAN KABUPATEN BOGOR:  
FINANCIAL FEASIBILITY BOND OFFERING**

**Estimated Timeline of PDAM Kab. Bogor Bond Issuance (as of Sept 7, 2006)**

	Follow-up Activities	Resp.	2006					2007				2008				2009			
			Aug	Sept	Oct	Nov	Dec	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
8.	<b>USAID approval of conditional DCA</b>																		
	CRB review Action Memorandum and recommends approval	USAID				X													
	CFO approves Subsidy Cost	USAID				X													
	Mission prepares Congressional Notification	USAID					X												
	Transfer of subsidy cost to DCA account	USAID					X												
9.	<b>Danareksa conditional underwriting</b>	Danareksa,ESP					X												
10.	<b>Bidding/procurement process</b>	ESP						—											
11.	<b>Construction phase</b>	ESP							—	—	—	—	—	—					
12.	<b>DCA to issue the guarantee</b>	USAID																X	
13.	<b>Danareksa to issue underwriting</b>	Danareksa, ESP																X	
14.	<b>Credit rating agency to issue credit rating of the bond</b>	Credit Rating Agency, ESP																X	
15.	<b>Bond issuance, contractor is repaid</b>	Danareksa, ESP																	X X

## ATTACHMENT B – CLASSIFICATION OF POTENTIAL AND TARGET CUSTOMERS

Location	Potential Customer	Target Customer	Customer Category	Tariff		
				0-10 m3	11-20 m3	>20 m3
<b>Central Bogor</b>						
Bambu Kuning	400	400	IIIA	1,600	2,990	3,410
Puri Citayam	700	700	IIIA	1,600	2,990	3,410
Taman Raya Bojong Gede	600	600	IIIA	1,600	2,990	3,410
Perdagangan Bojong Gede	200	200	IIIA	1,600	2,990	3,410
Griya Fortuna	150	150	IIIA	1,600	2,990	3,410
Pabuaran Asri Citayam	300	300	IIIA	1,600	2,990	3,410
Pasar Citayam and surroundings	150	150	IIIA	1,600	2,990	3,410
Along Bojong Gede pipeline	250		IIIA	1,600	2,990	3,410
Citayam Permai	400	400	IIIA	1,600	2,990	3,410
Bumi Sukahati	50	50	IIIB	2,030	3,270	3,840
Puri Alam Kencana	3,000		IIIB	2,030	3,270	3,840
Bumi Sentosa	700	700	IIIB	2,030	3,270	3,840
Persada Depok	350	350	IIIB	2,030	3,270	3,840
Bogor Asri Cibinong	622	500	IIIB	2,030	3,270	3,840
Visar Indah Pratama	1,200	800	IIIB	2,030	3,270	3,840
Villa Pabuaran Indah	1,450	900	IIIB	2,030	3,270	3,840
Puri Nirwana Golden Park	375	300	IVA	2,560	3,550	4,120
Bukit Sentul	2,500	2,500	IVA	2,560	3,550	4,120
<b>Sub-Total C. Bogor</b>	<b>13,397</b>	<b>9,000</b>				
<b>East Bogor</b>						
<b>Gunung Putri</b>						
Villa Nusa Indah I	1,204	530	IIIB	2,030	3,270	3,840
Villa Mahkota	1,832	1,367	IIIB	2,030	3,270	3,840
Villa Nusa Indah II	2,125	621	IVA	2,560	3,550	4,120
Villa Nusa Indah III	1,530	513	IVA	2,560	3,550	4,120
Villa Nusa Indah V	1,700	1,250	IVA	2,560	3,550	4,120
Bumi Mutiara	755	114	IVA	2,560	3,550	4,120
Kota Wisata	8,806	3,582	IVA	2,560	3,550	4,120
Legenda Wisata	1,000	1,000	IVA	2,560	3,550	4,120
<b>Cileungsi</b>						
Cileungsi Indah	100	100	IIIA	1,600	2,990	3,410
Kampung Tengah	100	100	IIIA	1,600	2,990	3,410
Kampung Kaum	100	100	IIIA	1,600	2,990	3,410
Kampung Pasar	100	100	IIIA	1,600	2,990	3,410
Citra Indah	1,500	1,000	IIIB	2,030	3,270	3,840
Cileungsi Hijau	400	400	IIIB	2,030	3,270	3,840
Griya Kenari Mas	100	100	IIIB	2,030	3,270	3,840
Griya Alam Sentosa	200	200	IIIB	2,030	3,270	3,840
Pondok Damai	500	350	IIIB	2,030	3,270	3,840
Duta Mekar Sari	200	200	IIIB	2,030	3,270	3,840
Limus Pratama	62	62	IIIB	2,030	3,270	3,840
Mall Cileungsi	61	61	IVD	6,260	6,260	6,260
<b>Sub-Total E. Bogor</b>	<b>22,375</b>	<b>11,750</b>				
<b>Total</b>	<b>35,772</b>	<b>20,750</b>				

## SUMMARY

	<b>Potential Customer</b>	<b>%of Potential</b>	<b>Target Customer</b>	<b>%of Target</b>
IIIA - Poor Households	3,550	9.9%	3,300	15.9%
IIIB - Middle-Income Households	13,370	37.4%	7,509	36.2%
IVA - High-Income Households	18,791	52.5%	9,880	47.6%
IVD - Large Commercial Establishment	61	0.2%	61	0.3%
<b>Total</b>	<b>35,772</b>		<b>20,750</b>	

# ATTACHMENT C – INDICATIVE TERM SHEET PDAM KABUPATEN BOGOR BOND ISSUE

For internal discussion only With Borrower a/o September 2208, 2006

<b>SUMMARY</b>	
<b>Proposed transaction</b>	<p>Take-out of construction financing and supporting costs through a bond issue (the “Bonds”) on the Surabaya Stock Exchange during the third quarter of 2009, the aggregate proceeds of which will be used to face value of the issue expected to consist of:</p> <p>(a) IDR 106,092.7 million, or 60.3% of the bond principal - RTo replace construction finance (Loan Principal) and Interest) organized by a construction contractor (the “Contractor”) pursuant to a fixed-price, fixed-schedule construction performance contract (the “Turnkey”) to undertake the implementation of approved water works (the “Works”)</p> <p>(b) IDR 24,180.7 million or 13.7% of the bond principal - Cover interest during construction on the value of the aforementioned construction performance contract</p> <p>(c) IDR 2,541.9 million, or 1.4% of the bond principal - Provide other working capital at commissioning of the Works needed to implement household connection program as to generate revenues from sale of water needed to repay the Bonds</p> <p>(d) IDR 96.0 million, or 0.1% of the bond principal - Cover interest during construction of working capital for to implementing the household connection program</p> <p>(e) IDR 2,658.2 million, or 1.5% of the bond principal - Pay for underwriter’s fees</p> <p>(f) IDR 2,977.2 million, or 1.7% of the bond principal – Defray the cost of bond issuance</p> <p>(g) IDR 552.0 million, or 0.3% of the bond principal – Cover costs of credit rating</p> <p>(h) IDR 1,755.3, or 1.0% of the bond principal – Pay for enhancer’s fee</p> <p>(i) IDR 35,150.5 million, or 20.0% - Establish liquidity standby reserves amounting to 20% of the Turnkey cost</p>
<p><b>Aggregate Face Value of Issue Consisting of:</b></p> <ul style="list-style-type: none"> <li>• <b>Construction take out</b></li> <li>• <b>Supporting costs</b></li> </ul>	<p>IDR 176,004.7 million, or 100%</p> <ul style="list-style-type: none"> <li>• IDR 130,273.4 million (74.0%) a+b</li> <li>• IDR 45,731.3 million (26.0%) c+d+e+f+g+h+id</li> </ul>
<p><b>Key participants:</b></p> <ul style="list-style-type: none"> <li>• <b>Borrower</b></li> <li>• <b>Owner</b></li> <li>• <b>Contractor</b></li> </ul>	<ul style="list-style-type: none"> <li>• PDAM Kabupaten Bogor</li> <li>• Kabupaten Bogor</li> <li>• Undesignated as yet, top quality Contractor to be selected through a competitive bidding, with procedures based on modified World Bank Guidelines to be agreed by Underwriter, Enhancer and Borrower</li> </ul>

**PDAM TIRTA KAHURIPAN KABUPATEN BOGOR:  
FINANCIAL FEASIBILITY BOND OFFERING**

<ul style="list-style-type: none"> <li>• <b>Underwriter</b></li> <li>• <b>Credit Enhancement</b></li> </ul>	<ul style="list-style-type: none"> <li>• PT. Danareksa Sekuritas, with conditional underwriting to be issued prior to mobilization of construction finance</li> <li>• US Treasury (DCA) guarantee instrument, covering First Loss Position up to 100% of all debt service due to eligible bondholders' up to an aggregate amount of 35% of face value of Facility A, or approximately IDR 49,299.0 million of unreimbursed balances, to be issued conditionally prior to the mobilization of construction finance</li> </ul>
<p><b>Works</b></p>	<p>The Works consist of an expansion of the piped water supply systems in East and Central Bogor, for:</p> <p><u>East Bogor</u></p> <ul style="list-style-type: none"> <li>• Construction of a two new production units, including intake facilities and treatment plant, with a combined capacity of 150 l/sec</li> <li>• Extension of distribution network to permit installation of 11,750 connections</li> </ul> <p><u>Central Bogor</u></p> <ul style="list-style-type: none"> <li>• Construction of a new production unit, including intake facilities and treatment plant, with a capacity of 150 l/sec</li> <li>• Extension of distribution network to permit installation of 9,000 new connections</li> </ul>
<p><b>Construction term</b></p>	<p>30 months: 1 March 2007 – 30 September 2009 to include detailed engineering, subject however to schedule accepted/proposed by Contractor and agreed by Underwriter and Enhancer selected Contractor</p>
<p><b>Approximate timing of underwriting</b></p> <ul style="list-style-type: none"> <li>• <b>Conditional</b></li> <li>• <b>Formal</b></li> </ul>	<ul style="list-style-type: none"> <li>• Approximately end 1<sup>st</sup> Quarter 2007</li> <li>• Approximately end 3<sup>rd</sup> Quarter 2009, unless agreed otherwise by Borrower and Underwriter</li> </ul>
<p><b>GENERAL FINANCING TERMS</b></p>	
<ul style="list-style-type: none"> <li>• <b>Take-out financing</b></li> <li>• <b>Facility A: Credit Enhanced</b></li> <li>• <b>Credit Enhancement for Facility A</b></li> <li>• <b>Facility B: Not Credit Enhanced and Subordinated to Facility A</b></li> </ul>	<ul style="list-style-type: none"> <li>• 10-years from issuance date, expected September 2009</li> <li>• Up to, but not to exceed, IDR 140,854.2 million, 35% credit enhanced, to be drawn on Disbursement</li> <li>• First Loss Position applied to 100% of debt service – overall draws not to exceed 35% of IDR 140,854.2 million, or IDR 49,299.0 million of balances that remain non-reimbursed</li> <li>• Anticipated IDR 35,150.5 million, but under no circumstances to exceed [IDR], except as otherwise might be agreed by Underwriter, to be drawn on Disbursement</li> </ul>
<p><b>Repayment, Facility A and B</b></p>	<p>Balloon maturities at 5 and 10 years from take-down with, respectively, IDR 45,731.3 million and IDR 130,273.4 million of face value falling due on each of such anniversaries</p>
<ul style="list-style-type: none"> <li>• <b>Interest rate for Facility A and B</b></li> </ul>	<ul style="list-style-type: none"> <li>• 14% estimated average for Facility A and B - to be set based on prevailing market at Disbursement. Underwriter and Borrower to agree on conditions under which Facilities will be drawn prior to commissioning, if prevailing market conditions and trends dictate</li> </ul>

**PDAM TIRTA KAHURIPAN KABUPATEN BOGOR:  
FINANCIAL FEASIBILITY BOND OFFERING**

<ul style="list-style-type: none"> <li>• <b>Construction</b></li> <li>• <b>Operations</b></li> <li>• <b>Enhancer Fee Facility B</b></li> </ul>	<ul style="list-style-type: none"> <li>• 8% rollup, 6% coupon payable semi-annually during construction</li> <li>• 14% average on unpaid balances, subject to prevailing market at Disbursement</li> <li>• Consisting of: (a) 1% Facility Fee, calculated on Face Value of Facility A; plus (b) a fee consisting of the present value of 0.75% of those balances in Facility A projected to be outstanding at each annual anniversary of Disbursement, over the life of the facility – with both fees payable at Disbursement. User’s fee is payable from PDAM cash flow at issuance</li> </ul>
<p><b>Trustee</b></p>	<p>Undesignated, to be selected from approved list of Custodians (as amended from time to time by Bapepam) with USAID / DCA and Underwriters approval</p>
<p><b>Terms of conditional underwriting</b></p>	<p><u>Take-out conditional upon following being met:</u></p> <ul style="list-style-type: none"> <li>• Preliminary Credit Rating for PDAM Kabupaten Bogor and proposed security structure of Investment Grade, or better</li> <li>• Unqualified acceptance of Works by Borrower</li> <li>• Works deemed to have been completed on time, on schedule and according to specifications by independent engineer, designated by Underwriter and Enhancer</li> <li>• Owner issues a letter of comfort to the Trustee promising to facilitate the maintenance of the full cost recovery tariffs at all times, using formula identified and agreed in the underwriting agreement entered into between Borrower and Underwriter and the trust deed entered into between Borrower and Trustee.</li> </ul> <p><u>To be discussed with Borrower and eventually Contractor as to when the following covenants kick in:</u></p> <ul style="list-style-type: none"> <li>• Days Account Receivables not to exceed [60 days of water sales ] at Disbursement</li> <li>• Non-revenue water not to exceed 28% over life of Facility A</li> <li>• Certificate to be issued quarterly by Borrower and Owner attesting that tariff is at full cost recovery, as per formula specified in conditional underwriting*</li> <li>• Debt service cover ratio not less than [1.5], historical [ ] quarters], projected [1.5] quarters</li> <li>• Quarterly financials to be provided, or on demand, as the case may be in the format prescribed by the arrangerUnderwriter and Eenhancer</li> <li>• All other security in place</li> </ul> <p><i>*Operating Revenue = Operating Expenses + Debt Service + 10% Equity</i></p>

<b>SECURITY ARRANGEMENTS</b>	
<b>1. Liquidity standby</b>	20% of the total bond offering will be withheld by the Trustee and placed in a bank account in the name of the Trustee. Based on certain investment criteria, the Trustee may invest the funds in secure short-term fixed income securities with a credit rating of at least [ ], or other liquid instruments. The reserves will be used by the Trustee to pay the obligations of the Borrower on any payment date when it is expected that the Borrower will not be able to make the payment on the payment date. The Borrower has the obligation to maintain the minimum amount in the reserves.
<b>2. Letter of comfort, backed by a DCA guarantee</b>	<p>Owner issue a letter of comfort to the Trustee stating that it commits to facilitate the maintenance of the full cost recovery tariffs during the terms of the bond, to include an outcome for debt service cover ratio in any payment period of at least 1.5, the numerator of which is equal to cash available from operations after all operating expenses including taxes have been met minus total debt service due on that payment period; divided by a denominator equal to the debt service, itself</p> <p>The Enhancer, as guarantor, will cover any shortfalls of the minimum amount in the liquidity standby reserve and the scheduled amount in the sinking fund, only after:</p> <ul style="list-style-type: none"> <li>• The Trustee has used up the credit balance in the collection account to cover the shortfalls; and</li> <li>• Owner is unable to cover the shortfalls</li> </ul> <p>Up to a cumulative 35% of face value of Facility A. The guarantee will apply initially to shortfalls in interest due at each repayment date and subsequently to principal up to an aggregate of 35% limit.</p>
<b>3. Water utility accounts receivable (lock-box arrangement)</b>	<p>The designated collection account used by water utility customers to pay their monthly bills is pledged to the Trustee and the Trustee has the authority to withdraw from it as necessary and from time to time to make payments to maintain the minimum amount of:</p> <ul style="list-style-type: none"> <li>• Liquidity standby reserve; and</li> <li>• Sinking fund obligations.</li> </ul> <p>When the Borrower under the trust deed fails to perform its obligations with regard to the liquidity standby reserve and the sinking fund, provided that in the event there is outstanding amount due to DCA, the Trustee will prioritize to cleanup the amounts due to DCA primarily to those payable under Facility A.</p>
<b>4. Sinking Fund</b>	Borrower will periodically fund the sinking fund and shall maintain sinking fund on schedule agreed to in the Trust Deed. The sinking fund will be in the name of the Trustee.



## ATTACHMENT D – LIST OF LEGAL DOCUMENTS REQUIRED FOR CLOSING

1. **Agreement:** *Underwriting or Commitment Agreement* between Issuer (PDAM Kabupaten Bogor) and Underwriter (PT. Danareska Sekuritas). [Note – the Term Sheet contemplates a Conditional Underwriting Agreement to be issued before construction, followed by an unconditional Underwriting Agreement prior to completion of construction. It is proposed to combine the conditional and unconditional agreements be combined in one document.  
**Basic Content:** Underwriter’s “firm” obligation to provide the Take-Out Financing, subject to the satisfaction of agreed upon conditions such as completion of the Water Supply System to specifications. The “firm” obligation means that the Underwriter will underwrite the Bonds, and if the Bonds are not fully subscribed then the Underwriter will directly purchase for its own account enough Bonds so that the issuance is fully subscribed.  
**Timing:** Should be signed before USAID Portable Guarantee Commitment Agreement or concurrently with USAID Portable Guarantee Commitment Agreement (not later than December 2006).
2. **Agreement:** USAID Portable Guarantee Commitment Agreement between Issuer and USAID.  
**Basic Content:** USAID agrees to partially guarantee the Take-Out Financing, subject to the satisfaction of agreed upon conditions. Pursuant to this Agreement, USAID agrees to enter into a separate Guarantee Agreement with the Bondholders’ Trustee under which it agrees to make payments to the Trustee to service the Bonds in the event of certain cash flow shortfalls.  
**Timing:** Should be signed by end of 2006. Just USAID and Issuer sign the Portable, and then, shortly before the Bonds are to be issued, USAID signs the Guarantee Agreement with the Bondholders’ Trustee.
3. **Agreement:** Construction Contract between the Issuer and the construction contractor (the “Contractor”).  
**Basic Content:** Contractor agrees to provide turnkey construction of water supply systems for agreed upon price and within agreed upon time period. [They may also agree to provide management and initial maintenance of the water supply systems.]  
**Timing:** Agreement to be signed by March 2007. Note that the Construction Contractor will not want to bear any risk of not getting paid due to failure to issue the Bonds.
4. **Agreement:** Construction Loan between construction lender and Contractor  
**Basic Content:** Provides for disbursements of the construction loan to fund costs of construction.  
**Timing:** To be signed concurrently w/ or shortly after the Construction Contract. The construction lender will not make any disbursements of the loan until the Underwriting Agreement is signed.
5. **Agreement:** Letter of Comfort issued by Kabupaten Bogor [and PDAM Kabupaten Bogor]; Bondholders’ Trustee and Issuer are the beneficiaries, but I don’t think anyone countersigns or accepts the Letter.  
**Basic Content:** Sets forth the non-binding commitment of Kabupaten Bogor to maintain the Liquidity Reserve at 10% of the Bonds and to support full cost-recovery tariffs.

