

**Jakarta**





# Jakarta

## Water supply : How to implement a sustainable process ?

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**Jakarta has to face major environmental problems and is undergoing an economical crisis. The local authorities are trying to implement a sustainable water supply process but have to face many various problems. Why are concessions so difficult to set up ?**

**Mr. Kris Tutuko**, Technical Director of PAM Jaya, Jakarta, representing the Local Authorities

Description of Jakarta, of the functioning of the urban area; analysis of its actual water supply system; evaluation in terms of environment, effectiveness, affordability for the local authorities and for the inhabitants.

The needs and the conditions necessary for the local authorities to renovate their water supply system : partnerships, financing (investment and management), taking into account the environmental dimension and the social needs.

**Mr. Manfred Giggacher**, Contracts Manager, Palyja - Ondeo, representing the Enterprise

Analysis of the local needs, attitude towards the environmental and sociological dimensions. How does the Enterprise set up and implement an agreement on water supply: financial, political and partnerships aspects in the short and the long terms

Chair: **Dr. Jing-sen Chang**, Vice-chairman, The Council for Economic Planning and Development, Chinese Taipei

Discussant: **Dr. Kusbiantoro**, Director, Urban Regional Development Institute of Indonesia





**Dr. Idris Maxdoni Kamil**, Associate Professor and Chairman, Department of Environmental Engineering, Institute of Technology, Bandung

Analysis of the present situation in its environmental and social dimensions; way the environmental and social issues are taken into account in the negotiations; propositions for a comprehensive plan for the sustainability of water supply in Jakarta.

### **Discussion**





- |   |   |   |  |
|---|---|---|--|
|  1 - Special Capital Province of Jakarta |  2 - District of Bogor |  3 - District of Tangerang |  4 - District of Bekasi |
|---|---|---|--|

# Jakarta water supply

**Kris Tutuko**

Technical Director of PAM Jaya, Jakarta, Indonesia

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## Abstract

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Jakarta is the capital city of Indonesia and has a status of special territory in which governor is the head of administration. Population of the city is about 8,4 million. PAM JAYA, a regional government owned water supply company, is responsible to provide water for the whole Jakarta. PAM JAYA is obligated to produce and distribute water to serve the population for domestic, commercial, and industrial uses. In 2000, its service covered around 48% of population and the number of house connections was 560,000. The total water sold in that year was 228 m<sup>3</sup>.

The water supply for Jakarta started in 1920 when 484 liter/second of water produced through a combination of deep wells and spring served its population. However, due to development of the city, the demand for water has been increasing and this has been responded by constructing new water supply facilities with assistance of central government, the World Bank and other countries. The extension of the service with respect to its production capacity and distribution extension to get good quality and reliable water supply to consumers were considered not satisfying, given the fact that until to date the unaccounted for water is still high, which is around 50%.

To accelerate the improvement, and due to the fact that the policy of the government in infrastructure development has changed from public financing to private financing, it was decided that to improve the water provision significantly and to extend the service to the population of Jakarta, private sectors were invited. As a result, PAM JAYA has entered into 25-year concession agreements with two private operators, effective from

February 1998, with Suez Lyonnaise des Eaux and Thames Water International, which serve the western and eastern part of Jakarta, respectively. Although economic crisis that hit Indonesia in 1998 has had a considerable influence to the operation of the water provision, the private operators and the government of Jakarta have determined to try their utmost to carry on with the cooperation. One of the efforts is by reviewing the cooperation agreement especially with respect to the water charges ; ways have been investigated to make the operation more efficient and direct the investment to the most needed ones to make tariff affordable to consumers.

## Introduction

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Jakarta is the capital city of the Republic of Indonesia and is located in the Northern part of the coastal area of the Java Island, North of West Java Province. It covers an area of 655 square km. The city comprises a special area that is comparable to province level and has become a centre of government, business, service and industries.

The growth rate of population and urbanization of this city have highly increased. During the period of 1960-1980, the increase in population was very fast even though it became lower for the next decades. The number of the Jakarta population reached 8,4 million people in 2000, while its population density level was 13.000 people per square km.

Jakarta's development aim is to make Jakarta a city, equal to all big cities in the world and its mission is to develop Jakarta as a service city with sustainable living environment. This condition shows that Jakarta needs city facilities, espe-

cially clean water, to do its activities including to fulfil Jakarta's public's needs.

In Jakarta, PAM JAYA, a regional government-owned enterprise, carries out the provision of water supply and is responsible for both water distribution and service for Jakarta community. In 1997, the service coverage ratio of PAM JAYA was 42%, covered 460.000 connections, while its total water sold was 190 million cubic meters. In 2000, the service coverage ratio was increased to 48 % with 560.000 customers of which 80% was household.

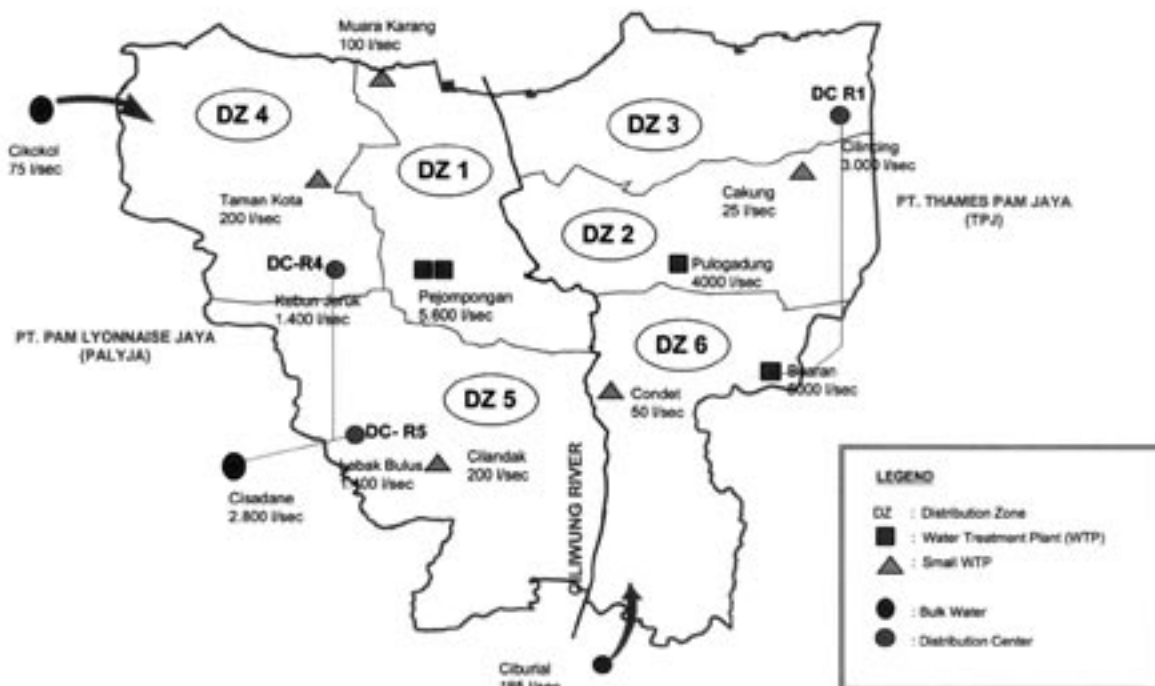
## Water supply development in Jakarta

Water supply provision in Jakarta has existed since 1843, initiated with deep well installations in some areas of Jakarta. In 1920, the Dutch Government had carried out the development of pipeline networks conveying 484 l/sec. Water from the spring in Ciomas-Ciburial, Bogor through 53 km of pipe.