**Timing:** Needs to be signed before Bonds are issued in September 2009. Underwriter may insist on issuance of Letter of Comfort before making a “firm” commitment to provide the Take-Out Financing in which case this would be needed by December 2006.

6. **Agreement:** Credit Rating for Bonds/Issuer – this is a letter issued by a rating agency for the benefit of the Bond Investors.  
**Basic Content:** Rating Agency provides the credit rating for the Bonds. The Bond Investors will primarily rely on this rating in assessing their level of interest in the bond offering and the pricing/interest rate which they will pay for the Bonds.  
**Timing:** Rating is issued shortly before the Bonds are issued – September 2009.
7. **Agreement:** Prospectus/Information Memorandum. This is prepared by the Issuer, in consultation with the Underwriter. It is approved by, and registered with, the Indonesian Securities Exchange Regulatory Authority. The document is distributed to prospective bond investors.  
**Basic Content:** Contains description of all material facts and information concerning the offering of the Bonds and the Water Supply Systems and the Issuer.  
**Timing:** Needs to be prepared in advance of the Bond offering in September 2009. It may take some time to have the Indonesian Securities Exchange Regulatory Authority approve the Prospectus/Information Memorandum, so the Issuer and Underwriter should probably start to work on this at least 4 months before the targeted bond issuance date which is Sept 2007.
8. **Agreement:** Bond Indenture/Bond Agreement between Issuer and Bondholders’ Trustee  
**Basic Content:** Sets forth the terms and conditions of the Bonds, including the interest rate and maturity.  
**Timing:** Gets signed just before Bonds are issued – September 2009.
9. **Agreement:** Liquidity Standby Escrow Agreement between the Issuer, Kabupaten Bogor, the escrow or account bank (the “Escrow Bank” – note that this is often the same bank that serves as Bondholders’ Trustee) and the Bondholders’ Trustee  
**Basic Content:** Issuer and Kabupaten Bogor commit to fund the Liquidity Standby Account maintained with the Escrow Bank and controlled by the Trustee. The Trustee is entitled to access the funds in this Escrow Account in the event the Issuer is unable to make payment in full on the Bonds on any scheduled payment date. Usually the Issuer and/or Kabupaten Bogor can direct that the funds in the account be invested in certain liquid and secure short-term investments. After the Bonds have been repaid in full the funds in the account, including the income from the investments, are returned to the Issuer and/or Kabupaten Bogor.  
**Timing:** Agreement should be signed on or just before the Bonds are issued – September 2009.
10. **Agreement:** Lock-Box Escrow Agreement and Receivables Pledge Agreement between the Issuer, an Escrow Bank and the Bondholders’ Trustee.  
**Basic Content:** The Issuer pledges all of its receivables from the water customers to the Trustee, as security for the payments due under the Bonds. Such receivables are deposited in an Escrow Account maintained by the Escrow Bank and controlled by the Bondholders’ Trustee. Such funds are used to make timely payment on the Bonds.

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**Timing:** This should be signed on or just before the Bonds are issued – September 2009. To make the “pledge” enforceable under Indonesian law, the water customers may need some form of notice and consent to the arrangements (local counsel to provide advice on this). This may require additional documentation.

<b>Document</b>	<b>Parties</b>	<b>Targeted Signing Date</b>
Underwriting Agreement	Underwriter and Issuer	December 2006
USAID Portable Gty Agmt	Issuer and USAID	December 2006
Construction Contract	Issuer and Contractor	March 2007
Construction Loan	Construction Lender and Contractor	March 2007 or shortly thereafter
Letter of Comfort	Kabupaten Bogor	Prior to Sept 2009; perhaps as early as Dec 2006 to induce Underwriter and Contractor to enter into agreements.
Credit Rating Letter	Credit Rating Agency	Shortly before bonds issues – July/Aug 2009
USAID Gty Agmt	USAID and Bondholders’ Trustee	Aug/Sept 2009
Prospectus for Bonds	Issuer – approved by regulatory agency	Aug/Sept 2009
Bond Indenture	Issuer and Bondholders’ Trustee	Sept 2009 – signed when Bonds are issued
Liquidity Standby Escrow Agmt	Kabupaten Bogor, Issuer, Escrow Agent and Bondholders’ Trustee	Sept 2009
Lock-Box Escrow Agmt; Pledge of Receivables	Issuer, Escrow Agent and Bondholders’ Trustee	Sept 2009



## ATTACHMENT E – ASSUMPTION SHEET

<b>OPERATING ASPECT</b>	<b>ASSUMPTION</b>	
<b>Demand and Production</b>		
Total Number of New Connections	PDAM's Regular Connection Program	32,998
	Due to the Investment Program	20,750
	Grand Total	53,748
Unit Consumption Household Connections	124 lcd	
Unit Consumption Non-Domestic Connections	5.5 m <sup>3</sup> /day	
Average Consumption per Connection	26.5 m <sup>3</sup> /month	
Production Capacity (beginning second semester of 2009)	2,378 l/sec)	
Non-Revenue Water (to be achieved beginning 2014)	Production Losses	3.9%
	Distribution Losses	24.6%
	Total Losses	27.5%
Range of PDAM Plant Capacity Utilization	62%-85.2%	
<b>Investment Proposal</b>		
Investment Cost (In Rp billion nominal)	East Bogor	Rp 79.9
	Central Bogor	Rp 46.8
	Consolidated	Rp 126.7
<b>Applications of Funds</b>		
Base Engineering costs plus Interest During Construction	Rp 130.3 billion (74.9%)	
Financial Costs	Rp 43.7 billion (25.1%)	
Total Applications for Proposed Program (Except Ciburial Main Transmission Line)	Rp 174.0 billion (100%)	
Replacement of Ciburial Main Transmission Line	Rp 9.2 billion	
<b>Sources of Funds</b>		
Facility A Credit Enhanced Bond Offering Not to Exceed)	Rp 160.0 billion (91.25%)	
Facility B Non-Credit Enhanced or as Otherwise Agreed	Rp 14.0 billion (8.75%)	
Total Bond Offering September 2009	Rp 174.0 billion (100%)	
Equity Increase by Owner for Ciburial Transmission Main	Rp 9.2 billion	
<b>Operating Expenses (Average Annual Increases at Nominal Rates)</b>		
Personnel		
Proportion to Number of Connections	6.25 per 1,000	
Increase in Salary Cost	8%	
Power	11%	
Chemicals	7%	
Maintenance Materials	15%	

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<b>OPERATING ASPECT</b>	<b>ASSUMPTION</b>
<b>Demand and Production</b>	
General Administration	7%
Raw Water	Rp 21 (at 2005 Prices) per m <sup>3</sup> of water produced
<b>Revenue</b>	
Tariff Adjustment (applied on previous year's weighted average tariff)	47.5% nominal increase 2008, and every two years thereafter equal to a compound of annual inflation plus a 4% per annum real increase
Connection Fees	None (to be financed through micro-credit scheme to customers)
Other Operating Revenues	Rp 31,000/connection (at constant 2005 prices)
<b>Balance-Sheet Items</b>	
Accounts Receivable-Water	69 days in 2006 to 60 days in 2009
Accounts Payable	30 days
Consumables Inventory	30 days
Installation Inventory	70 days

# I. INTRODUCTION

This financial feasibility assessment of the medium-term investment program of PDAM Kabupaten Bogor has been prepared by the Environmental Services Program (ESP) with funding from the United States Agency for International Development (USAID). The report's scope is to facilitate mobilization of finance for implementation of part of the investment under a guarantee facility to be provided by the Development Credit Authority (DCA).

The report uses as reference the Sub-Project Appraisal Report (SPAR) for Kabupaten Bogor, dated September 2005 and prepared under the Water Supply and Sanitation Project (WSSP) funded by ADB TA 4411-INO. It takes into account important developments since the SPAR was issued, especially very severe increases in energy prices and a significant water tariff adjustment in Kabupaten Bogor, both of which became effective in the last quarter of 2005.

The SPAR included three major investment packages (one each for West Bogor, Central Bogor and East Bogor). This assessment, however, is limited to those for Central and East Bogor, whose implementation will be backed by a DCA partial credit guarantee. The West Bogor investment is earmarked for softer financing through WSSP. ESP has also reviewed the WSSP water demand, as well as the cost of components in the associated investment programs, based on current prices and the project implementation experience of PDAM. This has resulted in a 30% reduction of investment costs and a 10% increase in the number of forecast additional connections compared with ADB TA estimates and projections. These modifications have been incorporated in the report, with the approval of PDAM.

A preliminary financial feasibility study, prepared in February 2006, was the basis for discussions with potential domestic financiers, as a result of which a corporate bond issue was identified as the most feasible option for PDAM instead of a domestic bank commercial loan, as previously contemplated. This change is due to the longer term of the bond issue and the comfort of a fixed interest rate. PT Danareksa, a state-owned investment house, will be the bond arranger and underwriter. This report also responds to specific issues raised by USAID in relation to the preliminary feasibility study.

It is worth noting that the concept of financing water supply projects through a partially securitized domestically mobilized bond issue has met with considerable enthusiasm by concerned central government ministries, especially the Ministry of Finance where the Minister regards a successful outcome at PDAM Kabupaten Bogor as a precursor towards resolving the problem of long-term financing for the more robust PDAMs.

The report can be divided into the following parts:

1. Analysis of the PDAM's historical performance from 2001 to 2005
2. Overview of existing conditions in the PDAM's service regions, with special emphasis on the two for which the proposed investment programs are intended
3. Work plan and budget for 2006
4. Investment programs, presented in consolidated and disaggregated scenarios for each of the target service regions
5. Highlights of the 20-year financial projection, including underlying assumptions and indicators of the financial feasibility of the investment programs

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6. An alternative 20-year financial projection assuming that the PDAM's assets and liabilities in the City of Depok might be turned over to its local government in the event that it wishes to establish its own PDAM
7. Overview of the PDAM's ownership and management
8. Conclusions and recommendations on the future operations of the PDAM
9. Lessons learned and outlook for other PDAMs.



## 2. ANALYSIS OF PDAM'S HISTORICAL PERFORMANCE (2001-2005)

### 2.1. OVERVIEW OF THE FRANCHISE AREA

PDAM's franchise area is served by 12 branches, grouped into four service regions (Table 1). A map of the franchise area is presented in Figure 1.

**Table 1 Service Regions and Branches.**

<b>Service Region</b>	<b>Branches</b>
Depok	Branch I
	Branch II
	Branch III
	Branch IV
Kab West Bogor	Branch V
	Branch VI
	Branch VII
	Branch VIII
Kab Central Bogor and Kota Bogor	Branch X
	Branch XI
Kab East Bogor	Branch IX
	Gunung Putri

### 2.2. PRODUCTION

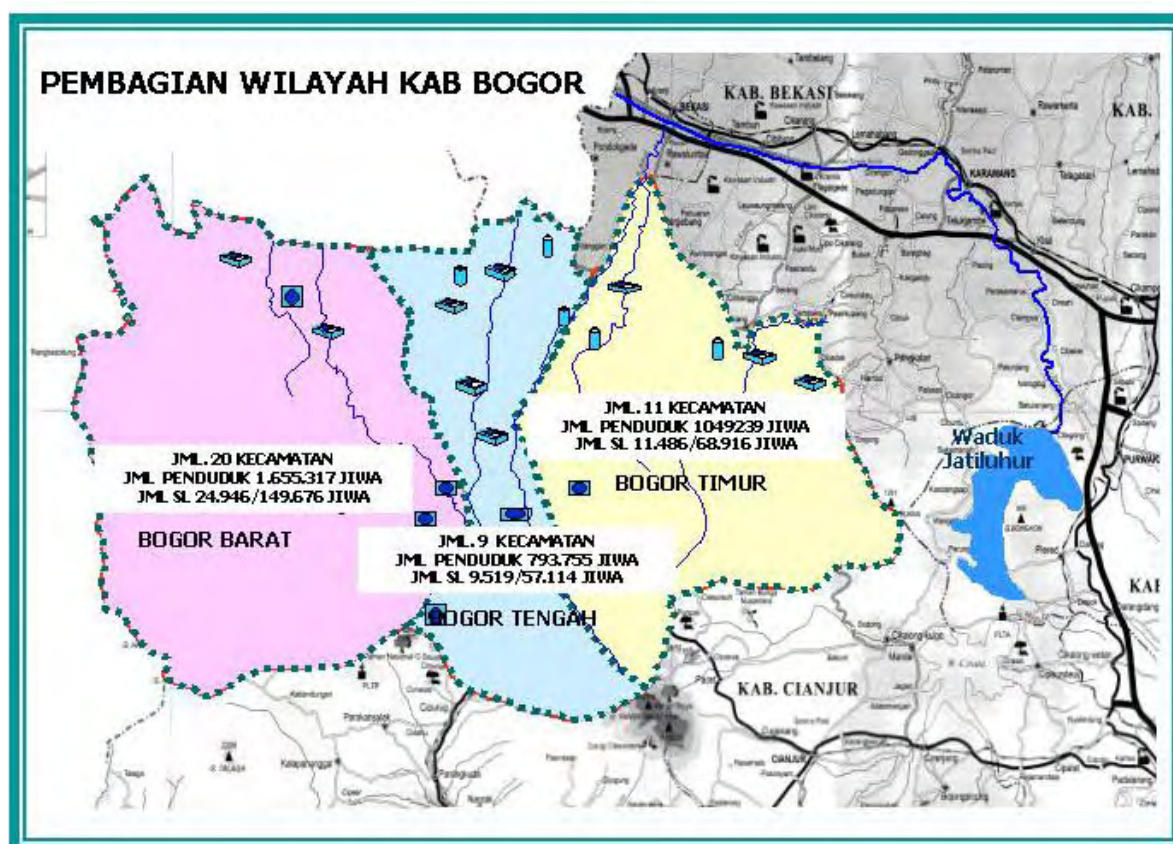
PDAM has a production capacity of 2,078 liters per second (l/sec) from a total of 32 sources with capacities ranging from 3 l/sec to 545 l/sec. Surface water contributes 56.8% of the total, spring water 37.6%, and groundwater 5.6%. An inventory of PDAM's existing water sources is presented in Table 2.

Service is 24 hours per day in most regions, although until recently there were locations, (e.g East Bogor), where it was 12-18 hours per day due to capacity constraints. Non-revenue water (NRW) was 42.3% in 2001. Since 2003, PDAM has implemented a sustained program of water-loss reduction measures, namely:

**PDAM TIRTA KAHURIPAN KABUPATEN BOGOR:  
FINANCIAL FEASIBILITY BOND OFFERING**

1. The pipeline network in each branch has been divided into zones.
2. Each zone has been equipped with district meters.
3. Each district meter is monitored for 24 hours.
4. Readings during off-peak hours are compared with average daily consumption to identify zones where water losses occur.
5. In zones where water losses are detected, repairs/replacement of pipe and water meters are undertaken.

Control over meter reading is through regular rotation of meter readers among the different branches. Meter-readings by 'new' readers are compared with historical records. Questionable results are verified by the Business Affairs Section of each branch directly with concerned customers.



**Figure 1 Map of the Franchise Area of PDAM Kabupaten Bogor.**

Table 2 Breakdown of Existing Production Capacity.

No.	Name of Source	Type of Source and Production Capacity (l/sec)			TOTAL
		Surface Water	Spring	Ground-water	
<b>Central Bogor</b>		<b>270.0</b>	<b>545.1</b>	<b>0.0</b>	<b>815.1</b>
1	Kedung Halang	70.0			
2	Cibinong	200.0			
3	Ciburial	0.0	45.1		
<b>East Bogor</b>		<b>0.0</b>	<b>0.0</b>	<b>95.0</b>	<b>55.0</b>
4	Jonggol	5.0			
5	Satwapres Jonggol	5.0			
6	Gunung Putri	100.0			
7	Cileungsi			5.0	
8	Kota Wisata Cluster J			15.0	
9	Kota Wisata Cluster H			10.0	
10	Kota Wisata Cluster A			10.0	
11	Kota Wisata Cluster C			10.0	
12	Kota Wisata Cluster P			15.0	
13	Bukit Golf	50.0			
<b>West Bogor</b>		<b>150.0</b>	<b>236.0</b>	<b>3.0</b>	<b>389.0</b>
14	Cibungbulang	30.0			
15	Leuwiliang	20.0			
16	Parung Panjang Kabasiran	100.0			
17	Ciampea		4.0		
18	Cijeruk		40.0		
19	Citis		14.0		
20	Cibedug		8.0		
21	Katulampa		10.0		
22	GSP		5.0		
23	Brujul		15.0		
24	Cikahuripan		140.0		
25	Katulampa			3.0	
<b>Depok</b>		<b>600.0</b>	<b>0.0</b>	<b>19.0</b>	<b>619.0</b>
26	Legong	430.0			
27	Citayam	160.0			
28	Sawangan	10.0			
29	Cinangka			10.0	
30	Cimanggis			5.0	
31	Permata Puri			10.0	
32	Laguna			10.0	
<b>Total Production Capacity (l/sec)</b>		<b>1,180.0</b>	<b>781.0</b>	<b>117.0</b>	<b>2,078.1</b>
<b>% TOTAL</b>		<b>56.8%</b>	<b>37.6%</b>	<b>5.6%</b>	

These measures had progressively reduced NRW (physical and non-physical) to just below 37% by the end of 2005. PDAM states that a major source of these losses is the transmission main from the Ciburial production facility, constructed in the 1920s. PDAM will finance rehabilitation of this 10 km main through an equity contribution of Rp 9.2 billion (as per the PDAM medium-term development plan - RPJM). Work will commence in the fourth quarter of 2006 and be completed in 2007. Salient data on production capacity, capacity constraints, and water losses are shown in *Table 3*.

**Table 3 Historical Production Capacity, Capacity Constraints and Water Losses (2001-2005).**

	2001	2002	2003	2004	2005
Production Capacity (l/sec)	1,587	1,999	2,027	2,078	2,078
Production Volume (m3/year)	45,369	46,537	48,091	49,056	48,616
Distribution Volume (m3/year)	40,897	46,386	47,990	48,985	48,616
Volume Sold to Consumers (m3/year)	26,196	29,087	28,409	29,645	30,698
Water Losses (%)	42.26%	37.50%	40.93%	39.57%	36.86%
No of Connections	75,880	78,939	85,426	89,878	96,362

## 2.3. CUSTOMERS AND WATER DEMAND

### 2.3.1. POPULATION

Kabupaten Bogor had a population of almost 3.6 million in 2005 with a recent annual growth rate of 3.2%. Population in the target areas of East and Central Bogor is projected to grow at an average annual rate of 3.6% between 2005 and 2025. The existing and projected population and number of households in the target areas, assuming an average household size of five persons (which is in fact likely to gradually decline), are presented at 5-year intervals in *Table 4*.