After the independence of Indonesia, in line with the growth of Jakarta city, some water facilities were installed. However, water demand could not be fulfilled by those installed facilities. By 1953, Water Treatment Plant (WTP) Pejompongan I, the first big WTP with a capacity of 2000 l/sec was built and in 1964 WTP Pejompongan II, with a capacity of 3000 l/sec was also built. In 1968, PDAM Jakarta was separated form the Ministry of public works in terms of administration, and became PAM JAYA, a company responsible for drinking water provision for Jakarta community, according to Regional Government Regulation No. 3 year 1977.

From 1980 to 1990, in accordance with the acceleration of high building and industrial development in Jakarta and the greater use of deep well that may cause environmental damage, big WTP in Pulogadung with the capacity of 4000l/sec., WTP Buaran with the 5000l/sec were built financed by

### Existing water supply facilities



foreign loan through Central Government. Beside those big WTPs, 7 other smaller WTPs with a capacity less than 200 l/sec bulk water from Cisadane-Serpong. Thus, the total capacity of water produced by PAM JAYA reached 18.000 l/sec.

Water management in Jakarta was improved by distribution system optimisation including training program to develop PAM JAYA human resources in managing, operating and maintaining drinking water facilities.

## Optimisation of the production and distribution systems

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The aim of the distribution and production system optimisation is to achieve sustainable and adequately good quality water distribution through PAM JAYA System Development Project, in which the distribution system area, previously consisting of 5 sub areas, will be divided into 6 technical zones, where each zone will be served by one WTP.

Development of the distribution system is carried out through expansion and addition of new pipelines systems, rehabilitation of damaged pipelines, increasing the number of connections, increasing water pressure and decreasing unaccounted for water. However, these attempts cannot be easily implemented because of so many old and rusted pipes, bad connections, damaged valves, and groundwater intrusion that decrease water pressure in the customers' taps.

The increase of water distribution is done by new WTP installation, optimisation of existing WTP and the establishment of central distribution and purchasing bulk water from water enterprise in the surrounding of Jakarta, i.e. PDAM Tangerang and Bogor regencies.

To date, PAM JAYA is able to distribute only water in «clean» quality to community, as mentioned in the standard published by Ministry of Health,

whereas potable water cannot be distributed yet. Because of this limitation ability, consumers have to boil the supplied water before usage.

The rate of unaccounted for water in Jakarta is still high. In 1997 it was around 57%. Unaccounted for water reduction program was applied by controlling illegal connections, improvement of meter reading, old distribution pipes replacement. But these attempts cannot be effectively done.

## Raw water resources

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### Surface water

So far, raw water for PAM JAYA drinking water mostly come from surface water. 80 % of it comes from the Citarum River, located East of Jakarta. The water is used and managed through several dams, ie. Saguling Dam, Cirata Dam and Jatiluhur Dam. Those dams are also used for electric power generation, river flow management, irrigation, tourism and industrial purposes. Another 15 % of raw water come from Cisadane River, located West of Jakarta, and another 5 % come from smaller rivers flowing from West Java Province to the Jakarta area such as Ciliwung, Krukut and Pesanggarahan. The average water capacity of the Citarum River distributed in the Jakarta, Bekasi and Karawang areas is 50 m<sup>3</sup>/sec, however, PAM JAYA is only maximally using 16,3 m<sup>3</sup>/sec of this distributed water for its WTP that conveys through West Tarum Canal. The multifunction West Tarum Canal is 70 km long and flows through several industrial and settlement areas, therefore the impact of smaller local river flows and domestic and industrial wastewater on the quality of distributed water quality cannot be controlled effectively. Beside those effects, there are suspended solid particles, mostly produced during the rainy season that rise problem in WTP.

## 26



■ Dangerous Zone, less than 40 m depth prohibited for commercial

 Safe Zone

Groundwater Management and Control are done by the Mining Office, where any groundwater drawing has to be permitted by Governor as mentioned in Regional Regulation Perda No. 10 year 1998, i.e. any groundwater drawing is subjected to drawing water taxation, whose tariff is not less than PAM JAYA water tariff.

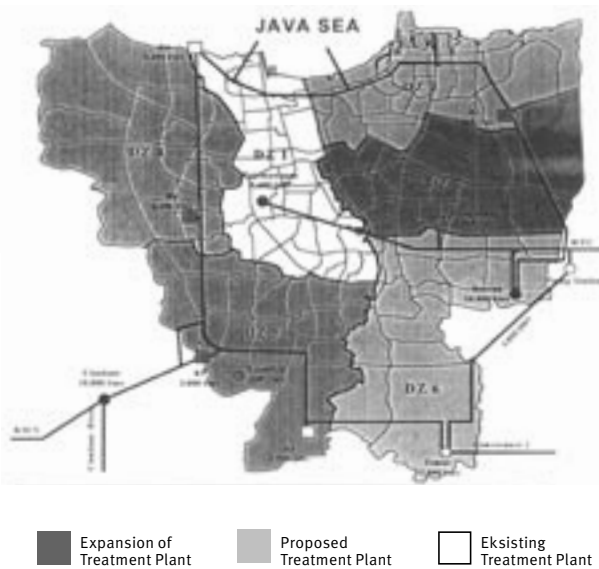
In term of quality aspect, E. Coli that comes from domestic wastewater has contaminated more than 50% of all the shallow wells and iron and manganese are present in 10 % of the shallow wells. The facility of Jakarta Domestic Waste Water



Company only covers the Setiabudi and Tebet Dis- tricts with 1.145 customers, or less than 1 % of population.

## Master plan of water supply

Water supply system in 2019



According to the Master Plan of Jakarta Water Supply for the period of up to year 2019, 83 % of Jakarta people will be served by drinking water, it means that 44.520 l/sec of drinking water will be required if water demand is 185 l/capita/day and water losses is 25 %.

In order to fulfil the demand, the establishment of new WTP is required, i.e. :

- |                    |          |              |
|--------------------|----------|--------------|
| • WTP Buaran III   | capacity | 5.000 l/sec  |
| • WTP Cipayang I   | capacity | 5.000 l/sec  |
| • WTP Cipayang II  | capacity | 10.000 l/sec |
| • WTP Cisadane II  | capacity | 5.000 l/sec  |
| • WTP Cisadane III | capacity | 5.000 l/sec  |

Additional raw water at a rate of 40 m3/sec comes from the Jatiluhur Reservoir, conveyed through the New Canal, and raw water at a rate of 35 m3/sec comes from the Karian Dam, located West of Jakarta.

To guarantee that the pressure of water in the cus- tomers' tap is adequate, a centre of distribution (DC) is required, they are :

- |             |          |                       |
|-------------|----------|-----------------------|
| • DC R1 II  | capacity | 19.800 m <sup>3</sup> |
| • DC R1 III | capacity | 19.800 m <sup>3</sup> |
| • DC R3 I   | capacity | 22.500 m <sup>3</sup> |
| • DC R3 II  | capacity | 22.500 m <sup>3</sup> |
| • DC R4 II  | capacity | 46.400 m <sup>3</sup> |
| • DC R4 III | capacity | 23.200 m <sup>3</sup> |
| • DC R4 IV  | capacity | 23.100 m <sup>3</sup> |
| • DC R5 II  | capacity | 35.100 m <sup>3</sup> |
| • DC R6 I   | capacity | 50.400 m <sup>3</sup> |

## Private sector participation

### Back ground

In 1995, due to the population growth rate that was estimated at more than 4 % per year and the acceleration of development, the demand for infrastructure service, including drinking water, was highly increased. So far, PAM JAYA is only able to serve around 42 % of the population, covering 340.000 house connections, while the rest 58 % of around 8 million of Jakarta people are still using groundwater.