**Table 4 Existing and Projected Population and Number of Households in Target Areas.**

AREA	2005		2010		2015		2020		2025	
	Pop	HH	Pop	HH	Pop	HH	Pop	HH	Pop	HH
<b>East Bogor</b>	<b>150,632</b>	<b>30,126</b>	<b>187,954</b>	<b>37,591</b>	<b>234,879</b>	<b>46,976</b>	<b>293,953</b>	<b>58,790</b>	<b>368,409</b>	<b>73,681</b>
Gunung Putri	95,351	19,070	120,823	24,165	153,098	30,620	193,994	38,799	245,815	49,163
Cileungsi	38,020	7,604	44,409	8,882	51,871	10,374	60,587	12,117	70,767	14,153
Kelapa Nunggal	17,261	3,452	22,722	4,544	29,910	5,982	39,372	7,874	51,827	10,365
<b>Central Bogor</b>	<b>235,685</b>	<b>47,137</b>	<b>289,330</b>	<b>57,866</b>	<b>355,920</b>	<b>71,184</b>	<b>438,701</b>	<b>87,740</b>	<b>541,751</b>	<b>108,350</b>
Sukaraja	52,874	10,575	60,237	12,047	68,625	13,725	78,181	15,636	89,069	17,814
Bojong Gede	164,289	32,858	207,718	41,544	262,627	52,525	332,051	66,410	419,827	83,965
Cibinong	18,522	3,704	21,375	4,275	24,668	4,934	28,469	5,694	32,855	6,571
<b>TOTAL</b>	<b>386,317</b>	<b>77,263</b>	<b>477,284</b>	<b>95,457</b>	<b>590,799</b>	<b>118,160</b>	<b>732,654</b>	<b>146,530</b>	<b>910,160</b>	<b>182,031</b>

### 2.3.2. ABILITY TO PAY

In 2003, the monthly median per capita expenditure in Kabupaten Bogor was Rp 209,129, more than twice the national poverty line of Rp 100,000 for urban and Rp 80,000 for rural areas. Poverty incidence was measured in 2002 at 12% of the total kabupaten population, but only 4.9% in areas targeted for service expansion.

A generally recognized principle among the donor community is that a household can afford to pay up to 4% of its monthly *income* to satisfy basic human needs for piped water (in Indonesia 80-100 liters per capita per day). The SPAR prepared for the ADB-funded WSSP conducted an affordability analysis which demonstrated that the monthly water bill is well below the ceiling of 4% of household *expenditure* and is therefore affordable. This conclusion has been reviewed against 2005 and 2006 income data to examine the effect on affordability of the tariff increase in November 2005. The results are presented in *Table 5*.

**Table 5 Affordability Analysis.**

	2005	2006
Household Unit Consumption (m3/month)	22.5	22.7
Average Household Monthly Water Bill (Rp)	42,183	72,123
Average Household Monthly Income (Rp)	2,215,000	2,392,200
Water Bill as Percentage of Income	1.9%	3.0%

The 2005 average household monthly income was derived from the local government, with the 2006 figure extrapolated by inflation and a 4% per capita real GDP growth. The average monthly water bill for 2005 is from PDAM's audited financial statement, and that for 2006 on actual revenue and water consumption figures until June. The results demonstrate that, notwithstanding the November 2005 tariff increase, consumption levels have not been affected and that affordability remains well within the accepted ceiling.

### 2.3.3. CONNECTIONS AND WATER DEMAND

Connections have grown by a yearly average of 7% since 2001. Households represented 97% of total connections and 82% of consumption in 2005. Average monthly consumption per connection declined from 30.7 m<sup>3</sup> in 2003 to 26.5 m<sup>3</sup> in 2005. The PDAM states that this was due to supply constraints in some areas, although it is also true that average consumption can decline as more low-income households connect to the system. Nevertheless, average consumption remained in the third tariff block (over 20 m<sup>3</sup>), which is the most profitable for a PDAM.

PDAM calculates domestic service coverage at 6 persons per ordinary household connection, 6 per very poor household, and 100 persons per public tap. Service ratios at the end of 2005 were 16.8% of the entire population of Kabupaten Bogor and 29.5% of the service area population. The Millenium Development Goals (MDG) set targets for piped water supply coverage at 60% in rural areas and 80% in urban areas by 2015. Clearly, at this rate of service-reach expansion, PDAM will not reach these targets.

Data pertaining to connection and water demand are presented in *Table 6*.

**Table 6 Historical Connection and Water Demand.**

	2001	2002	2003	2004	2005
Household Connections (No.)	73,450	76,384	82,369	86,785	93,337
Unit Consumption (lcd)	119	129	126	127	127
Non-Domestic Connections (No.)	1,939	2,037	2,522	2,529	2,449
Unit Consumption (m3/day)	9.6	9.6	5.8	5.2	5.7
Total Connections	75,880	78,939	85,426	89,878	96,362
Annual Change (No.)		3,059	6,487	4,452	6,484
Average Consumption per Connection (m3/month)	28.8	30.7	27.7	27.5	26.5
Domestic Service Ratio-Kab Bogor(%)	14.9%	15.2%	15.7%	16.2%	16.8%
Domestic Service Ratio-Serv. Area (%)	27.3%	26.1%	27.4%	27.8%	29.5%

These service ratios are, however, misleading as they include customers outside the kabupaten. PDAM serves 41,000 connections in Kota Depok, spun off from the kabupaten in 1999, plus 8,000 connections in Kota Bogor. Excluding these, the 2005 domestic service ratio within Kabupaten Bogor territory would be only half of what is presently recognized, i.e. about 7% of its population and 13% of the service area population. This implies huge potential demand, substantiated by about 36,000 prospective customers now on the PDAM's waiting list. It is this which is prompting PDAM to focus investment on expanding service within the kabupaten territory.

## 2.4. FINANCIAL PERFORMANCE

### 2.4.1. PROFITABILITY

PDAM's profitability record from 2001 to 2005 is shown in *Table 7*. Increase in tariff revenues (excluding monthly fixed charges for meter maintenance and administrative fees) averaged 19.6%. Total operating revenues grew at 20.8% per annum. Connection fees averaged Rp 4.8 billion per year, i.e. about Rp 1.1 million per customer. Operating expenses grew at almost the same rate as that of operating revenues.

Pre-tax profit increased by an average of 19.3% per year, and net income by 13.6%. However, year-on-year changes vary significantly because of the time lag between tariff adjustments whilst operating expenses are subject to no such limitations.

**Table 7 Historical Profitability Indicators (In Rp Million at Current Prices).**

	2001	2002	2003	2004	2005	Ave. Annual Change
Tariff Revenues	28,338	37,857	44,933	48,034	57,285	19.6%
Total Operating Revenues	36,351	48,409	60,697	66,548	76,431	20.8%
Operating Expenses	23,155	31,471	39,152	42,103	47,188	20.0%
Non-Operating Income/(Loss)	1,435	2,073	745	1,538	(484)	-11.2%
Net Profit Before Tax	3,019	5,447	5,526	5,497	5,278	19.3%
Income Tax	594	1,311	1,739	1,806	1,772	38.8%
<b>Net Income (Loss)</b>	<b>2,425</b>	<b>4,137</b>	<b>3,787</b>	<b>3,691</b>	<b>3,506</b>	<b>13.6%</b>
Return on Assets (Un-revalued)	2.2%	3.7%	2.8%	2.5%	2.2%	
Return on Equity	3.1%	5.2%	4.0%	3.1%	2.8%	

Fixed assets are carried at historical cost, as under existing regulations revaluation surpluses are taxable as capital gains. PDAM's fixed assets increased at an annual average of 16.1% between 2001 and 2005, equity at a slower rate of 13.2%. Physical investment equity of Rp 116 billion represented 43% of PDAM's gross fixed assets (Rp 268 billion) at the end of 2005. More than 80% has been provided by the local and central governments. Almost all local equity government equity classified as such in PDAM's balance sheet was originally provided in the form of grants to PDAM by central government and has been progressively transferred to the local government owner. Most PDAMs have this kind of equity profile. A more recent event is the contribution to equity of real estate developers who provide water supply infrastructure and transfer the associated assets to PDAM for operation and maintenance. These assets represented more than 12% of PDAM equity at the end of 2005.

## 2.4.2. RECURRENT COSTS

Over the 5-year period, recurrent costs, expressed in 2005 constant prices, posted the highest annual growth (17.3%) in 2003 following the 2002 tariff increase. They declined by 2.7% in 2004 before increasing again in 2005. The average annual real increase was 8.6%. Much of the 2003 increase was due to a 23% rise in personnel costs, linked to the tariff adjustment. However, between 2001 and 2005, this increase averaged only 6.7%. The number of employees per 1,000 connections stood at over 8 in 2001 and gradually declined to 7 by 2005. For a PDAM with 32 separate systems, this is a very satisfactory indicator.

Power costs increased in real terms by 5.8% per annum (but this excludes the full impact of the increase in energy costs in late 2005, which will only be expressed in the 2006 accounts), maintenance materials by 10.8%, overhead by 9.7%, and raw water by 8.2%. Overhead (defined as PDAM general and administrative expenses minus wages, interest payments, bad debts allowances, and maintenance and depreciation costs related to general and administrative fixed assets) remained less than one-third of personnel costs, demonstrating very good management control.

PDAM's recurrent costs for the five-year period under review are shown in Table 8.

**Table 8 PDAM Unit Costs (Rp per m<sup>3</sup> of Water Sold at 2005 Constant Prices).**

	2001	2002	2003	2004	2005	Ave. Annual Change
Personnel	568	598	736	711	723	6.7%
Power (Operational)	260	288	312	320	325	5.8%
Chemicals	100	75	88	82	91	-1.0%
Maintenance Materials	123	173	160	179	175	10.8%
Overhead	139	166	220	184	190	9.7%
Raw Water	25	15	26	25	25	8.2%
<b>Total</b>	<b>1,216</b>	<b>1,315</b>	<b>1,542</b>	<b>1,501</b>	<b>1,530</b>	
% Year-on-Year Change		8.16%	17.30%	-2.70%	1.93%	8.59%

### 2.4.3. TARIFF

The tariff structure is typical of PDAMs throughout Indonesia, being based on blocks of consumption, with high-income households and commercial/industrial consumers subsidizing low-income households and social services. Prior to the November 2005 adjustment, the previous tariff increase was in mid-2002.

The PDAM now implements tariff adjustments based on Government Regulation (PP) No. 16/2005 on the Improvement of Drinking-Water Supply (Pengembangan Penyediaan Air Minum). The PDAM board of directors proposes the adjustment to the board of supervisors, which then elevates the proposal to the Regent, who approves it by a decree (*Surat Keputusan* or *SK*). These procedures are much simpler than those prescribed by Minister of Home Affairs Decree (Permen) No. 2/1998, which required a series of public hearings with final approval by the local parliament (DPRD) through a local regulation (*Peraturan Daerah* or *Perda*).

Effective October 1, 2005, the national government raised fuel prices by more than 100%. On November 1, 2005 the PDAM implemented a new tariff with an average 74% increase. A comparison of the old and new tariffs is presented in Table 9.

Permendagri 2/1998 required annual tariff adjustments to compensate for annual inflation, without the need for an approval from the DPRD, plus a cyclical adjustment when significant additional investment is required. The methodology produces three types of tariff category:

1. *Biaya rendah* (low cost), which recovers only O&M (including salaries) and overhead costs
2. *Biaya dasar* (basic cost), which recovers *biaya rendah* plus debt service (principal and interest)
3. *Biaya penuh* (full cost), which recovers *biaya rendah* plus depreciation on the economic (useful) life factor applied against revalued fixed assets plus a 10% return on the book value of revalued assets.



Table 9 Comparison of Old and New Tariffs.

TYPE OF CONNECTION/CUSTOMER		OLD TARIFF (1 July 2002-31 October 2005) In Rp			NEW TARIFF (As of 1 November 2005) In Rp			% INCREASE		
		0-10 m <sup>3</sup>	11-20 m <sup>3</sup>	>20 m <sup>3</sup>	0-10 m <sup>3</sup>	11-20 m <sup>3</sup>	>20 m <sup>3</sup>	0-10 m <sup>3</sup>	11-20 m <sup>3</sup>	>20 m <sup>3</sup>
<b>GROUP I</b>	Public Toilets, Hydrants, Water Terminals, Places of Worship	390	390	390	970	970	970	149%	149%	149%
<b>GROUP II</b>	<b>IIA</b> Health Centers, Government Hospitals, Public Schools, Educational Foundations	550	550	1,170	1,300	1,500	2,800	136%	173%	139%
	<b>IIB</b> Very Low Cost Housing	620	620	1,300	1,300	1,500	2,800	110%	142%	115%
<b>GROUP III</b>	<b>IIIA</b> Low-Cost Housing	950	950	1,900	1,600	2,990	3,410	68%	215%	79%
	<b>IIIB</b> Medium-Class Housing	1,350	1,350	2,700	2,030	3,270	3,840	50%	142%	42%
	<b>IIIC</b> Government Agency	1,175	1,175	2,100	1,700	3,130	3,410	45%	166%	62%
<b>GROUP IV</b>	<b>IVA</b> Luxury Housing	1,450	1,450	2,800	2,560	3,550	4,120	77%	145%	47%
	<b>IVB</b> Small Commercial Establishment	1,550	1,550	2,800	2,990	3,840	4,270	93%	148%	53%
	<b>IVC</b> Small Industrial Establishment	1,950	1,950	3,000	3,560	4,130	4,550	83%	112%	52%
	<b>IVD</b> Big Commercial Establishment	4,550	4,550	4,550	6,260	6,260	6,260	38%	38%	38%
	<b>IVE</b> Big Industrial Establishment	4,550	4,550	4,550	6,260	6,260	6,260	38%	38%	38%
<b>SPEC. GROUP</b>	University of Indonesia	1,300	1,300	1,300	2,620	2,620	2,620	102%	102%	102%
	PAM Jaya/PT. TPJ	675	675	675				NA	NA	NA
	Yayasan Anggraini Bhakti				1,870	1,870	1,870	NA	NA	NA

Because of decentralization in 1999 and the transfer of water supply responsibilities to local government, this decree was never implemented. It provides useful guidelines for tariff formulation, although the definition of full cost recovery is onerous for PDAMs, and their customers. A case in point is PDAM Kabupaten Bogor, where, based on Permendagri 2/1998, PDAM's tariff has always been below full cost, as shown in *Table 10*.

**Table 10 Historical Tariff Performance of PDAM Kabupaten Bogor Based on Permendagri 2/1998.**

	2001	2002	2003	2004	2005
Volume of Water Sold (000 m3)	26,196	29,087	28,409	29,644	30,697
Tariff Revenue (Rp Million at current Prices)	28,338	37,857	44,933	48,034	57,285
<b>Average Tariff (Rp at Current Prices)</b>	<b>1,082</b>	<b>1,302</b>	<b>1,582</b>	<b>1,620</b>	<b>1,866</b>
Components of Full Cost Recovery (Permendagri 2/1998)					
• Total Operating Expenses (Rp Million at Current Prices)	23,155	31,471	39,152	42,103	47,188
• Depreciation (Rp Million at Current Prices)	9,264	10,980	14,349	18,375	21,533
• 10% of Assets (Rp Million at Current Prices)	10,896	11,294	13,302	15,042	15,933
Total Cost	43,314	53,744	66,803	75,520	84,654
<b>Full-Cost Recovery Tariff (Rp per m3 of Water Sold)</b>	<b>1,653</b>	<b>1,848</b>	<b>2,351</b>	<b>2,548</b>	<b>2,758</b>
<b>Extent of Full-Cost Recovery</b>	<b>65.4%</b>	<b>70.4%</b>	<b>67.3%</b>	<b>63.6%</b>	<b>67.7%</b>

Had the PDAM imposed full-cost recovery tariff, however, it would have generated returns on equity of between 22.3% and 48.6% which appears excessive in a public service industry and higher than what is required for incremental investment purposes. One inadequacy in Permendagri 2/1998 had been identified as the exclusion of non-tariff operating revenues (meter rental and administration charges), which are always a significant portion of total operating revenues, from the computation of full-cost coverage; another is that it does not take into account that industry consumption from deep wells constrains cross-subsidy potential of the tariff.

An alternative definition of full-cost recovery, conventionally practiced in other South-East Asian countries, is:

$$\text{Total Operating Revenue} = \text{Operating Expenses} + \text{Debt Service} + 10\% \text{ Return on Equity}$$

Under this definition, PDAM Bogor has been consistently able to achieve full-cost recovery from 2001-2005 and is expected to do so again in 2006. Further proof of the applicability of the definition is that other PDAMs participating in ESP, which were unable to achieve full-cost recovery under Permendagri 2/1998, were all at full-cost recovery from 2001-2005 and will be so again in 2006, as shown in *Table 11*.

**Table 11 Performance of Selected PDAMs Based on the Alternative Definition of Full-Cost Recovery.**

DESCRIPTION	5-YEAR AVE.				2006 BUDGET			
	Kab Bogor	Kt Malang	Kab Mgling	Kt Solo	Kab Bogor	Kt Malang	Kab Mgling	Kt Solo
Nominal Increase in Average Tariff (%)	14.9%	18.5%	28.4%	23.3%	33.0%	-1.0%	18.1%	21.1%
Weighted Average Tariff (Rp at Current Prices)	1,490	1,715	827	1,468	2,482	2,579	1,423	2,633
Full Cost Recovery Tariff: Permendagri 2/1998 (Rp at Current Prices)	2,232	1,593	940	1,882	2,580	2,383	1,742	3,118
Extent of Full-Cost Recovery (%)	66.8%	107.6%	88.0%	78.0%	96.2%	108.2%	81.7%	84.4%
Full Cost Recovery Tariff: O&M+Debt Service+10% Equity (Rp at Current Prices)	1,869	1,311	815	1,580	2,525	2,531	1,555	3,016
Total Operating Revenues per m3 of Water Sold (Rp at Current Prices)	1,985	1,816	943	1,638	2,844	2,708	1,759	3,143
Extent of Full Cost Recovery: O&M + Debt Service + 10% of Equity (%)	106.2%	138.5%	115.7%	103.7%	112.7%	107.0%	113.1%	104.2%

#### 2.4.4. ACCOUNTS RECEIVABLE

The PDAM's billing cycle is 50 days. Its collection efficiencies could therefore be reduced to the same number. The cycle is broken down as follows: Days 1-20 for meter reading, days 21-30 for verifying and resolving questionable meter-reading results, and days 31-50 for collection. Unpaid accounts are considered delinquent from day 51 and 10% penalties are imposed. Billing and collection have already been computerized in each branch. The branches, however, are not yet inter-connected such that it is not yet possible for a customer of one branch to pay in another.

In 2002, accounts receivable averaged 75 days of water sales. This improved in 2003 and 2004, but rose again in 2005 to 69 days as receivables from government agencies and the armed forces, which can neither be aged or written off, continued to grow. As of mid-2006, and in accordance with existing procedures, collection of these receivables was already being handled by the national association of water enterprises (Perpamsi) and resolution was to be expected before the end of 2006.

In contrast, bad debts as a proportion of water sales declined in 2005 (ref Table 12), which in any case have always been negligible.

**Table 12 Collection Efficiencies.**

	2001	2002	2003	2004	2005
Days Accounts Receivable	51	75	54	47	69
Bad Debts as % of Water Sales	0.47%	0.22%	0.95%	0.61%	0.41%

A comparative aging of PDAM's receivables in 2004 and 2005 is presented in *Table 13*. Whilst the central government receivables are difficult to expedite, the underlying collection efficiency in 2005 of customers (mainly households) over whom PDAM can exercise collection control is good, with an average of 55 days.

**Table 13 Comparative Aging of the PDAM's Receivables in 2004 and 2005 (In Rp Million at Current Prices).**

	2004		2005	
	Amount	% of Total	Amount	% of Total
Up to 3 months	4,670	57.4%	8,741	61.8%
Over 3 month up to 6 months	125	1.5%	113	0.8%
Over 6 months to 12 months	145	1.8%	194	1.4%
Over 12 months to 24 months	222	2.7%	216	1.5%
Over 24 months				
From government and armed forces	2,968	36.5%	4,888	34.5%
<b>Total</b>	<b>8,130</b>	<b>100.0%</b>	<b>14,152</b>	<b>100.0%</b>

## 2.4.5. INVENTORY MANAGEMENT

PDAM keeps consumables on the current assets side of the balance sheet and classifies investment materials as long-term assets. The consumables inventory accounting is based on the FIFO system.

In 2005, the value of the consumables inventory increased by 19.2%. The practice of the PDAM is to record all purchases under this account, except installation (capital) inventory (pipes, water meters, etc.), which may explain its relatively high level. Such purchases could, for example, include construction materials. Charges against the account are then made once purchases are issued to users. Items which properly belong to this inventory account are chemicals, fuel, and office consumables, which at year-end 2005 comprised less than 50% of the recorded value of the inventory.

Chemicals, fuel, and office supplies inventories amounted to Rp 671 million in 2004 and Rp 797 million in 2005, representing cover of 34 and 36 days which are considered good indicators.

As well as meters and connection pipes, installation inventory also absorbs excess materials from investment projects, which can be sold at public auction. Installation inventory averaged 97 days cover during the period under review, somewhat higher than the benchmark of 70 days.

A further item in the balance sheet consists of fixed assets (pumps and transmission and distribution pipes), which have never been used or are no longer useful. These have been carried

at a gross book value of Rp 454.4 million in 2004 and at Rp 1,282 million in 2005. Accumulated depreciation attributed to these assets amounted to Rp 353 million in both 2004 and 2005.

## 2.4.6. CURRENT RATIO AND CASH FLOW

The PDAM's current ratio deteriorated over the period 2001-2005, largely due to the absence of a tariff increase since 2002, although it did improve slightly in 2005 as a result of the fourth quarter tariff increase. Similarly, its cash cover of operating costs declined, settling at only 0.9 month in 2005, as the expansion in current assets was due mainly to increases in receivables and consumables inventory, while cash and deposits recorded a decline (as shown in *Table 14*).

**Table 14 Current Ratio and Cash Flow.**

	2001	2002	2003	2004	2005
Current Ratio	4.2	2.3	1.1	1.2	1.5
Cash = No. of Mo. of Operating Exp.	8.9	3.3	1.7	1.1	0.9

The full impact of the tariff increase of 74% has brought about a significant improvement of these ratios in 2006 (see below).

Of the PDAM's yearly net income, 55% is paid to the local government as dividend and another 19% is set aside for staff funds. Actual payment to the local government is made in the succeeding year. The local government has indicated a willingness to re-invest these dividends in PDAM after 2006.

## 2.4.7. OUTSTANDING LOANS AND DEBT-SERVICE CAPACITY

By the end of 2005, the PDAM's outstanding long-term loans from the national government through the Ministry of Finance amounted to Rp 14,106 million. The last of these loans is scheduled to be fully amortized in 2018. These loans are summarized in *Table 15*, while their repayment schedules are presented in *Annex A*.

**Table 15 Outstanding Long-Term Loans.**

No.	Loan	Date Contracted	Original Amount (Rp)	Interest	Balance in 2005 (Rp)	Amortization Completion Date
1	SLA-629/DDI/1991	30 December 1991	224,888,763	9.25%	75,038,021	August 2011
2	SLA-576/DDI/1991	14 August 1991	9,474,171,414	9.25%	2,531,575,837	December 2010
3	RDA-89/DDI/1992	25 June 1992	2,959,472,000	10.75%	8,312,637,231	September 2017
4	RDA-96/DDI/1992	7 August 1992	74,259,000	9.00%	29,703,600	August 2012
5	SLA-717/DP3/1993	10 August 1993	14,951,325,571	9.00%	1,085,139,726	June 2012
6	RDA-200/DP3/ 1994	15 April 1994	1,284,023,000	11.50%	543,240,500	April 2012
7	SLA 4138/DD3/ 2000	15 July 2000	1,973,584,000	10.50%	1,528,896,000	July 2018
	<b>Total</b>		<b>30,941,723,748</b>		<b>14,106,230,914</b>	

**PDAM TIRTA KAHURIPAN KABUPATEN BOGOR:  
FINANCIAL FEASIBILITY BOND OFFERING**

The PDAM has always maintained a 100% record in terms of punctual payments of principal and interest as they have fallen due.

In the absence of any additional sizeable loan assumed during the five-year period under review, the PDAM had been able to maintain more than adequate levels of debt service coverage ratios. It likewise has a healthy and improving gearing (debt to total capitalization) ratio, indicating its capacity to absorb more loans to finance any future investment, as shown in *Table 16*.

**Table 16 Indicators of Debt-Service and Borrowing Capacity.**

	<b>2001</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>
DSCR Based on Net Revenue	3.6	4.4	5.0	5.5	7.6
Debt to Total Capitalization	23%	22%	18%	15%	13%

## 3. PERFORMANCE OVERVIEW OF SERVICE REGIONS

PDAM's present practice is to view each of the service regions as a discrete area for investment planning. An overview of the performance of each provides an additional perspective from which any proposed investment program may be assessed. The analysis provided below is based on the PDAM's cumulative results of operations by mid-2006.

### 3.1. WATER DEMAND

About 43% of the PDAM's customers are located in Depok. Consumption per connection and per capita is highest in Kota Bogor and Central Bogor at 32 m<sup>3</sup> month and 177 liters per day, and lowest in East Bogor at 19 m<sup>3</sup> and 105 liters per day respectively. The reason cited by the PDAM for the low consumption in East Bogor is that service in a significant portion of the region was less than 24 hours a day until September 2005, when remedial works were finalized. An overview of water demand in each of the service regions is presented in *Table 17*.

**Table 17 Water Consumption per Service Region.**

Service Area	No. of Active Connections	Vol. of Water Sold (000 m3)	Consumption per Connection (m <sup>3</sup> /Month)	Consumption per Capita (Liters/Day)
Depok	41,546	7,442	25.6	142
West Bogor	32,517	5,906	25.9	144
Central Bogor + Kota Bogor	10,792	2,411	31.9	177
East Bogor	18,875	2,492	18.9	105

### 3.2. REVENUE

Average revenue per connection is also highest in Central Bogor and Kota Bogor, due mainly to the aforementioned high consumption rates in this area. While registering the lowest average monthly bill, customers in East Bogor are actually paying the highest per cubic meter of water, which indicates that these customers are in the higher tariff brackets. The average monthly water bill would therefore have been higher had there been 24-hour service and sufficient water pressure. The revenue breakdown for each service region is presented in *Table 18*.

**Table 18 Water Sales per Service Region.**

<b>Service Area</b>	<b>Ave. Water Sales Rev. (Rp Million)</b>	<b>Ave. Rev. per Connection (Rp/Month)</b>	<b>Ave. Revenue per m<sup>3</sup> of Water Sold</b>
Depok	24,096	82,855	3,238
West Bogor	19,080	83,826	3,231
Cental Bogor + Kota Bogor	8,060	106,697	3,343
East Bogor	18,875	73,010	3,870

### 3.3. PROFITABILITY

In percentage terms, West Bogor has the highest margin per unit of water sold at 67.5%. In absolute amount, East Bogor has the highest margin due to the much higher average per unit price of water sold. Operating and overhead expenses are also highest in East Bogor, which could be traceable to the large number of water production and treatment facilities in this service region.

An overview of the margins derived from each service region is in *Table 19*.

**Table 19 Margins on Water Sales Revenue per Service Region (Rp per m<sup>3</sup> of Water Sold).**

<b>Service Region</b>	<b>Revenue</b>	<b>Operating and Overhead Expenses</b>	<b>Gross Margin (Rp)</b>	<b>Gross Margin (%)</b>
Depok	3,238	1,222	2,016	62.3%
West Bogor	3,231	1,051	2,180	67.5%
Cental Bogor and Kota Bogor	3,343	1,434	1,909	57.1%
East Bogor	3,870	1,530	2,341	60.5%



## 4. WORK PLAN AND BUDGET FOR 2006

For 2006, the PDAM plans to install 2,000 new connections, an increase of 2.1% from 2005. This has turned out to be quite conservative as the target has already been reached by mid-year. Consumption per connection is projected to decline slightly to 26.0 m<sup>3</sup> per month from 26.5 m<sup>3</sup> in 2005.

PDAM's production capacity remains at 2,078 l/sec. Production, distribution, and volume of water sold are all budgeted to decline. NRW is predicted to be reduced significantly by almost five percentage points, from 36.9% in 2005 to 32.0%. Plant capacity utilization factor is foreseen to go down to 66.5% from 70.5% in 2005. The key assumptions on connections, demand, production, and distribution used in the PDAM's 2006 work plan and budget are shown in Table 20.

**Table 20 Connections, Demand, Production and Distribution in 2005 and 2006.**

	<b>2005 (Audited)</b>	<b>2006 (Budget)</b>	<b>Change (Amount)</b>	<b>Change (%)</b>
Household Connections (No.)	93,337	95,268	1,931	2.1%
Unit Consumption (lcd)	127	122	(4)	-3.5%
Non-Domestic Connections (No.)	2,449	2,505	56	2.3%
Unit Consumption (m3/day)	5.7	5.6	(0.1)	-1.3%
Total Connections	96,362	98,362	2,000	2.1%
Ave. Consumption per Connection (m3/month)	26.5	26.0	(0.5)	-1.9%
Volume of Water Sold (000 m3)	30,697	30,591	(106)	-0.3%
Production Capacity (l/sec)	2,078	2,078	(0)	
Production (000 m3)	48,616	45,325	(3,291)	-6.8%
Distribution (000 m3)	48,616	43,393	(5,223)	-10.7%
Water Losses (%)	36.9%	32.0%	-4.8%	-13.1%
Plant Utilization Factor	70.5%	66.5%	-4.0%	-5.7%

Overall, operating expenses are budgeted to increase by 20.0% in real terms, which largely reflect the full effect of the higher energy costs. However, maintenance materials and overhead also rise significantly, and even raw water is budgeted to post a double-digit increases. In contrast, personnel cost and chemicals are set to decrease in real terms. The proportion of overhead to personnel cost will thus increase from 26% in 2005 to 34% in 2006.

A constant-price comparison of the actual results of the PDAM's operations in 2005 and the operating-cost budget in 2006 is presented in Table 21.

**Table 21 Comparison of Unit Cost per m<sup>3</sup> of Water Sold for 2005 and 2006 (In Rp at Constant 2005 Prices).**

	<b>2005 (Audited)</b>	<b>2006 Budget</b>	<b>Change (%)</b>
Personnel	723	692	-4.3%
Power (Operational)	325	578	77.9%
Chemicals	91	86	-5.1%
Maintenance Materials	175	218	24.6%
Overhead	190	232	22.1%
Raw Water	25	29	13.7%
<b>Total</b>	<b>1,530</b>	<b>1,835</b>	<b>20.0%</b>

With the full application of the previous year's tariff increase, the weighted average tariff is forecast to increase by 78.3%. As a consequence of lower sales volume, however, tariff revenue and total operating revenues will expand at much lower rates of 32.5% and 16.4%.

Operating expenses, on the other hand, will increase by 26.2%. The net effect will be an improvement in the PDAM's net earnings by 34.8%, from Rp 3,506 million in 2005 to Rp 4,725 million in 2006.

Accounts receivable is planned to be held at its 2005 level of 69 days of total revenue. The current ratio, at 2.7, is a marked improvement over 2005. Available cash in terms of number of months of operating expenses will likewise improve to 2.3. Debt as a proportion of capital will contract to 10.6% from 14.5% in 2005. However, as a result of a planned Rp 11 billion investment in meter replacements, the debt service coverage ratio will decline very sharply from 7.6 to 2.8, although the 2006 parameter is still well within the comfort zone.

The indicators of the expected performance of the PDAM in 2006 are presented in Table 22.

**Table 22 Performance Indicators for 2005 and 2006 (In Rp Million at Current Prices) as.**

	<b>2005 (Audited)</b>	<b>2006 Budget</b>	<b>Change (Amount)</b>	<b>Change (%)</b>
Weighted Average Tariff (At Current Prices)	1,866	3,326	1,460	78.3%
Tariff Revenue (Rp Million at Current Prices)	57,285	75,927	18,642	32.5%
Total Operating Revenue (Rp Million at Current Prices)	76,431	89,002	12,572	16.4%
Operating Expenses	47,188	59,540	12,353	26.2%
Net Income before Tax (Rp Million at Current Prices)	3,506	6,737	3,231	92.2%
Net Income (Rp Million at Current Prices)	3,506	4,725	1,219	34.8%
Days Accounts Receivables	69	69	(0)	-0.1%
Bad Debts as % of Water Sales	0.41%	0.40%	-0.01%	-1.7%
Current Ratio	1.5	2.7	1.2	79.2%
Cash = Mo. of Operating Expenses	0.9	2.3	1.4	146.2%
Debt Service Coverage Ratio	7.6	2.8	(4.8)	-63.0%
Debt to Total Capitalization	14.5%	10.6%	-3.9%	-26.9%

Table 23 below shows performance-against-budget figures to date. While a full variance analysis has not been included, as this will require another round of discussion with PDAM, it is evident that PDAM is outperforming the budget, probably because of exercise of prudence in estimating budget operating costs.

**Table 23 Comparison of Actual Results of Operations and Budget as of 31 July 2006 (In Rp Million Nominal, Except %).**

	Budget	Actual Result	Variance	
			Amount	%
Tariff Revenue	59,682	56,995	(2,687)	-4.5%
Total Operating Revenue	63,393	61,043	(2,350)	-3.7%
Operating Expenses	20,630	17,693	(2,936)	-14.2%
Overhead Expenses	18,546	17,153	(1,394)	-7.5%
Depreciation	14,632	11,644	(2,987)	-20.4%
Net Income before Tax	7,180	13,990	6,811	94.9%
Gross Internal Cash Generation	20,506	22,149	1,643	8.0%
Total Sources of Funds	64,625	62,302	(2,323)	-3.6%
Operations	39,162	35,642	(3,520)	-9.0%
Debt Service	980	1,002	22	2.3%
Total Applications of Funds	65,489	57,733	(7,757)	-11.8%
Cash Increase/(Decrease)	(864)	4,570	5,434	-628.9%
Beginning Cash Balance	3,544	3,577	33	0.9%
Ending Cash Balance	2,680	8,147	5,467	204.0%



## 5. PDAM INVESTMENT PROPOSAL

### 5.1. DOMESTIC INFLATION

Forecast domestic inflators<sup>3</sup> used in calculating the current prices of the investment cost components as well as in the subsequent financial projection are presented in *Table 24*.

**Table 24 Assumptions on Domestic Inflators (2005=1).**

	Yearly Inflation Factor	Cumulative Inflation Factor
<b>2007</b>	1.055	1.22
<b>2008</b>	1.055	1.28
<b>2009</b>	1.055	1.34
<b>2010</b>	1.055	1.40
<b>2011</b>	1.055	1.47
<b>2012</b>	1.055	1.54
<b>2013</b>	1.055	1.61
<b>2014</b>	1.055	1.68
<b>2015</b>	1.055	1.75
<b>2016</b>	1.055	1.83
<b>2017</b>	1.055	1.91
<b>2018</b>	1.055	1.99
<b>2019</b>	1.055	2.07

### 5.2. INVESTMENT PROGRAM OVERVIEW - SOURCES AND APPLICATIONS OF FUNDS

*Attachment A*, Timeline for PDAM Kabupaten Bogor of the Executive Summary provides an indicative schedule for implementing the investment program. The bulk of the projected expenditure will be executed over the period 2007-09 with small components of the aggregate program, for example, applying to household connection extending well beyond the aforementioned period.

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<sup>3</sup> Obtained from the World Bank Office in Jakarta

## 5.2.1. APPLICATIONS OF FUNDS

Total application of funds can be segregated into three areas: (a) estimated base engineering and construction costs plus interest during construction (Rp 130,273.4 million); (b) financial costs (Rp 45,731.34 million) to include liquidity standby reserves and other normal expenditures; and (c) replacement of the Ciburial transmission line, currently the source of considerable water loss (Rp. 9,200 million), as shown in *Table 25*.

**Table 25 Applications of Funds (In Rp Million Nominal).**

Description	Estimated Costs by Category, 2007-13	% of Total
Base Engineering Costs plus Interest During Construction	130,273.4	74.0%
Financial Costs	45,731.3	26.0%
Total Applications for proposed program (Except Ciburial Main programmed for FY 2006/07)	176,004.7	100.0%
Replacement of Ciburial Main Transmission Line	9,200.0	----

Of the total base engineering and construction cost, Rp 79,934.3 million will address the expansion program in East Bogor and Rp 46,746.0 million in Central Bogor. The remainder, specifically those pertaining to the generation of new connections beyond 2009, will be derived from the PDAM's internal cash generation. Financing costs – which consist of reserve funds, arrangers' fee, bond issuance costs, credit rating fee, and enhancers' fee – as mentioned, amount to an additional Rp 45,731.3 million. Trustee costs are not yet included in the projections but may not have a significant impact on overall outcome.

Replacement of the 10 km Ciburial main is expected to be completed in 2007, financed through an equity contribution by the PDAM. This component is already inserted in the PDAM medium-term investment plan, the cost of which is therefore excluded from the borrowing requirements further below.

## 5.2.2. SOURCES OF FUNDS

Except for land acquisition and new connections, the investment program will be implemented as a turnkey project, under a fixed price, fixed term performance contract with a first-class contractor. Implementation will be financed by the contractor, with take-out in 2009 through a bond offering to be underwritten by Danareksa, expected to be mobilized in the second semester of 2009, at prevailing market interest rate assumed in the attached projections to be 14% per annum.