To accelerate the development of service, distri- bution pipes are to be replaced, new installation is to be established or existing WTP is to be reha- bilitated. To do so, PAM JAYA needs a big budget, while its ability to provide such budget and invest- ment is limited since its revenue cannot cover all the required expenses and the rate of accounted for water is still high. The increase of tariff is not only based on the affordability of customers and the rate of inflation but also on Governor of Jakarta regulation.

In line with government policy direction that cur- rently tend to increase participation of potential private sector in infrastructure development in Indonesia, in 1995, the Government attempted to ask private partner to participate in the drinking water management in Jakarta.

## Legal aspect

After 2 years of negotiation between private partners, i.e. PT Thams Pam Jaya and PT Pam Lyonnaise Jaya, consortium of Thames Waters Overseas, with local partner for eastern part of Jakarta area, and Suez Lyonnaise des Eaux with local partner for western part of Jakarta area, at last Partnership with private sector was signed on 6 June 1997, that came to effective on 1 February 1998.

This partnership agreement was based on Ministry of Home Affair Regulation No. 4 year 1990 regarding Guidelines on Partnership of Regional Company and Private Sector, Instruction of Ministry of Home Affair No. 9 year 1995 regarding Guidelines of Partnership Implementation Method of Regional Company and Private Sector and Instruction of Ministry of Home Affair No. 21 year 1996 regarding Guidelines of partnership of implementation regional water company and private sector.

## Principle, Form and Scope of Partnership

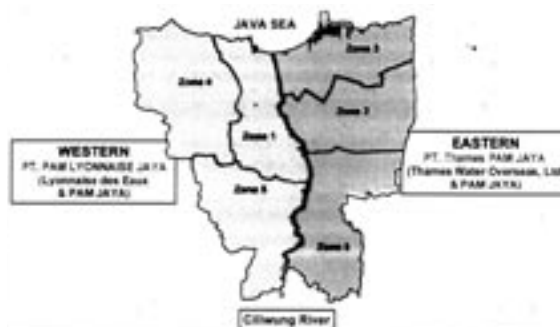
This partnership is expected to benefit all parties, i.e. :

- Community will be served adequately and the tariff is affordable
- Personnel will not be subject to deployment, but on the contrary will receive better prosperity and knowledge and technology transfer
- PAM JAYA will be able to pay all debts and provide budget for overhead
- Jakarta Regional Government will receive (actual regional income) and will be able to control the environment
- Private partner will gain the reasonable profit and return the investment.

Partnership between PAM JAYA and a private partner takes the form of an operational partnership for the period of 25 years, in which PAM JAYA will be taking over the responsibility of operation, maintenance and development of water supply system for Jakarta city including rehabilitation

and development of drinking water installation, distribution system and pipelines network, meter reading, bill collection and customer service to PT Thames Pam Jaya and PT Pam Lyonnaise Jaya.

## DKI Jakarta map



Private partner will employ 2.803 PAM JAYA personnel at operational units.

All existing assets, except PAM JAYA Headquarter Office, are managed by private partner and at the end of partnership period, the assets including new assets built by private partner will be returned back to PAM JAYA.

PAM JAYA is functioning as a monitor and supervisor in order to guarantee that the drinking water service activities led by both private partners are adequate to fulfil the community water demand in accordance with available service standards.

## Revenue Sharing

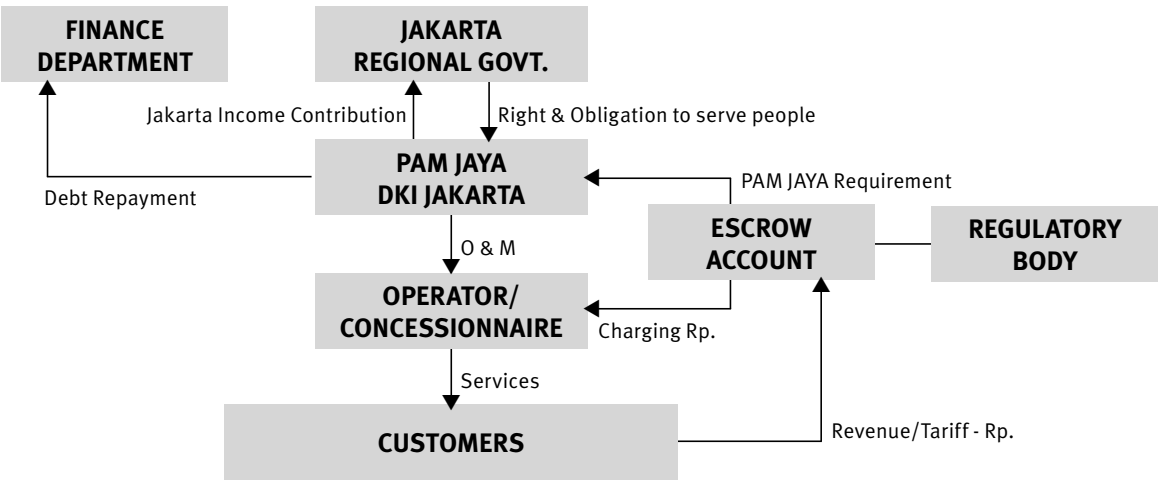
Revenue sharing is carried out through Escrow Account all in with revenues of partnership project are collected in Escrow account of Escrow Bank. The allocation of each party is projected in the Financial Projection of partnership project and the financial drawing is done according to operational mechanism, based on one of supporting agreements, i.e. Escrow Account Agreement whose principle mechanisms are as follows :

Whereas, Evaluation on revenue sharing mechanism is done yearly as shown in the enclose diagram (Flowchart of Revenue Sharing).

It is noted that although the system is expressing revenue sharing pattern, the system used here is water charging system where PAM JAYA private partner will receive profit based on profit value per cubic of water sold (water charge) multiply by the volume of water sold.

Then the value of water charge is indexed every 6 months using indexation formula, therefore it can be said that water charge is automatically increased every semester. The combination between revenue sharing system and water charging sharing will give rise to part-

Principle of revenue sharing mechanism



nership project deficit, especially if the adjustment of drinking water tariff cannot be done properly in order to cope with the increase water charge of those private partners. Since the tariff of water becomes the responsibility of the Government of Jakarta, consequently all project deficit risks will be burdened to PAM JAYA or Government of Jakarta.

Technical Target and Service Standard

The 1997 Agreement between PAM JAYA and the private partners mentioned the target of the amount of water sold for the first 5 years. If the private partners cannot fulfil the target, they have to pay a fine to PAM JAYA.

	Year 5	Year 10	Year 20	Year 25
Volume of water sold	342 mil m <sup>3</sup>	398 mil m <sup>3</sup>	419 mil m <sup>3</sup>	428 mil m <sup>3</sup>
Unaccounted for Water (UFW)	35 %	25 %	20 %	20 %
Coverage Ratio	70 %	75 %	98 %	100 %
Quality	Clean Water at the end of year 9		Potable Water at the year 10	
Water Pressure	7,5 m in all zones at the end of year 5 (except Pluit)		7,5 m in all zones before year 10	

### Investment Program for the first 5 year

Investment cost (Capex) of the first 5-year program covers rehabilitation cost and pipeline development and existing WTP rehabilitation. Capex in

the financial projection is also covering replacement costs for 25 years.

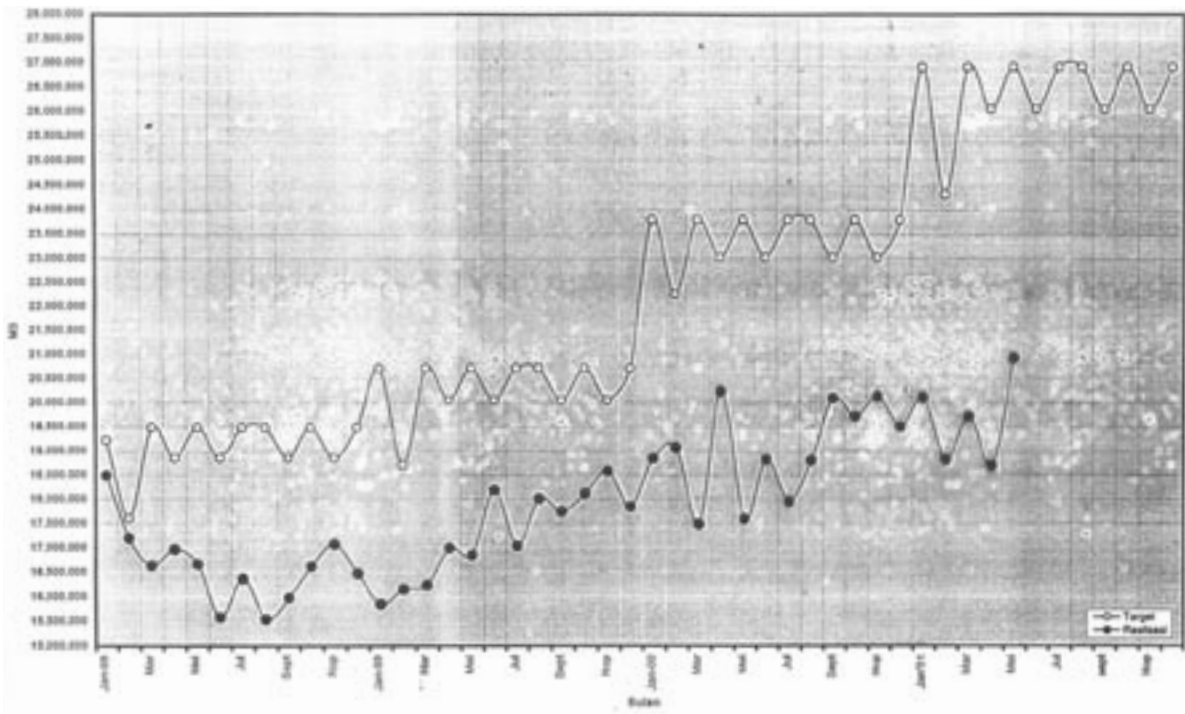
To achieve the technical target of 5 yearly program, following investment programs are required :

Description	West Billion (Rp)	East Billion (Rp)	Total Billion (Rp)
Production	146	30	176
Transmission	138	0	138
Distribution	390	361	751
Losses (UFW)	165	96	261
Others	85	109	194
<b>Total</b>	<b>924</b>	<b>596</b>	<b>1520</b>

Similar with the above technical target and service standard and based on the renegotiation, the amount

of investment in 2001 and the following years will be decreased because of the same reason.

Water sold, in m<sup>3</sup>, Pam Jaya/1998-2001



Responsibility and Risk

Main task and responsibility of both parties are determined as follows :

Private Partners	PAM JAYA
<ul style="list-style-type: none"><li>• The achievement of Technical Target and Service Standard</li></ul>	<ul style="list-style-type: none"><li>• Monitoring on Technical Target and Service Standard</li></ul>
<ul style="list-style-type: none"><li>• The next 5 years investment plan</li></ul>	<ul style="list-style-type: none"><li>• Evaluating on feasibility study and assisting the next phase renegotiation</li></ul>
<ul style="list-style-type: none"><li>• Financing</li></ul>	<ul style="list-style-type: none"><li>• Financing Monitoring</li></ul>
<ul style="list-style-type: none"><li>• Implementation</li></ul>	<ul style="list-style-type: none"><li>• Implementating Monitoring</li></ul>
<ul style="list-style-type: none"><li>• Operation and maintenance</li></ul>	<ul style="list-style-type: none"><li>• Operation and Maintenance Monitoring</li></ul>
<ul style="list-style-type: none"><li>• Information to Tariff Committee</li></ul>	<ul style="list-style-type: none"><li>• Tariff adjustment</li></ul>
<ul style="list-style-type: none"><li>• Bad debt</li></ul>	<ul style="list-style-type: none"><li>• Raw Water/ Bulk Water</li></ul>
	<ul style="list-style-type: none"><li>• Deep Well</li></ul>

Arising Problems and Renegotiation

This partnership was effective on 1 February 1998, when the economical and political crisis occurred in Indonesia, therefore an action plan for recovery is still required to date. Because of this problem, the implementation of this partnership is crucially restricted. Financial progress cannot meet financial projection, for example : several financial assumptions mentioned the inflation of 70 % whereas the assumption of financial projection calculated the inflation and increasing tariff of 6,5 % per year. The increase of tariff every 6 months cannot be realized because the community's purchasing ability keeps decreasing.

These above mentioned problems affected the calculation of water charge, it become far higher than the average increasing tariff for consumers, consequently partnership project had deficit problem.

Besides, there were personnel problems in term of salary equalization, position and changing of work pattern. Because of these additional problems, the partnership project that kept a «win-win solution» base principle cannot be optimally

implemented, therefore all party agreed to seek a way out by reviewing or renegotiation the partnership agreement signed on 1 June 1998, i.e. the agreement of water charge by operational and maintenance costs efficiently, delaying non priority investment, PAM JAYA debt rescheduling, technical target adjustment, single management of human resources and other aspects. The results of renegotiation were completed in September 2001, with a 2-year transition period.

However, it is too early to conclude this partnership project since the partnership period is still on going and 22 years remaining, but through sense of trust and optimism and belief that Indonesia's economical and political condition will be better in the near future, all party believe that the aim of the partnership, i.e. to benefit all parties (government, investor and community) will be achieved.

Besides, an independent, transparent and accountable Regulatory body has been established. Initially, the establishment was based on Jakarta Governor Decision ; the number of the body was 5 persons.



The task of this regulatory body is to supervise the implementation of cooperation agreement, to guarantee the provision of sustainable community service that fulfil quality and quantity requirements and the tariff is based on community affordability.