The sources of funds are summarized in *Table 26*.

**Table 26 Sources of Funds (In Rp Million Nominal).**

Description of Bond Offering Structure	Estimated Amount, by Category of Funding	% of Total
Facility A: Credit Enhanced Bond Offering <u>Not to exceed:</u>	140,854.2	80.0%
Facility B: Non-Credit Enhanced <u>Or as otherwise agreed</u>	35,150.5	20.0%
Total Bond Offering September 2009	176,004.7	100.0%
Equity Increase By Owner – for Ciburial Main	9,200.0	----

Two Facilities will need to be underwritten. It is proposed that Facility A, in an amount not to exceed Rp 140,854.2 million, will be supported by a DCA guarantee for up to 35% of principle (Rp 49,299.0 million); whereas Facility B will not be credit enhanced. Apart from the credit enhancement, both Facilities A and B have similar security arrangements. Nonetheless, each Facility will have a different rating and, presumably, a different yield. Facility A amounts to 80.0% of the total offering; while Facility B is equal to 20.0%, based on current estimates of turnkey cost – which will not be pinned down precisely until the construction contractor is selected. At this time, a premium has been added to estimated base engineering costs to cover the risk element to the contractor for the type of contract proposed.

Facility A will have two tranches with the following respective maturities: a 5-year bullet and a 10-year bullet maturity. The 10-year bullet covers all engineering and construction costs, amounting to Rp 130,273.4 million; whereas the 5-year bullet will cover the balance, amounting to Rp 10,580.7 million of finance-related costs, for a total exposure not to exceed Rp 140,854.2 million.

Facility B has only a 5-year bullet covering the liquidity standby reserve up to a total of Rp 35,150.5 million.

<b>Facility A</b>	<b>140,854.2</b>	<b>80.0%</b>
10-year bullet	130,273.4	
5-year bullet	10,580.7	
<b>Facility B</b>	<b>35,150.5</b>	<b>20.0%</b>
5-year bullet	35,150.5	
<b>Total</b>	<b>176,004.7</b>	<b>100.0%</b>

Both Facility A and B, however, have sinking fund requirements, to be agreed with the underwriter. A much more detailed description of the proposed transaction structure including its security arrangements is available in the Executive Summary as *Attachment C, The Indicative Term Sheet* (already in process of discussion with Borrower); whilst an outline of all required documents is identified in *Attachment D, Legal Agreements Required for Closing*.

## 5.3. SCOPE

### 5.3.1. EAST BOGOR

The proposed investment consists of two discrete components:

1. Construction of two new production facilities, including intake facilities and treatment plants, with a combined capacity, of 150 l/sec
2. Extension of the distribution system.

PDAM originally considered the following options for the new production unit location:

1. Option 1: Two intakes and two treatment plants, one in Bojong Kolor with a capacity of 100 l/sec and another in Bojong Nangka of 50 l/sec
2. Option 2: Intake and treatment plant in Bojong Kolor with capacity of 100 l/sec
3. Option 3: Intake and treatment plant in Bojong Kolor with capacity of 150 l/sec
4. Option 4: Intake and treatment plant in Bojong Nangka with capacity of 150 l/sec

With the assistance of ESP, PDAM management has decided to construct one treatment plant with a capacity of 50 l/sec on Bojong Kolor and another in Bojong Nangka with a capacity of 100 l/sec. The reasons for this selection are:

1. A much reduced length of incremental distribution pipe from 166 km to 38 km due to the fact that much of the previously envisaged pipework investment has already been installed by residential estate developers (a factor not taken into account in the ADB-financed TA).
2. The diameter of the bulk transmission main is reduced from 500 mm to 400 mm.
3. Nearly 3,000 additional connections can be installed as the transmission lines pass through more populated areas and would thus enable extension of the service to more households.

A breakdown of the cost of the investment program for East Bogor is presented in *Table 27*.

**Table 27 Breakdown of Investment for East Bogor (In Rp Million at Current Prices).**

DESCRIPTION	2007	2008	2009	2010	2011	2012	2013	Total	% of Total
Procurement	4,213.6	8,388.0	4,174.4					16,776.0	21.0%
Procurement - Connections		501.7	1,003.4	788.4	716.7	358.3		3,368.5	4.2%
Civil Works	7,584.5	15,098.4	7,513.9					30,196.8	37.8%
Civil Works - Connections		334.5	668.9	525.6	477.8	238.9		2,245.7	2.8%
Land Acquisition	1,196.0							1,196.0	1.5%
Design	1,041.3	1,052.1	65.2	25.1				2,183.6	2.7%
Supervision	694.2	701.4	43.5	16.7				1,455.8	1.8%
Administration	619.8	626.2	41.8	17.9	14.9	14.9		1,335.6	1.7%
<b>Total Base Prices</b>	<b>15,349.3</b>	<b>26,702.2</b>	<b>13,511.1</b>	<b>1,373.7</b>	<b>1,209.4</b>	<b>612.2</b>		<b>58,757.9</b>	<b>73.5%</b>



**PDAM TIRTA KAHURIPAN KABUPATEN BOGOR:  
FINANCIAL FEASIBILITY BOND OFFERING**

DESCRIPTION	2007	2008	2009	2010	2011	2012	2013	Total	% of Total
Financial Contingencies	1,819.5	4,552.5	2,983.2	414.7	894.1	797.0		11,460.9	14.3%
Taxes and Duties	1,716.9	3,125.5	1,649.4	178.8	332.8	263.3		7,266.8	9.1%
<b>Total Inv. Cost, Current Prices + Contingencies</b>	<b>18,885.7</b>	<b>34,380.2</b>	<b>18,143.7</b>	<b>1,967.2</b>	<b>3,660.7</b>	<b>2,896.8</b>		<b>79,934.3</b>	<b>100.0%</b>

### 5.3.2. CENTRAL BOGOR

The investment program for Central Bogor entails the installation of 150 l/sec additional production capacity, not only for this service region but also to alleviate the PDAM's supply constraints and thus enable it to pursue its regular connection program. The existing distribution network will likewise be extended.

A breakdown of the cost of the investment program for Central Bogor is presented in *Table 28*.

**Table 28 Breakdown of Investment Program for Central Bogor (In Rp Million at Current Prices).**

DESCRIPTION	2007	2008	2009	2010	2011	2012	2013	Total	% of Total
Procurement	6,519.3	6,556.8	37.5					13,113.5	28.1%
Procurement – Connections			286.7	573.4	573.4	573.4	573.4	2,580.1	5.5%
Civil Works	7,823.1	7,868.1	45.0					15,736.2	33.7%
Civil Works – Connections			191.1	382.2	382.2	382.2	382.2	1,720.1	3.7%
Land Acquisition	373.0							373.0	0.8%
Design	1,220.4	6.9	40.1	40.1	40.1	40.1	20.1	1,408.0	3.0%
Supervision	813.6	4.6	26.8	26.8	26.8	26.8	13.4	938.6	2.0%
Administration	726.4	4.1	23.9	23.9				778.3	1.7%
<b>Total Base Prices</b>	<b>17,475.8</b>	<b>14,440.5</b>	<b>651.1</b>	<b>1,046.4</b>	<b>1,022.5</b>	<b>1,022.5</b>	<b>989.0</b>	<b>36,647.8</b>	<b>78.4%</b>
Financial Contingencies	2,101.5	2,229.5	159.8	318.3	385.4	463.9	528.2	6,186.5	13.2%
Taxes and Duties	1,957.7	1,667.0	81.1	136.5	69.4			3,911.7	8.4%
<b>Total Inv. Cost, Current Prices + Contingencies</b>	<b>21,535.1</b>	<b>18,337.0</b>	<b>892.0</b>	<b>1,501.1</b>	<b>1,477.3</b>	<b>1,486.3</b>	<b>1,517.2</b>	<b>46,746.0</b>	<b>100.0%</b>

## 5.4. TARGETS

Through the investment program, a total of 20,750 new connections are targeted to be generated, 11,750 in East Bogor and the remaining 9,000 in Central Bogor, based on the current waiting list consisting of almost 36,000. In East Bogor, the first of these connections will be installed after 12 months of the construction program (i.e. when the bulk transmission main and

the water treatment plants will have been commissioned) expected to be in the third quarter of 2008, and will continue until 2012. In Central Bogor, the installation of new connections will start in the third quarter of 2009 and is scheduled to be completed in 2013.

Using PDAM's customer classification, 14.5% (3,000) of the 20,750 new connections in the two targeted service areas will fall under the low-income household category<sup>4</sup>. (See *Attachment B* of the Executive Summary for a comprehensive breakdown of the income profile of households expected to be served by the investment program.)

In addition, the PDAM plans to install 33,000 new connections through its regular connection program, including the incremental distribution network in East and Central Bogor to customers not on the current waiting list. On a linear basis, this is a conservative target compared with recent historical trends (ref *Table 6*).

The consolidated schedule for installing new connections is presented in *Table 29*.

**Table 29 Consolidated Schedule for Installing New Connections.**

Type of Connection	2007	2008	2009	2010	2011	2012	2013	2014-2025	Total	% of Total
Other Households	1,894	3,552	6,157	6,394	6,157	4,973	3,789	17,997	50,914	94.7%
Very Poor Households	37	69	119	124	119	96	73	349	987	1.8%
Public Taps	13	24	41	42	41	33	25	119	337	0.6%
Commerce	43	80	140	145	140	113	86	408	1,154	2.1%
Services	11	21	37	39	37	30	23	108	307	0.6%
Industry	2	3	5	6	5	4	3	16	45	0.1%
Harbors and Water Tankers	0	0	1	0	0	0	0	2	5	0.0%
Sub-Total, Non-Domestic	56	105	183	189	182	147	112	535	1,511	2.8%
<b>Total</b>	2,000	3,750	6,500	6,749	6,499	5,250	4,000	19,000	53,748	100.0%
<b>Cumulative</b>	<b>2,000</b>	<b>5,750</b>	<b>12,250</b>	<b>19,000</b>	<b>25,499</b>	<b>30,749</b>	<b>34,748</b>	<b>53,748</b>		
<b>Due to Investment Program</b>		<b>1,750</b>	<b>6,250</b>	<b>11,000</b>	<b>15,499</b>	<b>18,749</b>	<b>20,748</b>			

The schedule for installing new connections in East Bogor is in *Table 30*.

<sup>4</sup> The ADB SPAR uses official data to show that 12.0% of the 2002 Kabupaten Bogor population fall below the national poverty line, but only 4.5% in the service area. It is assumed that the continued economic recovery in Indonesia will have reduced these percentages of poor significantly. Nevertheless, although poverty reduction is not a major issue within the overall context of this project, the investment will benefit a substantial percentage of the service area poor.

**Table 30 Schedule for Installing New Connections in East Bogor.**

Type of Connection	2007	2008	2009	2010	2011	2012	2013	Total	% of Total
Other Households		1,658	3,315	2,605	2,368	1,184		11,130	94.7%
Very Poor Households		32	64	50	46	23		216	1.8%
Public Taps		11	22	17	16	8		74	0.6%
Commerce		38	75	59	54	27		252	2.1%
Services		10	20	16	14	7		67	0.6%
Industry		1	3	2	2	1		10	0.1%
Harbors and Water Tankers									
Sub-Total, Non-Domestic		49	98	77	70	35		329	2.8%
<b>Total</b>		<b>1,750</b>	<b>3,500</b>	<b>2,750</b>	<b>2,500</b>	<b>1,250</b>		<b>11,749</b>	<b>100.0%</b>
<b>Cumulative</b>		<b>1,750</b>	<b>5,249</b>	<b>7,999</b>	<b>10,499</b>	<b>11,749</b>	<b>11,749</b>		

The schedule for installing new connections in Central Bogor is in *Table 31*.

**Table 31 Schedule for Installing New Connections in Central Bogor.**

Type of Connection	2007	2008	2009	2010	2011	2012	2013	Total	% of Total
Other Households			947	1,894	1,894	1,894	1,894	8,525	94.7%
Very Poor Households			18	37	37	37	37	165	1.8%
Public Taps			6	13	13	13	13	56	0.6%
Commerce			21	43	43	43	43	193	2.1%
Services			6	11	11	11	11	51	0.6%
Industry			1	2	2	2	2	8	0.1%
Harbors and Water Tankers			1					1	0.0%
Sub-Total, Non-Domestic			28	56	56	56	56	253	2.8%
<b>Total</b>			<b>1,001</b>	<b>2,000</b>	<b>2,000</b>	<b>2,000</b>	<b>2,000</b>	<b>9,000</b>	<b>100.0%</b>
<b>Cumulative</b>			<b>1,001</b>	<b>3,001</b>	<b>5,000</b>	<b>7,000</b>	<b>9,000</b>		

On average, the investment required for generating each new connection is nearly Rp 5.8 million nominal. The investment per capita for extending the piped water supply service amounts to almost Rp 1.0 million, as shown in *Table 32*.

**Table 32 Comparison of Investment Cost and Indicative Benefits.**

	<b>East Bogor</b>	<b>Central Bogor</b>	<b>Consolidated</b>
Total Cost (Rp Million)	79,934.3	46,746.0	126,680
New Connections (No.)	11,749	9,000	20,748
People to be Served (No.)	73,750	56,489	130,239
Cost Per Connection (Rp)	6,803,754	5,194,061	6,105,530
Cost Per Capita	1,083,859	827,522	972,676

With reference to the SPAR prepared for the ADB-funded WSSP, the cost per connection presented in the foregoing table is considerably less than the indicative ceiling of Rp 8 million, largely because the incremental distribution network will be financed by property developers, instead of by PDAM.

## 6. HIGHLIGHTS OF THE FINANCIAL PROJECTION

The discussion focuses on the years 2007 to 2019, the time slice that is considered critical as it corresponds to the period for implementing the investment program and the ten-year term of the bond issue.

### 6.1. ASSUMPTIONS

The assumptions used in the financial projection are summarized in *Attachment E, Assumption Sheet* of the Executive Summary.

#### Weighted Average Cost of Capital

The weighted average costs of capital (WACCs) are computed based on the fund-sourcing mix. As mentioned, the bond issue will bear a coupon of 14.0%. PDAM and local government contributions, on the other hand, are assumed to have a usual (commercial bank) cost of capital of 16%. On this basis, the WACCs for the investment programs for East and Central Bogor, and as consolidated are presented in *Table 33*.

**Table 33 Weighted Average Costs of Capital (WACCs).**

	East Bogor		Central Bogor		Consolidated	
	Bond	Gov't Funds	Bond	Gov't Funds	Bond	Gov't Funds
Amount (Rp Million Nominal)	68,964	10,970	39,670	7,076	108,635	18,046
Weight	86.28%	13.72%	84.86%	15.14%	85.75%	14.25%
Cost of Capital	14.00%	16.00%	14.00%	16.00%	14.00%	16.00%
Weighted Component of WACC	12.08%	2.20%	11.88%	2.42%	12.01%	2.28%
<b>WACC</b>	<b>14.27%</b>		<b>14.30%</b>		<b>14.28%</b>	

### 6.2. PRODUCTION AND DEMAND

In the second half of 2008, 50 l/sec each of additional production capacity from East Bogor and Central Bogor is scheduled to come on stream, bringing the PDAM's total production capacity to 2,178 l/sec. The remainder of the planned additional capacity of l/sec will become operational by the second semester of 2009, by which time the PDAM's total production capacity will reach 2,378 l/sec.

The PDAM intends to reduce non-revenue water (NRW) progressively from its present level of 36.9% in 2005 to 27.2% by 2016, including production losses. The most significant contributor to this reduction will be the rehabilitation of the Ciburial transmission main funded by the PDAM.

The PDAM's projected production capacity, capacity constraints, and water losses are presented in *Table 34*.

Average household demand is forecast to remain steady at 125 lcd. Non-domestic connection daily demand is forecast at 5.5 m<sup>3</sup>. Average monthly consumption per connection has thus been set at 26.5 m<sup>3</sup> starting in 2012.

The domestic service ratio for Kabupaten Bogor will reach 18.3% in 2013, after which it will progressively decline as population growth overtakes the rate at which new connections are generated without additional investment in systems. For the service area, the highest level is projected at 24.3% to be achieved in 2020. These projections assume that Kota Depok will continue to be served by the PDAM.

The projections of connections and water demand are summarized in *Table 35*.

Details of projections of production capacity and capacity constraints as well as connections and demand are in *Annex C*.

## **6.2.1. RECURRENT EXPENDITURES**

Recurrent expenditure for each major cost item is treated on the following basis:

1. Personnel and personnel cost: The proportion of staff to connections will improve to 6.25 per 1,000 in 2008 and will be maintained at this level throughout the rest of the projection period. The cost per employee is assumed to increase in nominal terms by 8% per year.
2. Power: Energy price distortions are expected to be gradually corrected during the next five years (up to 2010) by progressive elimination of government subsidies for petroleum-based fuel and electricity. Increases in this item will therefore be higher during the earlier years of the projection period, but on average be limited to 11% per year in nominal terms in view of the current efforts of the PDAM, with assistance from ESP, to identify and implement energy-saving measures.
3. Based on the work plan and budget, the anticipated increase in power cost in 2006 is much higher. The PDAM contends, however, that its past efforts as well as the ongoing ESP-assisted power-cost reduction program should be able to rein in this cost at the assumed level of increase.
4. Chemicals: Due to increased reliance on surface water and greater turbidity as a result of continued deforestation, unit chemical costs are projected to rise by 7% per annum (higher than inflation).
5. Maintenance materials: These are pegged at 2.1% of net fixed assets, which is the same as the historical rate.
6. Administration: This is defined as PDAM general and administrative expenses minus wages, interest payments, bad debts allowances, and maintenance and depreciation costs related to general and administrative fixed assets. These expenses are projected to increase by 7% per year.
7. Raw water: The average cost of Rp 21 per m<sup>3</sup> at constant 2005 prices is used throughout the projection period.