#### Objective of renegotiation

Achieving Transparency and Affordable Water Charge for DKI Jakarta People and Government

#### Result of renegotiation

- Water Charge < Tariff
- No more deficits
- Adjustment of Technical Targets and Services Standards
- Revise Financial Projection
- Tariff adjustment
- Rescheduling PAM JAYA debt
- Single management of employees
- Adjustment of risks allocation
- Evaluate and review the performance of the investment, the operation and maintenance program and the implementation of the annual budget
- Procedure on Performance Supervising and Evaluation System (Active Monitoring)
- Establishment of Independent Regulatory Body
- Replacement of local partner shares
- Sanctions and Penalties

## Conclusion

- The government policy to decrease government financial resources in the public development causes the increasing need of private sector investment, especially for drinking water sector in Indonesia.

- Drinking water sector is still providing a big possibility to invest since PAM JAYA service coverage is still low (only 48 %), the high population growth rate and activity and the increase of water demand, groundwater contamination and policy of environmental conservation.

- A Regulatory Body is required in order to supervise the implementation of the cooperation agreement to guarantee that the drinking water service given to the community can be maintained and the body also acts as a mediator of each party in case a conflict occurs.

- In the cooperation agreement that the employee rights must be protected.

- To avoid project deficit, the balance between community purchasing ability or tariff projection with revenue projection and investment required to pay water profit to private partner are to be taken into account.

- Transparency of each party is required in order to find out a solution for problems faced in the implementation of partnerships that adopt a «win-win solution». ■

# Appendix 1

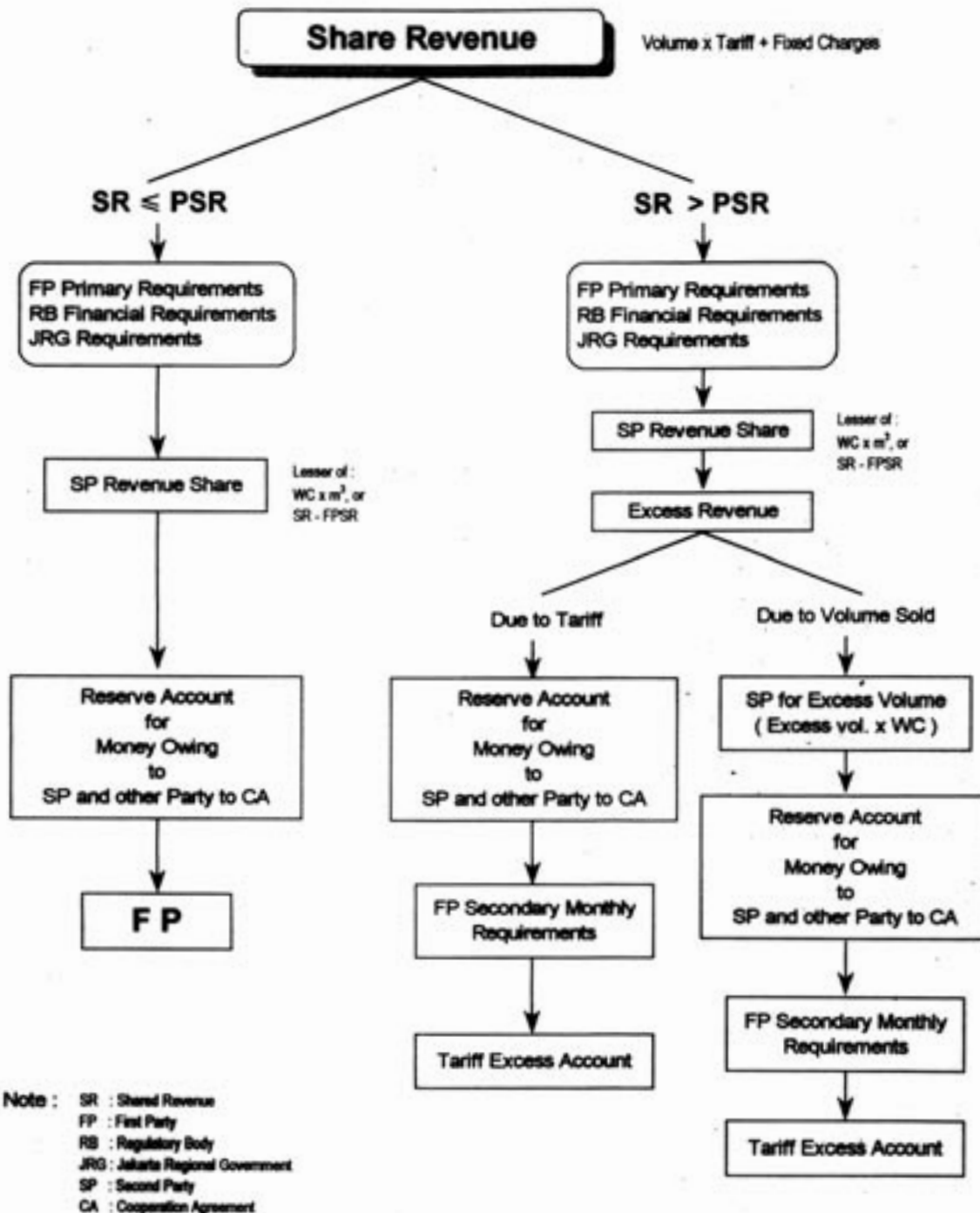
## The Processes of Cooperation Agreement

	1995	1996	1997	1998	1999	2000	2001
Letter of intent: - KATI - GDS	June 30 August 22						
MoU and ToR	October 6						
The execution of FS Agreement		June 4					
Agreement on principles		September 27					
Execution of Cooperation Agreement			June 6				
Principal Legal by Minister of Home Affairs			August 25				
Addendum to the Cooperation Agreement				January 28			
Effective date				February 1			
Hand over of Operation and Administration				June 1			
Agreement on Principles for second Addendum to Cooperation Agreement						January 12	
Agreed by City Council						February 28	
Agreement and agreed to amend and restate the initial Cooperation Agreement							April 10
Signing Agreement and to amend and restate the initial cooperation agreement							September 19
Signing by Governor							October 22
Transition Period							April 2001 December 2002



# Appendix 2

## Revenue Waterfall





# Appendix 3

## Investment Programme

### PT. THAMES PAM JAYA

Description	1998	1999	2000	2001	2002	Million IDR
						Total
Production	4.400	5.500	3.200	22.000	10.000	45.100
Network & Conn. Development	5.538	37.236	101.958	13.948	32.948	191.168
Reduction & Maintaining NRW	14.760	36.140	29.565	23.375	21.375	125.215
Others	19.681	29.130	11.863	5.950	5.850	72.474
<b>Total</b>	<b>44.379</b>	<b>108.006</b>	<b>146.686</b>	<b>65.273</b>	<b>70.173</b>	<b>434.417</b>

### PT. PAM LYONNAISE JAYA

Description	1998	1999	2000	2001	2002	Million IDR
						Total
M & E equipment	23.010	46.403	12.330	15.971	28.015	125.729
Network	91.022	135.110	81.920	53.775	77.060	438.887
Meters	5.131	5.600	4.790	15.548	13.932	45.001
Building	22.491	10.590	990	11.850	1.060	46.981
Miscellaneous	20.875	18.136	3.541	5.689	14.381	62.622
Intangible ass. (fin. Cost, studies)	17.955	-	-	-	-	17.955
Capital Expenditures	180.484	215.839	103 571	102.833	134.448	737.175