**Table 34 Projected Production Capacity, Capacity Constraints and Water Losses.**

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Production Capacity (l/sec)	2,078	2,078	2,378	2,378	2,378	2,378	2,378	2,378	2,378	2,378	2,378	2,378	2,378
Production Volume (000 m3/year)	44,966	44,627	46,620	51,118	53,867	56,058	57,586	58,798	59,660	60,522	61,384	62,247	63,109
Distribution Volume (000 m3/year)	43,050	42,725	44,665	49,054	51,728	53,856	55,334	56,502	57,327	58,153	58,978	59,804	60,629
Volume Sold to Customers (000 m3/year)	31,211	31,830	33,449	36,664	38,716	40,409	41,648	42,602	43,293	44,008	44,699	45,319	45,938
Production Losses (%)	4.3%	4.3%	4.1%	4.0%	4.0%	3.9%	3.9%	3.9%	3.9%	3.9%	3.9%	3.9%	3.9%
Distribution Losses (%)	27.0%	25.0%	25.2%	25.3%	25.1%	24.9%	24.7%	24.6%	24.4%	24.3%	24.2%	24.2%	24.2%
Total Water Losses (%)	30.1%	28.2%	28.3%	28.3%	28.1%	27.9%	27.6%	27.5%	27.4%	27.2%	27.2%	27.2%	27.2%
PDAM Plant Utilization Factor	66.0%	65.5%	62.0%	66.6%	70.1%	72.5%	74.4%	75.8%	76.9%	78.0%	79.1%	80.2%	81.3%

**Table 35 Projected Connections and Water Demand.**

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Household Connections (No.)	97,199	100,820	107,097	113,614	119,891	124,960	128,822	130,753	132,685	134,616	136,547	138,478	139,462
Unit Consumption (l/cd)	122	123	123	124	125	125	125	125	125	125	125	125	125
Non-Domestic Connections	2,562	2,667	2,850	3,040	3,222	3,369	3,482	3,538	3,594	3,650	3,707	3,763	3,819
Unit Consumption (m3/day)	5.6	5.5	5.5	5.9	5.7	5.6	5.6	5.6	5.6	5.5	5.5	5.5	5.5
Total Connections (No.)	100,362	104,112	110,612	117,362	123,861	129,111	133,110	135,110	137,110	139,110	141,110	143,110	145,110
Annual Change (No.)	2,000	3,750	6,500	6,749	6,499	5,250	4,000	2,000	2,000	2,000	2,000	2,000	2,000
Average Consumption per Connection (m3/month)	26.0	25.8	26.1	26.4	26.4	26.5	26.4	26.5	26.5	26.5	26.5	26.5	26.5
Domestic Service Ratio-Kabupaten Bogor (%)	16.8%	16.8%	17.3%	17.8%	18.1%	18.3%	18.3%	18.0%	17.7%	17.4%	17.1%	16.8%	16.5%
Domestic Service Ratio-Service Coverage Area (%)	19.0%	19.5%	20.5%	21.4%	22.4%	23.1%	23.5%	23.7%	23.8%	23.9%	24.0%	24.1%	24.2%

## **6.2.2. WATER TARIFF**

The assumed adjustments to average tariff are 47.5% nominal in 2008, and every two years thereafter in accordance with a compound of annual inflation plus a 4% per annum real increase. On this basis, the weighted average tariff will range between 100% and 153% of full cost, with the lowest level falling in 2019 when the PDAM fully redeems the bond issue through a balloon payment.

The assumed yearly average tariff and those required for various levels of cost recovery are presented in *Table 36*.

Notwithstanding the aforementioned tariff increases, the projected monthly water bill per household connection, expressed in constant 2005 prices will remain affordable, ranging between 2.5% and 3.2% of average household income or well below the 4% generally accepted ceiling.

The affordability analysis of projected weighted average tariffs is in *Table 37*.



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**Table 36 Cost-Recovery Analysis of Projected Tariff (Rp per m3 of Water Sold at Current Prices).**

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Water Sold (000 m3)	31,211	31,830	33,449	36,664	38,716	40,409	41,648	42,602	43,293	44,008	44,699	45,319	45,938
Operating Revenues (Rp Million)	92,112	134,844	141,433	189,248	199,534	256,942	264,656	335,326	340,563	430,171	436,687	551,705	559,033
Operating Revenue per m3 of Water Sold (Rp)	2,951	4,236	4,228	5,162	5,154	6,359	6,355	7,871	7,866	9,775	9,769	12,174	12,169
Cost Components													
• Operating Expenses (Rp Million)	62,511	67,621	74,002	85,173	98,935	111,113	122,888	134,404	145,763	157,820	170,545	184,813	199,869
• Debt Service (Rp Million)	2,922	2,762	2,602	28,139	27,726	27,342	26,977	71,066	20,549	20,463	20,376	19,943	151,334
• 10% of Equity (Rp Million)	14,710	19,057	21,785	25,707	30,695	39,448	48,872	63,928	80,156	103,792	129,509	165,233	205,098
Full Cost (Rp Million)	80,142	89,440	98,389	139,019	157,356	177,903	198,738	269,397	246,468	282,075	320,430	369,988	556,302
Full Cost per m3 of Water Sold (Rp)	2,568	2,810	2,941	3,792	4,064	4,403	4,772	6,324	5,693	6,410	7,169	8,164	12,110
Cost Recovery (%)	115%	151%	144%	136%	127%	144%	133%	124%	138%	153%	136%	149%	100%

**Table 37 Affordability Analysis of Projected Tariff (Rp per m3 of Water Sold at Constant 2005 Prices).**

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Connections (No.)	97,199	100,820	107,097	113,614	119,891	124,960	128,822	130,753	132,685	134,616	136,547	138,478	140,409
Consumption (000 m3/year)	25,538	26,188	27,723	29,684	31,515	33,228	34,354	35,125	35,637	36,150	36,662	37,175	37,687
Unit Consumption (m3/month)	21.9	21.6	21.6	21.8	21.9	22.2	22.2	22.4	22.4	22.4	22.4	22.4	22.4
Weighted Average Tariff (Rp/month)	2,961	4,137	3,919	4,677	4,430	5,287	5,008	5,977	5,661	6,756	6,399	7,637	7,234
Ave. Household Water Bill (Rp/month)	<b>64,839</b>	<b>89,554</b>	<b>84,535</b>	<b>101,829</b>	<b>97,038</b>	<b>117,153</b>	<b>111,288</b>	<b>133,791</b>	<b>126,703</b>	<b>151,189</b>	<b>143,180</b>	<b>170,852</b>	<b>161,803</b>
Average Household Income (Rp/month)	<b>2,583,576</b>	<b>2,790,262</b>	<b>3,013,483</b>	<b>3,254,562</b>	<b>3,514,927</b>	<b>3,796,121</b>	<b>4,099,810</b>	<b>4,427,795</b>	<b>4,782,019</b>	<b>5,164,580</b>	<b>5,577,747</b>	<b>6,023,967</b>	<b>6,505,884</b>
Water Bill as % of Monthly Income (%)	<b>2.5%</b>	<b>3.2%</b>	<b>2.8%</b>	<b>3.1%</b>	<b>2.8%</b>	<b>3.1%</b>	<b>2.7%</b>	<b>3.0%</b>	<b>2.6%</b>	<b>2.9%</b>	<b>2.6%</b>	<b>2.8%</b>	<b>2.5%</b>

## 6.3. FEASIBILITY INDICATORS

Based on the foregoing assumptions on revenue and cost, the investment programs, as consolidated and individually, are found feasible with positive NPVs and FIRRs that exceed the WACCs.

Moreover, the investment programs, individually and as consolidated, all survive the adverse scenarios used in the sensitivity analysis, to wit: 10% increase in investment and incremental O&M costs, 10% decrease in incremental revenue, a combination of a 10% increase in costs and 10% decrease in revenue, and one-year delay in the realization of incremental revenue.

The projected yields of the investment programs expressed in NPVs and FIRRs using the WACCs as hurdle rates under various scenarios are presented in *Table 38*.

**Table 38 Financial Feasibility Indicators (In Rp Million Nominal, Except %).**

Scenarios	East Bogor		Central Bogor		Consolidated	
	NPV	FIRR	NPV	FIRR	NPV	FIRR
Base Case	28,373	18.67%	27,631	20.32%	55,170	19.36%
+10% Investment and O&M Costs	19,274	16.83%	19,460	18.33%	36,347	17.46%
-10% Incremental Revenue	14,836	16.64%	16,697	18.12%	30,830	17.26%
+10% Cost and -10% Revenue	4,136	14.84%	8,525	16.14%	12,007	15.38%
1 Year Delay in Incremental Revenue	6,715	15.03%	8,567	16.14%	12,998	15.47%

## 6.4. FINANCIAL RESULTS

### 6.4.1. INCOME STATEMENT

The tariff and connection revenues are carried from the revenue calculation into the income statement, whilst the 2005 constant price revenues are converted into nominal prices through the application of the annual GDP inflator. A bad debts allowance of 0.6% is assumed for tariff revenues. Profits are taxed at the corporate rates currently prevailing in Indonesia.

Connection fees are fully collected from customers as connections are installed.

The PDAM will consistently generate positive and increasing yearly net income during the entire projection period. Retained earnings will likewise be always positive. Return on equity will be at 10% or better. Return on assets, on the other hand, will be less robust during the early years from 2007 to 2013, ranging between 2% and 10%. Thereafter, it will consistently be above 10%.

A summary of the PDAM's income statement for the period 2007-2018 is presented in *Table 39*. Detailed income statements are presented in *Annex D*.

## **6.4.2. SOURCES AND APPLICATIONS OF FUNDS**

Cash flows will be consistently positive. Replacement capital expenditure per annum on the existing system is estimated at 7.5% of 2005 gross fixed assets and adjusted by the GDP inflator. However, no additional production capacity and system expansion is included. The positive cash flows generated would be used for this purpose. The DSCR will always be above the statutory minimum, with the lowest levels at 3.3 in 2014, when the PDAM redeems the bond with five-year bullet through a balloon payment, and at 3.2 in 2019 at the maturity of the remaining bond principal which will also be retired through a balloon payment.

A summary of the sources and applications of funds is presented in *Table 40*, while the details are in *Annex E*.

As mentioned, of the PDAM's yearly net income 55% is paid to the local government as dividend and another 19% is set aside for staff funds. Actual payment to the local government is done on the succeeding year. In discussion with the PDAM's Supervisory Board, it was agreed in principle that the yearly dividend payment will be reinvested in the PDAM.

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**Table 39 Summary Income Statement (In Rp Million at Current Prices, Except Ratios).**

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Tariff Revenues	62,511	67,621	74,002	85,173	98,935	111,113	122,888	134,404	145,763	157,820	170,545	184,813	199,869
Total Operating Revenues	92,112	134,844	141,433	189,248	199,534	256,942	264,656	335,326	340,563	430,171	436,687	551,705	559,033
Operating Expenses	62,511	67,621	74,002	85,173	98,935	111,113	122,888	134,404	145,763	157,820	170,545	184,813	199,869
Non-Operating Income/(Loss)	815	1,726	4,851	12,208	14,873	18,597	24,951	32,627	40,950	54,075	71,986	92,454	119,454
Net Profit Before Tax	6,774	43,309	26,315	52,261	48,374	93,861	92,382	158,565	159,883	246,297	253,402	369,645	393,215
Income Tax	2,023	12,984	7,886	15,661	14,495	28,141	27,697	47,552	47,947	73,872	76,003	110,876	117,947
<b>Net Income Loss</b>	<b>4,751</b>	<b>30,325</b>	<b>18,429</b>	<b>36,600</b>	<b>33,880</b>	<b>65,721</b>	<b>64,685</b>	<b>111,013</b>	<b>111,936</b>	<b>172,426</b>	<b>177,399</b>	<b>258,769</b>	<b>275,268</b>
Other Payments	3,515	22,441	13,638	27,084	25,071	48,633	47,867	82,150	82,832	127,595	131,275	191,489	203,698
Retained Earnings	1,235	7,885	4,792	9,516	8,809	17,087	16,818	28,863	29,103	44,831	46,124	67,280	71,570
Return on Assets	2%	9%	4%	7%	6%	10%	9%	13%	11%	13%	11%	13%	12%
Return on Equity	3%	16%	8%	14%	11%	17%	13%	17%	14%	17%	14%	16%	13%

**Table 40 Summary Sources and Applications of Funds (In Rp Million at Current Prices, Except Ratios).**

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Gross Internal Cash Generation	30,416	68,949	72,282	116,282	115,473	164,426	166,718	233,549	235,750	326,426	338,127	459,347	478,618
Equity	2,599	2,613	16,679	10,136	20,130	18,634	36,146	35,577	61,057	61,565	94,834	97,569	142,323
Borrowing	38,852	52,717	84,436										
<b>Total Sources of Funds</b>	<b>71,867</b>	<b>124,279</b>	<b>173,396</b>	<b>126,418</b>	<b>135,603</b>	<b>183,060</b>	<b>202,864</b>	<b>269,126</b>	<b>296,807</b>	<b>387,991</b>	<b>432,961</b>	<b>556,916</b>	<b>620,941</b>
Capital Expenditures	63,338	81,590	53,489	41,460	46,386	49,206	50,022	52,328	56,359	60,699	65,372	70,403	75,820
Debt Service	2,922	2,762	2,602	28,139	27,726	27,342	26,977	71,066	20,549	20,463	20,376	19,943	151,334
Operations	(872)	(6,407)	15,045	24,532	17,181	20,225	27,344	32,568	45,710	55,158	71,421	85,852	105,470
<b>Total Applications of Funds</b>	<b>65,388</b>	<b>77,945</b>	<b>71,137</b>	<b>94,131</b>	<b>91,293</b>	<b>96,774</b>	<b>104,343</b>	<b>155,962</b>	<b>122,619</b>	<b>136,319</b>	<b>157,169</b>	<b>176,198</b>	<b>332,624</b>
Cash Increase (Decrease)	6,479	46,334	102,259	32,287	44,310	86,286	98,521	113,164	174,188	251,672	275,792	380,718	288,317
DSCR (Net Revenues)	10.4	25.0	27.8	4.1	4.2	6.0	6.2	3.3	11.5	16.0	16.6	23.0	3.2

### **6.4.3. BALANCE SHEET**

The bulk of the capital expenditures are forecast to be completed in 2008, while the residual connection program will be sustained until 2013. All new investments are carried as work-in-progress in the year of expenditure and capitalized in the following year. Depreciation is calculated on the useful life basis for tariff purposes and at the fiscal rate for accounting purposes. Fixed assets are carried throughout the forecast at historical cost, as is the current PDAM practice. The provisions of the Decree of the Minister of Finance (KMK) No. 507/KMK/04/1996 and preceding relevant pieces of legislation treat revaluation surpluses as capital gains, with the tax payable immediately. The PDAM is therefore not expected to consider re-valuation of its fixed assets while this decree is still in effect. Capitalized interest and construction preliminaries and demobilization expenses are treated as deferred expenses and amortized at 10% per annum on the outstanding balance.

Balance sheet projections assume 60-day accounts receivables and 30-day accounts payable. The inventory point for chemicals and maintenance materials is 30 days and for installation inventories, 70 days. Cash and cash equivalents are projected to be positive and will constantly increase during the entire projection period. The current ratio will always be at a safe level, with the lowest at 2.8 in 2007. Cash expressed in terms of number of months of operating expenses will likewise be more than adequate, with the lowest level at 3.5 months also in 2007. Debt to total capitalization will reach its highest level at 54% in 2008 and will significantly decline every year thereafter.

The highlights of the balance sheet are presented in *Table 41*. The detailed balance sheet projections are in *Annex F*.

## **6.5. OTHER BENEFITS OF THE INVESTMENT PROGRAM**

The proposed investment program will assist in facilitating economic growth and the pursuit of equality through poverty alleviation. Economic growth will be facilitated by:

1. Providing urban infrastructure improvement which support sustainable commercial, services, and industrial development
2. Ensuring efficient utilization of urban infrastructure.

Poverty alleviation will be assisted by providing improved environmental conditions in low-income housing areas. The benefits will be as follows:

1. Rehabilitation of existing water supply facilities
2. Provision of clean water supply to 136,000 persons, thereby improving the quality of their lives and the level of public health, and also facilitating commercial, institutional, and industrial development
3. Improved levels of service to 450,000 existing piped water supply customers as a result of further improvements in the corporate governance of PDAM.

**PDAM TIRTA KAHURIPAN KABUPATEN BOGOR:  
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**Table 41 Summary Balance Sheet Projections (In Rp Million At Current Prices, Except Ratios).**

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Cash and Deposit	18,219	64,553	155,803	166,072	188,364	252,632	329,135	468,876	629,882	868,371	1,130,980	1,498,515	1,912,068
Current Assets, net of Cash	19,242	22,649	35,495	65,261	89,046	120,468	143,843	128,923	143,112	171,252	185,571	217,910	93,957
Current Assets	37,460	87,202	191,298	231,334	277,410	373,100	472,978	597,799	772,994	1,039,622	1,316,551	1,716,425	2,006,025
Net Fixed Assets	123,889	194,722	229,551	232,283	236,208	240,118	240,112	239,175	237,310	235,279	233,068	230,661	228,042
<b>Total Assets</b>	<b>213,912</b>	<b>320,272</b>	<b>445,295</b>	<b>488,902</b>	<b>540,287</b>	<b>640,560</b>	<b>742,001</b>	<b>866,856</b>	<b>1,042,045</b>	<b>1,308,678</b>	<b>1,585,620</b>	<b>1,985,510</b>	<b>2,275,127</b>
Current Liabilities	13,251	24,964	39,581	45,386	47,642	61,019	68,433	87,135	99,859	129,934	148,962	190,137	210,595
Long-Term Debt, Net	66,815	129,705	227,447	231,834	233,341	246,083	253,279	227,575	240,488	270,760	290,530	333,184	224,143
Total Liabilities	5,213	5,504	5,811	6,135	6,477	6,838	7,219	7,622	8,047	8,496	8,969	9,469	9,997
Equity	147,097	190,568	217,849	257,068	306,946	394,476	488,722	639,281	801,557	1,037,918	1,295,090	1,652,327	2,050,984
<b>Total Equity and Liabilities</b>	<b>213,912</b>	<b>320,272</b>	<b>445,295</b>	<b>488,902</b>	<b>540,287</b>	<b>640,560</b>	<b>742,001</b>	<b>866,856</b>	<b>1,042,045</b>	<b>1,308,678</b>	<b>1,585,620</b>	<b>1,985,510</b>	<b>2,275,127</b>
Current Ratio	2.8	3.5	4.8	5.1	5.8	6.1	6.9	6.9	7.7	8.0	8.8	9.0	9.5
Debt to Total Capitalization	35%	54%	10%	8%	6%	5%	4%	2%	2%	1%	1%	1%	0%
No. of Days Accounts Receivable	61	60	60	60	60	60	60	60	60	60	60	60	60
Cash = No. of Months of Operating Exp.	3.5	11.5	25.3	23.4	22.8	27.3	32.1	41.9	51.9	66.0	79.6	97.3	114.8

## 7. ALTERNATIVE SCENARIO

### 7.1. ASSUMPTIONS

#### 7.1.1. GENERAL

PDAM Kabupaten Bogor serves around 41,000 connections in Depok, which was spun off into a separate municipality in 1999. Shortly thereafter, the local government of Depok established its own water supply management entity (*UPTD*) under the local Department of Public Works. The two local governments then initiated a study to identify and quantify the assets that should be transferred from PDAM Kabupaten Bogor to Kota Depok. By mutual agreement of the two local governments, the transfer did not materialize, however, and PDAM Kabupaten Bogor continues to serve its customers in Depok.

The continuing presence of PDAM Kabupaten Bogor beyond what might be called its franchise area is not covered by a formal and binding agreement between the two concerned parties. There is thus the possibility that the local government of Kota Depok could eventually demand that PDAM Kabupaten Bogor relinquish its rights over its assets and service area in Kota Depok.