# Appendix 4

## Western

### TECHNICAL TARGETS

Technical Targets		Year 1	Year 2	Year 3	Year 4	Year 5	Year 25
Volume of Water Billed	Mill. m³	89,17	101,73	110,41	114,55	118,73	169,78
Water Production	Lt/sec	5.213	5.077	4.663	4.873	5.100	5.900
UFW	%	58,63	57,84	51,27	49,27	47,27	27,22
Number of Connections	Unit	209.895	225.813	257.952	282.048	301.048	450.198
Service Coverage Ratio	%	32	33	38	42	45	About 100

### SERVICE STANDARDS

**Water Quality** Clean Water until the end of year 9 and Potable Water in year 10  
**Water Pressure** on all zones except Pluit

	End of year 3	End of year 4	End of year 5
% age of Cooperation Region	50%	75%	100%

**Response time to routine telephone call:** to be answered within 30 seconds  
**Attendance time for response complaints:** Burst mains: 2 hours  
No water complaints: 4 hours  
Water quality complaints: 6 hours  
**Repair for Interruption in Distribution Network:** Tertiary pipes: 6-24 hours  
Secondary pipes: 12-24 hours  
Primary pipes: 24-72 hours  
**New Connections:** 1 working day

# Appendix 5

## Eastern

### TECHNICAL TARGETS

Technical Targets		Year 1	Year 2	Year 3	Year 4	Year 5	Year 25
Volume of Water Billed	Juta m³	91,96	105,90	117,94	121,83	131,32	183,50
Water Production	Lt/dt	8.523	7.827	7.408	7.282	7.309	7.758
UFW	%	58,07	51,74	45,74	45,03	43,03	25,00
Number of Connections	Unit	278.083	285.735	304.303	315.126	335.413	430.813
Service Coverage Ratio	%1	57	57	59	60	62	About 100

### SERVICE STANDARDS

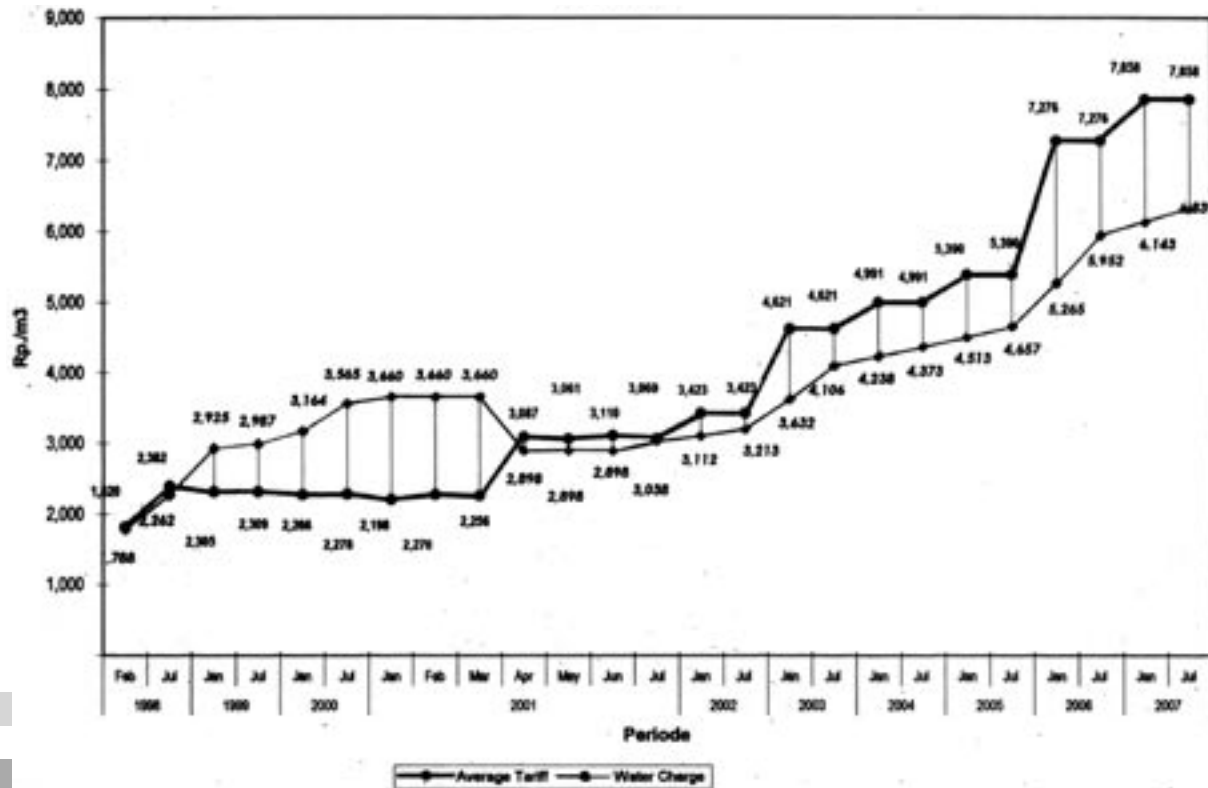
**Water Quality** Clean Water until the end of year 9 and Potable Water in year 10  
**Water Pressure**

% age of Cooperation Region	End of year 3	End of year 4	End of year 5	End of year 10
s> or = 0.75 atm	38%	46%	50%	100%
0.3 atm - 0.75 atm	-	30%	35%	-

**Response time to routine telephone call:** to be answered within 30 seconds  
**Attendance time for response complaints:** Burst mains: 2 hours  
No water complaints: 4 hours  
Water quality complaints: 6 hours  
**Repair for Interruption in Distribution Network:** Tertiary pipes: 6-24 hours  
Secondary pipes: 12-24 hours  
Primary pipes: 24-72 hours  
**New Connections:** 1 working day

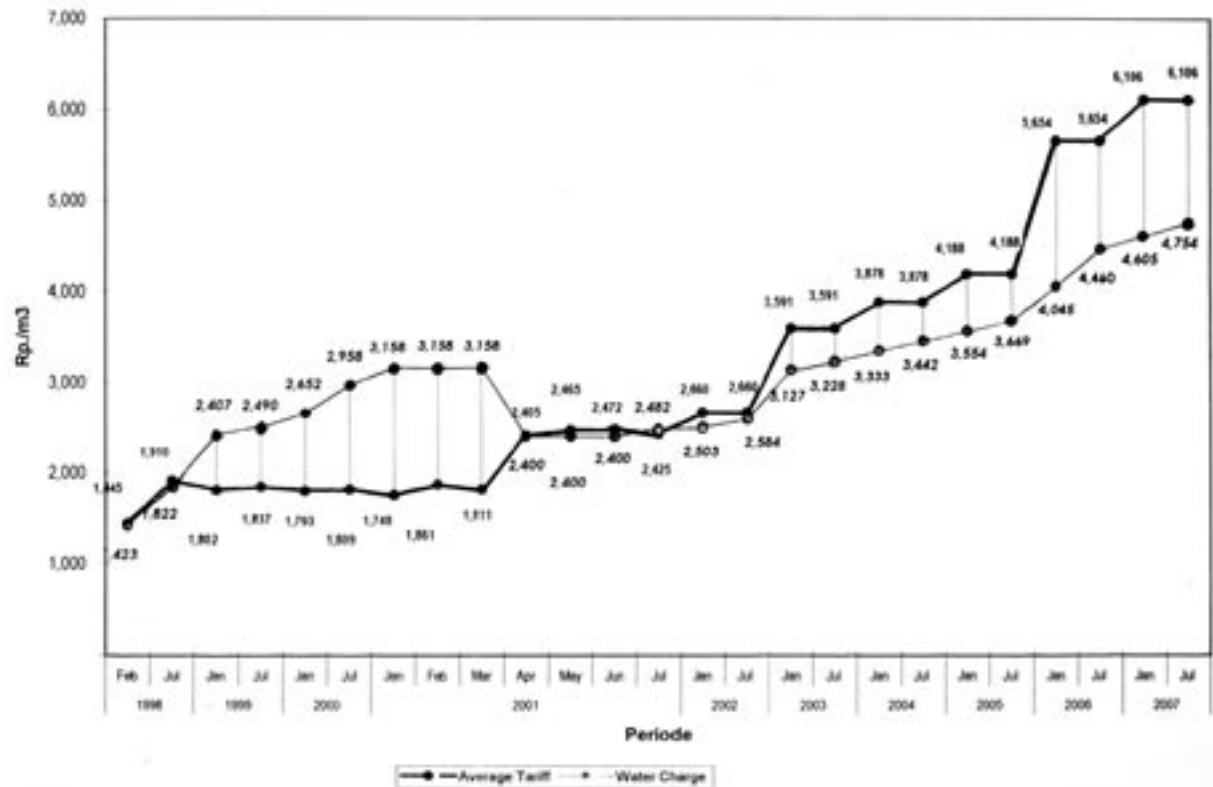
# Appendix 6

## Comparison Average Tariff Vs Water Charge, West Area



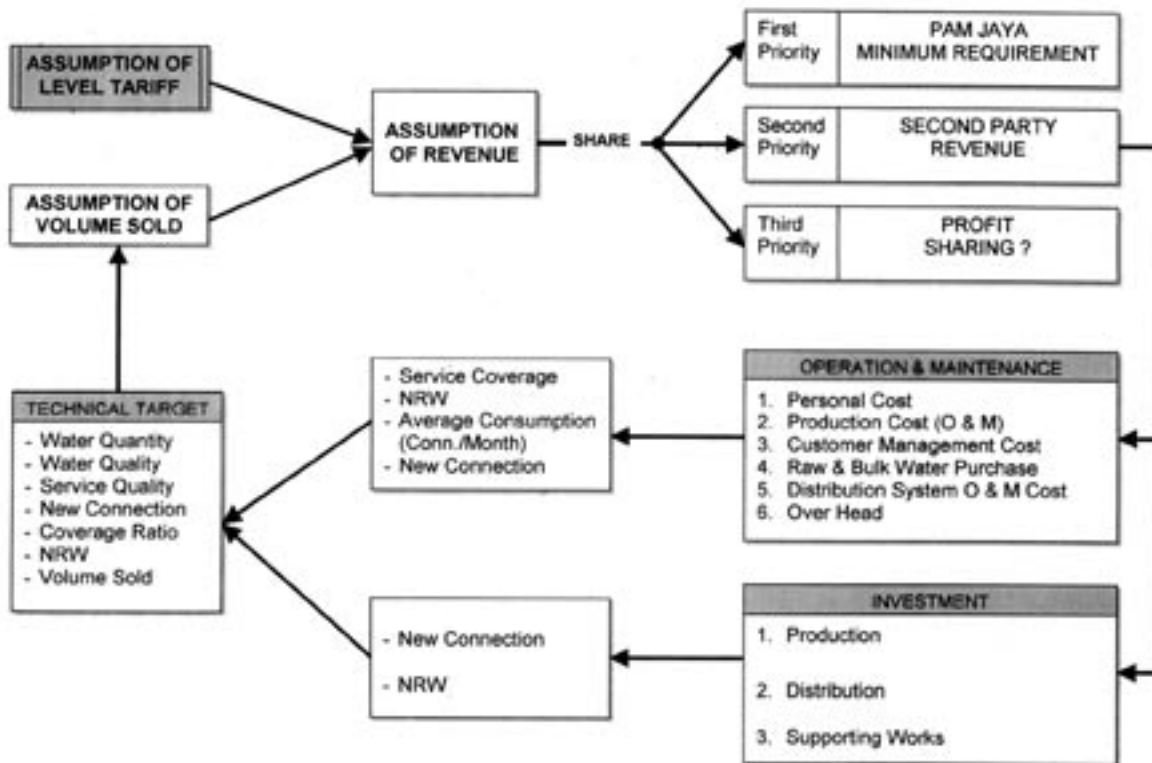
# Appendix 7

## Comparison Average Tariff Vs Water Charge, East Area



# Appendix 8

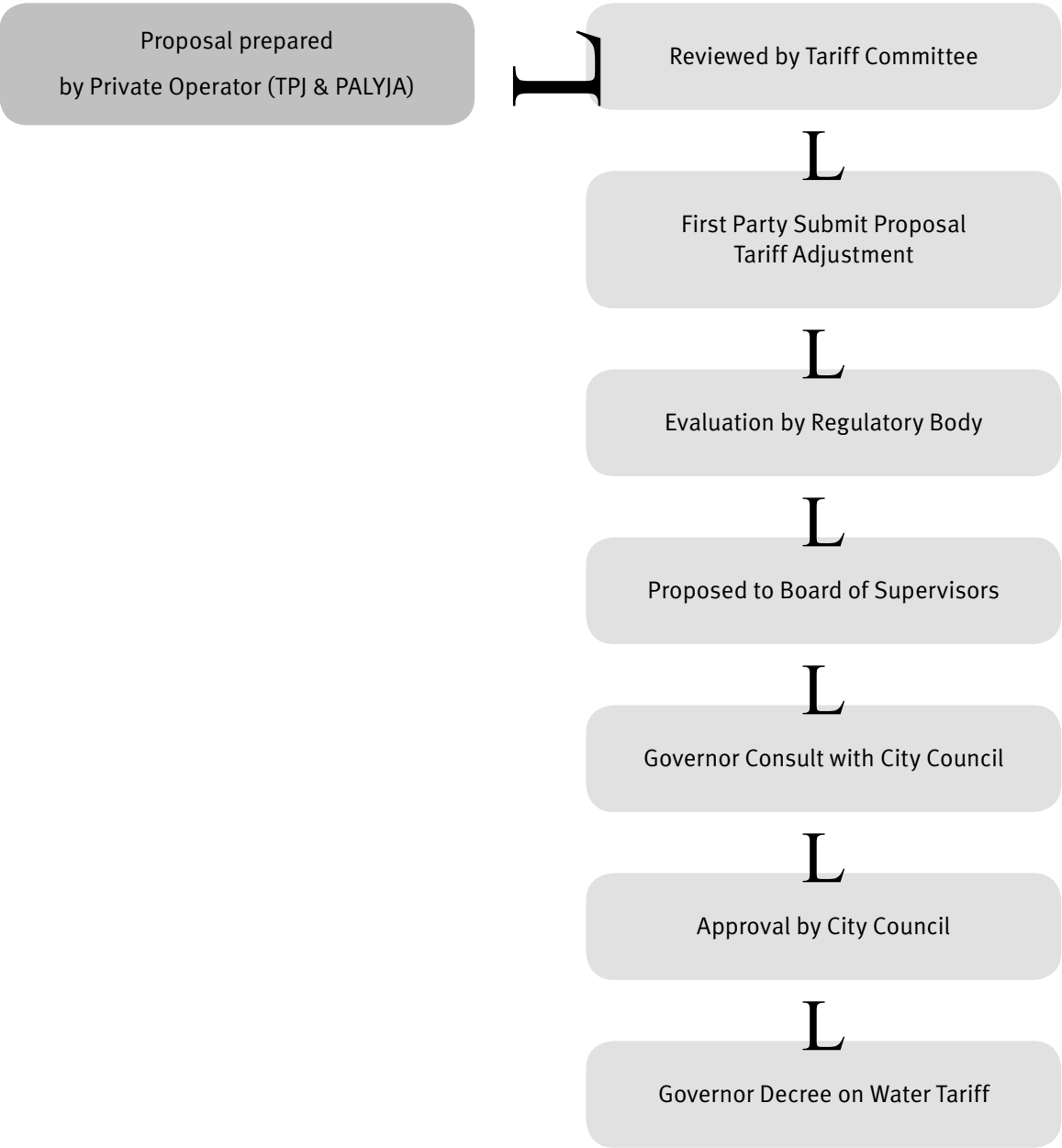
## Correlation of Tariff, Water Charge and Technical Target