For the purposes of simulating this alternative scenario, it is assumed that PDAM Kabupaten Bogor will transfer assets and liabilities attributable to Depok, including long-term debt, in 2009. It is further assumed that any excess in the value of the transferred assets over liabilities, or vice versa will be paid by the owing party in cash at the time of the transfer.

Included in the assets will be the PDAM's 41,000 connections in Kota Depok as well as the corresponding production and transmission and distribution lines. As a result of the transfer, it is likewise assumed that the PDAM Kabupaten Bogor will be able to automatically adjust its headcount to conform to the targeted level of 6.25 per 1,000 connections.

The other assumptions used in the financial projection that includes Depok shall remain valid unless explicitly revised in the discussion that follows.

#### 7.1.2. PRODUCTION AND DEMAND

Facilities with aggregate production capacity of about 650 l/sec are presently supplying customers in Depok. Of these, 495 l/sec are located within Depok's territorial jurisdiction and are therefore assumed to be part of the asset transfer. Production from the remaining 160 l/sec capacity would be sold by the PDAM to Depok as treated bulk water.

Based on the foregoing, starting in 2010, when the transfer would have been fully effected, PDAM Kabupaten Bogor's production capacity will be 1,883 l/sec, including the 300 l/sec that will come on stream from the implementation of the investment programs in East and Central Bogor. In the same year, production, distribution, and sales volumes will drop sharply and recover gradually to pre-transfer levels only in 2020. Plant capacity utilization will range between

57.8% in 2010 and 76.4% in 2010, implying that with the de-merging the PDAM could pursue a more aggressive connection program within the boundaries of the kabupaten. The PDAM's projected production capacity, capacity constraints, and water losses, assuming the de-merging of Depok, are presented in *Table 42*.

A net reduction of 34,281 connections will be recorded in 2010, which is basically the over 41,000 connections that will be transferred to Depok less the new connections that will be generated through the PDAM's regular connection program and the proposed investment programs in East and Central Bogor. On this basis, the domestic coverage ratio will reach only 10.6% by the end of the projection period.

The projections of connections and water demand, excluding Depok, are summarized in *Table 43*.

For household connections, unit consumption is set at 127 lcd, which is slightly higher than the 125 lcd set for the 'with Depok' scenario. Non-domestic consumption is set at over 9 m<sup>3</sup> per connection per day, which reflects the treated bulk water sales to Depok.

Details of projections of production capacity and capacity constraints as well as connections and demand, without Depok, are in *Annex G*.

### **7.1.3. WATER TARIFF**

Assumptions on tariff adjustments are the same as those used in 'with Depok scenario'. On this basis, it is projected that weighted average tariff will on the main be above full cost, ranging from 114% to 153%. The exception, however, is 2019, when weighted average tariff will just be 94% of full cost as a consequence of the un-proportionately high debt service when the PDAM fully retires the bond issue.

The PDAM's projected cost-recovery performance is presented in *Table 44*.

## **7.2. FEASIBILITY INDICATORS**

The exclusion of Depok has no significant influence on the feasibility of the proposed investment programs, meant as these are for other service regions. Thus, the investment programs remain feasible, with NPVs and FIRRs that are the same as those in the 'with Depok' scenario (see *Table 38*).

## **7.3. FINANCIAL RESULTS**

### **7.3.1. INCOME STATEMENT**

Net income will be negative in 2010, for while weighted average tariff will fully cover the various cost components (operating expenses, debt service, and 10% of equity), it will be inadequate to cover depreciation, which will be significantly higher than debt service during the year.



**Table 42 Projected Production Capacity, Capacity Constraints and Water Losses Without Depok.**

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Production Capacity (l/sec)	2,078	2,078	2,378	1,883	1,883	1,883	1,883	1,883	1,883	1,883	1,883	1,883	1,883
Production Volume (000 m3/year)	44,966	44,627	46,620	34,912	37,660	39,851	41,380	42,591	43,453	44,315	45,178	46,040	46,902
Distribution Volume (000 m3/year)	43,050	42,725	44,665	32,847	35,521	37,649	39,127	40,295	41,121	41,946	42,771	43,597	44,422
Volume Sold to Customers (000 m3/year)	31,211	31,830	33,449	25,076	26,804	28,173	29,088	29,717	30,327	31,043	31,734	32,353	32,972
Production Losses (%)	4.3%	4.3%	4.1%	5.8%	5.6%	5.5%	5.4%	5.4%	5.4%	5.3%	5.3%	5.3%	5.3%
Distribution Losses (%)	27.0%	25.0%	25.2%	23.9%	24.8%	25.3%	25.8%	26.4%	26.2%	25.9%	25.8%	25.8%	25.8%
Total Water Losses (%)	30.1%	28.2%	28.3%	28.4%	29.0%	29.4%	29.8%	30.4%	30.1%	29.9%	29.7%	29.7%	29.7%
PDAM Plant Utilization Factor	66.0%	65.5%	62.0%	57.8%	62.2%	65.3%	67.7%	69.4%	70.8%	72.2%	73.6%	75.0%	76.4%

**Table 43 Projected Connections and Water Demand Without Depok.**

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Household Connections (No.)	97,199	100,820	107,097	73,214	79,491	84,560	88,422	90,353	92,285	94,216	96,147	98,078	100,009
Unit Consumption (l/cd)	122	123	123	161	127	127	127	127	127	127	127	127	127
Non-Domestic Connections	2,562	2,667	2,850	2,154	2,336	2,483	2,596	2,652	2,708	2,764	2,821	2,877	2,933
Unit Consumption (m3/day)	5.6	5.5	5.5	9.4	10.3	9.9	9.6	9.6	9.5	9.4	9.3	9.2	9.1
Total Connections (No.)	100,362	104,112	110,612	75,814	82,313	87,563	91,562	93,562	95,562	97,562	99,562	101,562	103,562
Annual Change (No.)		3,750	6,500	(34,799)	6,499	5,250	4,000	2,000	2,000	2,000	2,000	2,000	2,000
Average Consumption per Connection (m3/month)	26.0	25.8	26.1	35.7	31.0	30.9	30.6	30.7	30.6	30.5	30.4	30.3	30.2
Domestic Service Ratio- Kabupaten Bogor (%)	16.8%	16.8%	17.3%	11.7%	12.3%	12.6%	12.8%	12.6%	12.5%	12.4%	12.2%	12.1%	12.0%

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**Table 44 Analysis of Projected Cost Recovery Without Depok (Rp per m3 of Water Sold at Current Prices).**

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Volume of Water Sold (000 m3)	31,211	31,830	33,449	25,076	26,804	28,173	29,088	29,717	30,327	31,043	31,734	32,353	32,972
Total Operating Revenues (Rp Million)	92,112	134,844	141,433	130,917	139,775	180,946	186,842	236,093	240,802	305,658	312,240	396,087	403,481
Operating Revenue per m3 of Water Sold (Rp)	2,951	4,236	4,228	5,221	5,215	6,423	6,423	7,945	7,940	9,846	9,839	12,243	12,237
Cost Components													
• Operating Expenses (Rp Million)	62,511	67,621	74,002	73,861	63,115	71,516	80,842	89,658	98,214	107,167	116,667	127,343	138,670
• Debt Service (Rp Million)	2,922	2,762	2,602	27,744	27,189	27,058	26,860	70,948	20,432	20,345	20,258	19,825	151,275
• 10% of Equity (Rp Million)	14,710	19,057	21,785	21,649	23,758	29,474	36,159	46,311	57,062	73,072	90,605	115,318	143,320
Full Cost (Rp Million)	80,142	89,440	98,389	123,254	114,061	128,047	143,861	206,918	175,708	200,584	227,530	262,485	433,265
Full Cost per m3 of Water Sold (Rp)	2,568	2,810	2,941	4,915	4,255	4,545	4,946	6,963	5,794	6,462	7,170	8,113	13,140
Extent of Cost Recovery	115%	151%	144%	106%	123%	141%	130%	114%	137%	152%	137%	151%	93%

A summary of the PDAM's income statement for the period 2007-2019, excluding Depok, is presented in *Table 45*. Detailed income statements are presented in *Annex H*.

### **7.3.2. SOURCES AND APPLICATIONS OF FUNDS**

Cash flows will be consistently positive. DSCR will always meet the statutory minimum, with the lowest levels also during the maturities of the bond issue in 2014 (DSCR of 2.4) and in 2019 (with DSCR of 2.3).

A summary of the sources and applications of funds is presented in *Table 46*, while the details are in *Annex I*.

### **7.3.3. BALANCE SHEET**

Except from the reduction of assets and liabilities that are deemed attributable to Depok, the assumptions underlying the balance-sheet projections are basically the same as those used in the 'with Depok' scenario.

The current ratio will always be at a safe level, with the lowest at 2.8 in 2007. Cash expressed in terms of number of months of operating expenses will likewise be more than adequate, with the lowest level at 3.4 also in 2007.

The highlights of the balance sheet are presented in *Table 47*. The detailed balance sheet projections are in *Annex J*.

This positive result is due to: a) a cash payment by Depok to PDAM in final settlement of the transfer of assets and liabilities; b) the need for PDAM to supply more than 160 lit/sec of bulk treated water to Depok; and c) the structure of the bond with balloon instead of annual principal payments.

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**Table 45 Summary Income Statement Without Depok (In Rp Million, Except Ratios).**

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Tariff Revenues	77,464	116,525	122,455	115,669	123,639	163,743	169,061	217,624	222,093	286,437	292,816	376,146	383,343
Total Operating Revenues	92,112	134,844	141,433	130,917	139,775	180,946	186,842	236,093	240,802	305,658	312,240	396,087	403,481
Operating Expenses	62,511	67,621	74,002	73,861	63,115	71,516	80,842	89,658	98,214	107,167	116,667	127,343	138,670
Non-Operating Income/(Loss)	815	1,726	4,851	11,589	11,849	13,704	17,704	22,921	27,510	36,294	48,478	62,512	81,245
Net Profit Before Tax	6,774	43,309	26,315	4,625	30,208	62,036	59,552	105,330	106,022	167,343	172,976	256,241	276,457
Income Tax	2,023	12,984	7,886		9,125	14,574	16,612	31,581	31,789	50,185	51,875	76,855	82,920
<b>Net Income Loss</b>	<b>4,751</b>	<b>30,325</b>	<b>18,429</b>	<b>(1,947)</b>	<b>21,083</b>	<b>47,462</b>	<b>42,941</b>	<b>73,748</b>	<b>74,233</b>	<b>117,158</b>	<b>121,101</b>	<b>179,386</b>	<b>193,537</b>
Other Payments	3,515	22,441	13,638		15,601	35,122	31,776	54,574	54,933	86,697	89,614	132,746	143,218
Retained Earnings	1,235	7,885	4,792	(1,947)	5,482	12,340	11,165	19,175	19,301	30,461	31,486	46,640	50,320
Return on Assets	2.2%	9.5%	4.1%	-0.4%	4.6%	9.1%	7.2%	11.1%	9.5%	12.2%	10.5%	12.5%	12.2%
Return on Equity	3.2%	15.9%	8.5%	-0.9%	8.9%	16.1%	11.9%	15.9%	13.0%	16.0%	13.4%	15.6%	13.5%

**Table 46 Summary Sources and Applications of Funds Without Depok (In Rp Million, Except Ratios).**

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Gross Internal Cash Generation	30,416	68,949	72,282	68,646	88,509	123,135	123,704	169,356	170,098	234,785	244,051	331,255	346,057
Equity	2,599	2,613	16,679	10,136		11,596	26,104	23,617	40,562	40,828	64,437	66,605	98,663
Borrowing	38,852	52,717	84,436										
<b>Total Sources of Funds</b>	<b>71,867</b>	<b>124,279</b>	<b>173,396</b>	<b>78,782</b>	<b>88,509</b>	<b>134,731</b>	<b>149,808</b>	<b>192,973</b>	<b>210,660</b>	<b>275,613</b>	<b>308,487</b>	<b>397,861</b>	<b>444,719</b>
Capital Expenditures	63,338	81,590	53,489	33,414	37,729	39,892	39,999	41,544	44,756	48,214	51,939	55,949	60,269
Debt Service	2,922	2,762	2,602	27,744	27,189	27,058	26,860	70,948	20,432	20,345	20,258	19,825	151,275
Operations	(872)	(6,407)	15,045	16,409	9,646	17,591	13,978	18,485	29,718	36,452	48,149	58,600	71,919
<b>Total Applications of Funds</b>	<b>65,388</b>	<b>77,945</b>	<b>71,137</b>	<b>77,567</b>	<b>74,563</b>	<b>84,541</b>	<b>80,837</b>	<b>130,977</b>	<b>94,906</b>	<b>105,011</b>	<b>120,346</b>	<b>134,374</b>	<b>283,463</b>
Cash Increase (Decrease)	6,479	46,334	102,259	1,215	13,946	50,190	68,971	61,996	115,754	170,602	188,141	263,486	161,256
DSCR (Net Revenues)	10.4	25.0	27.8	2.5	3.3	4.6	4.6	2.4	8.3	11.5	12.0	16.7	2.3

**PDAM TIRTA KAHURIPAN KABUPATEN BOGOR:  
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**Table 47 Summary Balance Sheet Without Depok (In Rp Million, Except Ratios).**

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Cash and Deposit	18,219	64,553	155,803	135,000	126,928	155,100	202,053	290,625	393,197	550,616	725,574	975,878	1,262,371
Current Assets, net of Cash	19,242	22,649	35,495	160,286	183,530	212,293	235,405	216,979	231,235	255,352	269,755	297,026	173,178
Current Assets	37,460	87,202	191,298	295,286	310,458	367,393	437,458	507,604	624,432	805,968	995,330	1,272,904	1,435,549
Net Fixed Assets	123,889	194,722	229,551	122,427	126,803	131,199	131,716	131,341	130,082	128,701	127,190	125,537	123,729
<b>Total Assets</b>	<b>213,912</b>	<b>320,272</b>	<b>445,295</b>	<b>438,902</b>	<b>459,523</b>	<b>521,192</b>	<b>592,981</b>	<b>663,337</b>	<b>780,346</b>	<b>962,089</b>	<b>1,151,682</b>	<b>1,429,506</b>	<b>1,592,418</b>
Current Liabilities	13,251	24,964	39,581	37,153	37,484	42,542	47,743	61,057	70,588	92,263	106,158	135,766	148,869
Long-Term Debt, Net	50,585	101,718	8,566	5,790	4,997	4,259	3,566	2,873	2,180	1,488	795	795	795
Total Liabilities	66,815	129,705	227,447	222,409	221,947	226,456	231,392	200,222	209,724	231,374	245,631	276,330	159,219
Equity	147,097	190,568	217,849	216,493	237,576	294,736	361,589	463,114	570,621	730,715	906,050	1,153,177	1,433,199
<b>Total Equity and Liabilities</b>	<b>213,912</b>	<b>320,272</b>	<b>445,295</b>	<b>438,902</b>	<b>459,523</b>	<b>521,192</b>	<b>592,981</b>	<b>663,337</b>	<b>780,346</b>	<b>962,089</b>	<b>1,151,682</b>	<b>1,429,506</b>	<b>1,592,418</b>
Current Ratio	2.8	3.5	4.8	7.9	8.3	8.6	9.2	8.3	8.8	8.7	9.4	9.4	9.6
Debt to Total Capitalization	35%	54%	10%	9%	8%	6%	5%	3%	2%	2%	1%	1%	0%
No. of Days Accounts Receivable	76	60	60	60	60	60	60	60	60	60	60	60	60
Cash = No. of Months of Operating Exp.	3.4	11.2	26.1	25.8	33.8	37.4	43.2	47.0	56.8	70.5	83.5	100.4	105.8



## 8. OWNERSHIP AND MANAGEMENT

### 8.1. THE LOCAL GOVERNMENT OF KABUPATEN BOGOR

The local government of Kabupaten Bogor is the sole owner of the PDAM. As such, its present and projected financial performance becomes an important consideration as a recourse in case the PDAM encounters financial difficulties.

#### 8.1.1. PRINCIPLES OF LOCAL GOVERNMENT ADMINISTRATION AND THE FISCAL BALANCE

Enactment of laws on regional autonomy marked a new paradigm in the relationship between local/provincial (regional) governments and central government. Sweeping changes to increase local government autonomy were first codified in Law No. 22/1999 on Local Government Administration and Law No. 25/1999 on the Fiscal Balance between the Central Government and Local Governments. These were subsequently replaced by respectively Law No. 32/2004 and Law No. 33/ 2004.

The allocation of functions between central and regional governments is clearly delineated, with each level responsible for the performance of its functions, including financing. Central government retained authority over foreign relations, national defense and security, judicial issues, national monetary and fiscal policy, and religious affairs. The functions of regional government are:

1. Development planning and control
2. Spatial planning, land use, and supervision
3. Community order and security
4. Provision of public infrastructure
5. Health
6. Education
7. Social welfare
8. Manpower services
9. Development of cooperatives and small- and medium-scale enterprises
10. Environmental protection
11. Land administration services Civil registration and other services
12. Public administrative services
13. Investment administration services
14. Provision of other basic services
15. Others as mandated by laws and regulations.

Local governments are responsible for undertaking these functions within their administrative boundaries. Provincial governments take over cross-boundary issues arising therefrom, as well as those which local governments cannot perform.

The allocation of central government revenues was also substantially overhauled to enable regional governments to manage their newly devolved functions. Various central government transfers, particularly grants that were formerly allocated through presidential instructions, were replaced by a single general appropriations fund. Three general principles govern the fiscal balance between central and regional governments, as follows:

1. Decentralization: devolution of functions from central to regional level.
2. *Deconcentration*: delegation of a central government function, and corresponding resources to perform same, to the provincial government through the governor.
3. Assistance, which entails the issuance of a mandate to a government level or entity to perform, and be accountable for, a central government function, together with the transfer of concomitant implementation funds.

## 8.1.2. INCOME

Law No. 33/2004 identifies local government income as consisting of the following:

1. Local revenue
  - Locally sourced revenue
  - Central government transfers
  - Others
2. Financing
  - Previous year's surplus
  - Loans
  - Reserves
  - Sale of local-government asset

Locally sourced revenues are taxes and fees (based on typologies mandated by central government with rates set by local government), plus income from local-government assets. Central government transfers have three main components: the general appropriations and special allocation funds, as well as a share in specified tax and non-tax proceeds collected by central government.

The general appropriations fund is set by law at a minimum of 26% of the national government's net income from domestic sources, distributed among regional governments to cover personnel expenses and any fiscal gap, the latter being the difference between the fiscal capacity of the regional government and the need for basic services within its administrative jurisdiction. The allocation criteria include population size, area, construction cost index, per capita gross regional domestic product, and human development index.

Special allocation funds support specific local government activities/functions as identified in the national government budget. Except for local governments with very limited fiscal capacities, recipients from this fund are expected to contribute counterpart funding of at least 10% of the total implementation cost. In the case of local emergencies/disasters, as declared by the president, local governments may also receive an emergency fund. The basic principle is that local governments with lower financial capacities should receive appropriate compensating adjustments.



Regional governments are allowed to borrow, but only from domestic sources, such as the central government, other regional governments, banks, non-bank financial institutions, and individuals in the form of bonds sold through the securities market. Regional government permitted borrowings fall under three categories:

1. Short-term, with maturity of one year or less, to be used for covering cash-flow shortfalls in the annual budget
2. Medium-term, with maturity equal to the remaining term of the local government head or maximum of five years, to be used for providing non-revenue-generating public facilities and services
3. Long-term, with maturity of more than five years, to be used for implementing revenue-generating investment projects.

Medium/long-term loans require the prior approval of the regional legislative body.

Law No. 33/2004, supplemented by PP 54/2005 on regional borrowing, explicitly prohibits regional governments from directly contracting foreign loans. This prerogative is reserved for the central government through the Ministry of Finance. Regional governments can, however, participate in a foreign loan program and share in the proceeds channeled by the central government as sub-loans or grants based on mechanisms defined by PMK 53 and 54/2006 (Ministry of Finance decrees).

Under existing regulations, there are two methods for computing the borrowing capacity of regional governments. Law No. 33/04 and PP 54/2005 stipulate that the debt ceiling is 75% of a regional government's revenue less targeted income. They also provide a second formula whereby the local government's DSCR based on net revenue is set at a minimum of 2.5.

### **8.1.3. EXPENDITURES**

Expenditures are those incurred as a necessary consequence of the existence of the regional government, and are divided into discretionary and non-discretionary items. Non-discretionary items are regional government employees' salaries and fringe benefits, plus the salaries of regional government legislative representatives and the costs of its apparatus. Income from loans (except short-term), the special allocation fund and the emergency fund must be used for the purpose specified.

Net public savings (NPS) can be defined as the non-discretionary sum of the regional government total income less the total of non-discretionary expenditure. It can be equated to the amount available for investment in development.

### **8.1.4. ACTUAL AND PROJECTED INCOME AND EXPENDITURE BUDGET**

The WSSP SPAR included a projection of the Kabupaten Bogor income and expenditure until 2010 based on actual figures for 2002-2004. This is adapted in this report to cover the period up to the maturity of the proposed bond issue in 2019.

In general, the projection assumes a 9% yearly growth in total revenues. The general appropriations fund is projected to increase at yearly inflation plus real GDP growth.

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Total revenue is thus projected to reach Rp 4,560 billion in 2019 from Rp 1,121 billion in 2005. Locally generated revenues will account for 40.8% of the total, while central government transfers the remaining 59.2%.

Expenditures will amount to Rp 4,112 billion in 2019 from Rp 1,130 billion in 2005. The bulk will continue to be for personnel, accounting for 46.2% of the total in 2019. Investment, on the other hand, is projected to remain at almost the same level at 18.8% from 18.5% in 2005, despite a real increase of about 5% per annum.

On the foregoing basis, the local government is forecast to generate a surplus every year, which will amount to Rp 449 billion in 2019 from a projected deficit of Rp 731 million in 2006.

The actual and projected revenue and expenditure budget of the local government of Kabupaten Bogor is presented in *Table 48* (presented in alternate years).

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**Table 48 Actual and Projected Revenue and Expenditure of the Local Government of Kabupaten Bogor (In Rp Million at Current Prices).**

Description	2004	2005	Growth er Year (%)	2007	2009	2011	2013	2015	2017	2019	% of Total in 2005	% of Total in 2019
<b>Revenue</b>												
Locally Generated Revenue	176,901	194,590	9.0%	231,192	274,680	326,347	387,733	460,665	547,316	650,267	17.4%	14.5%
Share from Building Tax	63,018	68,705	11.0%	84,651	104,299	128,507	158,333	195,082	240,361	296,149	6.1%	6.5%
Share from Land Tax	42,667	58,859	11.0%	72,520	89,352	110,091	135,643	167,125	205,915	253,708	5.3%	5.5%
Share from Income Tax	26,866	29,687	9.0%	35,271	41,906	49,788	59,153	70,280	83,500	99,206	2.6%	2.2%
Deconcentration Fund												
Shares from Other Government Income	92,826	120,674	11.0%	148,682	183,192	225,710	278,098	342,644	422,172	520,158	10.8%	11.4%
Income from Natural Resources	17,853	16,010	5.5%	17,820	19,834	22,075	24,570	27,347	30,438	33,879	1.4%	0.8%
Other Income												
<b>Sub-Total Revenue</b>	<b>420,131</b>	<b>488,525</b>		<b>590,137</b>	<b>713,262</b>	<b>862,518</b>	<b>1,043,530</b>	<b>1,263,145</b>	<b>1,529,703</b>	<b>1,853,366</b>	<b>43.6%</b>	<b>40.8%</b>
<b>Central Government Transfers</b>												
General Allocation Fund	629,730	626,864	11.0%	772,359	951,624	1,172,496	1,444,632	1,779,931	2,193,053	2,702,060	55.9%	59.0%
Special Allocation Fund	5,299	5,299		5,299	5,299	5,299	5,299	5,299	5,299	5,299	0.5%	0.1%
Emergency Fund												
Reforestation Fund												
<b>Sub-Total Government Transfers</b>	<b>635,029</b>	<b>632,163</b>		<b>777,658</b>	<b>956,923</b>	<b>1,177,795</b>	<b>1,449,931</b>	<b>1,785,230</b>	<b>2,198,352</b>	<b>2,707,359</b>	<b>56.4%</b>	<b>59.2%</b>
<b>Total Receipts</b>	<b>1,055,160</b>	<b>1,120,688</b>	<b>9.0%</b>	<b>1,367,795</b>	<b>1,670,184</b>	<b>2,040,313</b>	<b>2,493,461</b>	<b>3,048,375</b>	<b>3,728,054</b>	<b>4,560,726</b>	<b>100.0%</b>	<b>100.0%</b>
<b>Expenditures</b>												
Local Government Personnel	468,118	514,093	10.0%	622,053	752,684	910,747	1,102,004	1,333,425	1,613,444	1,952,267	45.5%	46.2%
Other Personnel	14,272	15,674	10.0%	18,966	22,948	27,767	33,599	40,654	49,192	59,522	1.4%	1.4%
Investment	198,782	209,001	10.0%	252,891	305,998	370,258	448,012	542,095	655,935	793,681	18.5%	18.8%
Debt Service												
Other Expenditures	356,815	390,918	9.0%	464,450	551,813	655,609	778,929	925,445	1,099,521	1,306,341	34.6%	33.6%
<b>Total Expenditures</b>	<b>1,037,987</b>	<b>1,129,686</b>		<b>1,358,359</b>	<b>1,633,443</b>	<b>1,964,381</b>	<b>2,362,543</b>	<b>2,841,619</b>	<b>3,418,092</b>	<b>4,111,811</b>	<b>100.0%</b>	<b>100.0%</b>
<b>Cash Flow</b>												
Surplus/(Deficit)	17,173	(8,998)		9,436	36,741	75,932	130,917	206,756	309,963	448,914		

### **8.1.5. BORROWING CAPACITY**

Assuming an interest of 14% and a repayment period of ten years, the PDAM's proposed bond issue of Rp 174.0 billion in 2009 will only be 15.4% of the local government's borrowing capacity during that year computed based on the 75%-of-revenue method and 16.6% based on 2.5-minimum-DSCR method.

The projection of the local government's borrowing capacity from 2007 to 2019 is presented in Table 49. It provides for no assumption of new debt because the local government has no plans to raise finance through borrowing.

## **8.2. THE PDAM'S MANAGEMENT STRUCTURE**

The Board of Supervisors (*Badan Pengawas*) serves as the overseer of the PDAM. The decree of the Minister of Home Affairs No. 7/1998 (Kepmendagri 7/1998) provides that the board should be composed of three members, representing the local government, community, and consumers respectively. In Kabupaten Bogor, the local government is represented by the Head of the Economic Affairs Division, the community by a general medical practitioner, and the consumers by an economics professor from the local university. These members were selected through an open, competitive process, where the search was first advertised in newspapers widely read in the locality. Applicants were then screened and short-listed. The short-listed candidates then underwent a fit-and-proper selection process conducted by the University of Indonesia and was thus free of influence of any vested interest.

The present setup represents a vast improvement over the previous one when the PDAMs were run solely by the local governments, with the Board of Supervisors being all local government officials.

For day-to-day operations, the PDAM is run by a three-member Board of Directors: a managing director, a technical director, and one for financial and administrative affairs. Members are directly appointed by the local government through the Regent. The heads of divisions are then named by the board of directors, mostly from the existing cadre of personnel. The current practice of some PDAMs to conduct open, competitive selection, wherein candidates undergo fit-and-proper tests, is not yet being applied by this PDAM, and rarely so in Indonesia.

Each member of the board of directors is appointed for a term of four years with the possibility of reappointment for one more term. The current managing director and technical director are serving their second terms, which expire respectively in December 2007 and September 2008. The first term of the director for general affairs expires in December 2007.

Much could be done to improve the recruitment of the Board of Directors. One suggestion is to widen the search for each member through a transparent and competitive process. Clearly established rewards-and-sanctions mechanisms, perhaps covered by a performance contract, could also be instituted. However, some guidance from the Ministry of Home Affairs would likely be required before local governments start to move in this direction.

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**Table 49 Projected Borrowing Capacity of the Local Government of Kabupaten Bogor (In Rp Million at Current Prices).**

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
75% of Previous Year's Net Rev.													
Previous Year's Revenue	1,238,015	1,367,795	1,511,360	1,670,184	1,845,899	2,040,313	2,255,427	2,493,461	2,756,870	3,048,375	3,370,990	3,728,054	4,123,267
Less													
• Special Allocation Fund	5,299	5,299	5,299	5,299	5,299	5,299	5,299	5,299	5,299	5,299	5,299	5,299	5,299
• Emergency Fund													
• Deconcentration Fund													
• Reforestation Fund													
• Servicing of Existing Debt													
Net Revenue	1,232,716	1,362,496	1,506,061	1,664,885	1,840,600	2,035,014	2,250,128	2,488,162	2,751,571	3,043,076	3,365,691	3,722,755	4,117,968
Borrowing Capacity	924,537	1,021,872	1,129,546	1,248,664	1,380,450	1,526,260	1,687,596	1,866,121	2,063,678	2,282,307	2,524,268	2,792,067	3,088,476
At DSCR of 2.5													
Allowed Revenue Sources													
• Locally Generated Revenue	231,192	252,000	274,680	299,401	326,347	355,718	387,733	422,629	460,665	502,125	547,316	596,575	650,267
• Share from Building Tax	84,651	93,963	104,299	115,772	128,507	142,643	158,333	175,750	195,082	216,541	240,361	266,801	296,149
• Share from Land Tax	72,520	80,497	89,352	99,181	110,091	122,201	135,643	150,563	167,125	185,509	205,915	228,566	253,708
• Share from Income Tax	35,271	38,446	41,906	45,677	49,788	54,269	59,153	64,477	70,280	76,605	83,500	91,015	99,206

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	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
• Income from Natural Resources	17,820	18,800	19,834	20,924	22,075	23,289	24,570	25,922	27,347	28,851	30,438	32,112	33,879
• General Allocation Fund	772,359	857,319	951,624	1,056,302	1,172,496	1,301,470	1,444,632	1,603,541	1,779,931	1,975,723	2,193,053	2,434,289	2,702,060
Total Revenue	1,213,814	1,341,024	1,481,694	1,637,257	1,809,303	1,999,590	2,210,064	2,442,882	2,700,431	2,985,356	3,300,583	3,649,357	4,035,269
Less Mandatory Expenses													
• Government Personnel	622,053	684,258	752,684	827,952	910,747	1,001,822	1,102,004	1,212,204	1,333,425	1,466,767	1,613,444	1,774,788	1,952,267
• Other Personnel Expenses	18,966	20,862	22,948	25,243	27,767	30,544	33,599	36,958	40,654	44,720	49,192	54,111	59,522
• Amortization of Existing Debts													
Total Expenses	641,018	705,120	775,632	853,195	938,515	1,032,366	1,135,603	1,249,163	1,374,079	1,511,487	1,662,636	1,828,899	2,011,789
Net Public Savings	572,796	635,904	706,062	784,062	870,789	967,224	1,074,462	1,193,719	1,326,352	1,473,869	1,637,948	1,820,458	2,023,479
Amount Available for Debt Service at DSCR of 2.5	229,118	254,362	282,425	313,625	348,316	386,890	429,785	477,488	530,541	589,547	655,179	728,183	809,392
Borrowing Capacity (at 14%, 10 years)	849,392	942,975	1,047,011	1,162,677	1,291,283	1,434,285	1,593,307	1,770,153	1,966,832	2,185,583	2,428,894	2,699,536	3,000,594

## 9. CONCLUSIONS AND RECOMMENDATIONS

### 9.1. CONCLUSIONS

From the foregoing discussions, the following conclusions are derived:

1. **PDAM Kabupaten Bogor has maintained a sound financial performance during the five-year period under review.** Net income has been consistently generated every year. The PDAM has likewise been able to meet its obligations such as the timely amortization and interest payments of its existing loans.
2. **There are certain aspects that if not given due attention could very well constrain future performance.** The major ones are PDAM's inability to obtain a full-cost-recovery tariff (although PP 16/2005 requires this) on a consistent basis, especially to meet external events beyond its control (such as national energy pricing policy); a second risk is failure to maintain NRW reduction. However, PDAM has a sound RPJM to continue past improvements. PDAM should endeavor to reduce unit energy costs. The ESP-sponsored energy reduction program, already under way, should assist this objective.
3. **The proposed investment programs for East Bogor and Central Bogor are found feasible and should further strengthen the future financial position of the PDAM.** The incremental revenues they generate are adequate to cover recurrent costs, interest payments, and redemption of the bond principal, and to generate net returns for the PDAM.
4. **The PDAM and the local government of Kabupaten Bogor have the financial capacity to implement the program under the proposed financing scheme.** The PDAM is shown to be able to fulfill its future obligations, and, in the remote possibility that the PDAM runs into financial difficulties, the local government has the financial wherewithal to launch a rescue.
5. **The investment programs and financial position of the PDAM remain feasible even with the assumed exclusion of Depok.** The NPVs and FIRR, as mentioned, are the same as in the 'with Depok' scenario. The PDAM will continue to generate net income and be able to meet its obligations, including those under the proposed bond issue.

## 9.2. RECOMMENDATIONS

The following observations and recommendations are offered regarding the PDAM's present operations:

1. **Continue to carefully monitor and control recurrent costs, especially overhead.** There seems to be a common pattern in all PDAMs for a significant portion of any tariff increase to be allocated to the improvement of personnel welfare with little left for improving the service reach and delivery of the water enterprise. However, PDAM Kabupaten Bogor has an excellent record in overhead control.
2. **Standardize the role of external parties in the development of the PDAM's water supply system.** The present practice whereby the PDAM takes over fixed assets built by other parties is certainly a big boost toward extending the enterprise's service reach without incurring associated investment costs. This practice should however be based on common guidelines/standards, preferably codified, and properly recognized in the PDAM's records. In the absence of these, the PDAM risks absorbing assets resulting from shoddy workmanship, which would impede rather than enhance its operating efficiencies.
3. **Properly and adequately prepare the entire PDAM organization for the implementation of the investment program.** The volume of the investment program may exert undue strain on the implementation capacity. The nature of the investment programs as well as their individual components is neither unprecedented nor technically novel, however, and the PDAM has been successfully implementing similar projects.



# 10. LESSONS LEARNED AND OUTLOOK FOR THE OTHER PDAMS

## 10.1. LESSONS LEARNED

During the preliminary financial assessment of pre-selected PDAMs and the subsequent preparation of a full-fledged feasibility study of the investment program of PDAM Kabupaten Bogor, the following insights were gathered:

1. **There is a real and widespread need for access to financial resources that match the timing of the PDAMs requirements.** As cited in the rationale for the Indonesia Water Fund (IWF), the PDAMs' traditional sources of funding, such as central-government grants/transfers and loans from multi-lateral institutions, are either drying up, need protracted preparation process or offer only selective access.
2. **There is, however, a corresponding need to develop awareness among the PDAMs on the availability of such alternative sources of funding.** They should likewise fully realize what it takes to access these funding sources: the preparatory processes involved, the attendant costs, and the operating and financial benchmarks that need to be achieved.
3. **Stakeholders, especially those that could influence 'go' or 'no go' decision should be made active participants at the earliest possible stage of the process.** This refers particularly to officials of the concerned local governments' executive and legislative branches. The local parliament (DPRD) is strongly averse to any loan whose repayment needs to be secured by the local government's allotment from the general appropriations fund (*dana alokasi umum* or DAU), which is a major reason why bond financing is being preferred to the proposed ADB loan. The prior approval by the local parliament is a prerequisite for local governments and local government-owned enterprises to avail of medium- and long-term external financing. For future initiatives of this kind, PDAM should therefore undertake advocacy efforts to convince the DPRD, as well as its local government owner, and to build a constituency around community stakeholders.
4. **A clear, unequivocal commitment toward the achievement of time-bound operational improvements should, at some point in time, be made a prerequisite for the preparation process to proceed further.** This pertains primarily to the formulation of appropriate responses to problem areas identified during the preliminary assessment. An action plan could then be formulated, and made formal and enforceable through an appropriate legal framework.

5. **The other forms of technical assistance to the PDAM should then be synchronized with the funds mobilization process.** This refers in particular to the technical assistance provided by ESP's service delivery team. While the areas of such technical assistance are understood to have already been pre-defined in a memorandum of understanding, there should also be a room for flexibility, both in coverage and in the timing of delivery, to account for the identified needs of the PDAM.

## 10.2. OUTLOOK FOR THE OTHER PDAMS

Based on the foregoing lessons, the following steps are proposed for the other pre-selected PDAMs (Kota Bogor, Kota Malang, Kabupaten Magelang, and Kota Solo):

1. **Presentation of the terms sheet.** This should serve to familiarize the PDAMs with the requirements for mobilizing the alternative fund sources offered by ESP. Important stakeholder segments that should be targeted are the PDAMs board of directors and board of supervisors as well as officials of the executive and legislative branches of concerned local governments.
2. **Issuance of letter of commitment from the PDAM.** This should basically express the PDAM's willingness to undergo the preparation process and fulfill all its requirements. While this can conceivably be issued by the PDAM's managing director, endorsement by the local government head (Regent/Mayor) should be required.
3. **Formulation and formalization of an operational improvement action plan.** As mentioned, this should contain specific and time-bound measures for resolving the issues raised during the preliminary assessment. The legal framework could be in the form of a decree (Surat Keputusan) of the managing director and endorsed by the board of supervisors.
4. **Mobilization of technical assistance.** This should primarily be directed toward the implementation of the aforementioned action plan. At the same time, this should also be used as an external monitoring mechanism that should be able to provide warning signs as basis for proceeding further or aborting the entire process.
5. **Conduct of feasibility assessment.** This should commence only on the basis of initial tangible results of the implementation of the aforementioned action plan and sufficient assurance that the rest of the measures therein will likewise be undertaken.

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