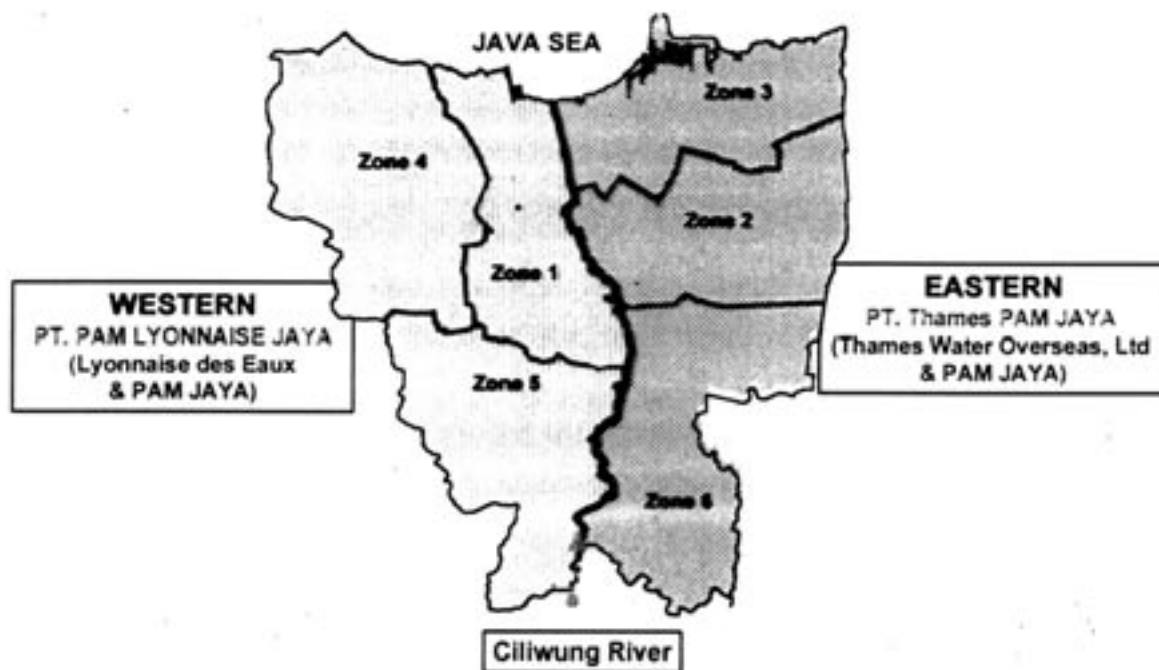


# Appendix 9

## Water Tariff Adjustment

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# Water supply concession as a tool for city sustainability.

## Trials, experiences and lessons learnt

### **Manfred Giggacher**

Contracts Manager, Palyja - Ondeo, Jakarta, Indonesia

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#### **Summary**

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Since the early 90's the concepts surrounding sustainability and sustainable development have been evolving and seems, today, to be well established in all types of literature, art and science. However, in truth the application of these concepts has still a long road to travel, not due to a lack of effort or thinking or funding but rather due to the varying dimensions and complexities of the problems encountered. No better examples of the hurdles to be addressed exist than in the management of the world's fast growing Megacities.

As populations continue to move from a rural centred civilisation to a predominantly urban lifestyle, one can imagine that solutions must be systemic in nature and address the ever changing dimensions within the social, economic, environment and cultural spheres.

These concerns must then be 'packaged' into a delivery model (concession contract) encompassing the political idiosyncrasies within each Megacity, City State or Nation. Thus allowing a contract to be managed efficiently and with sufficient clarity to secure the required financial equilibrium over the long term and thus provide the sustainability demanded by all stakeholders.

This paper presents a case study of the establishment by ONDEO-PALYJA of the 25 year Water Supply Co-operation Agreement for West-Jakarta,

highlighting the experiences and lessons learnt, and how the delivery model has evolved as a result of the Asian Economic Crisis. A crisis that has effectively forced all stakeholders to focus their attention on the main issues surrounding management, economic regulation and delivery of water supply services. The end result is a well balanced and model contract clearly separating roles & responsibilities and flexible enough to allow the respective Parties to better manage and generate long term sustainability in water supply services at an affordable price to the population in general and the City of Jakarta in particular.

#### **Achievements**

It is more than 3 years after signing of the Initial Cooperation Agreement and inclusive of the Asian economic crisis and Indonesian political upheavals thereafter. Despite these events and the ongoing negotiations, some major achievements have been made and are summarised as follows:

- West Jakarta Customer Base: Increased customer connections by 40% to 280,000 connections (from 200,000 in 1998), representing a domestic population coverage of 2,450,000 people or 46% (from 30% in 1998),
- Connections to impoverished customers 30,000 (from 8,000 in 1998),
- Advanced information/communication systems implemented for monthly meter reading, billing and collection and a database designed for the tariff structure of DKI Jakarta. Collections at 96% of billed revenues and more payment facil-

ities (ATM, Call Centre, Internet). Dedicated billing and new connection call centre. Creation of a dedicated marketing team for new connections in each service area,

- Main structures: Transmission pipes over 600mm laid 28 km. One new Distribution Centre reservoir built (1600 l/s) Doubled capacity of Cilandak WTP (to 400 l/s),
- Distribution: Primary, Secondary & Tertiary pipes (50-600 mm) laid for rehabilitation 394 km; Pipes laid for extension 669 kms.
- Leak Repairs: Over 16,000 repairs made in network, over 27,000 repairs made on connections,

The initial results are very encouraging since water is now distributed almost normally in the western region of DKI Jakarta. As the result of the above committed investment in the network, the Non Revenue Water (NRW) has dramatically decreased from more than 57% down to 47% year to date with an ongoing trend of improvement.

## Introduction

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The world has entered into another millennium where we currently see that half of the earth's populations are now city dwellers. The massive migrations from a rural population to an urban population -urbanisation - seen in the last half of the previous century is expected to continue and reach proportions never before seen in the history of mankind. These increases will most likely be centred on developing countries although similar but lower scale changes will also be seen in the developed countries. This movement of peoples is acting in parallel with another dynamic force - globalisation - creating a rapidly expanding economic market place for the world.

The combined forces of urbanisation and globalisation is placing additional burdens, roles and responsibilities onto the city and national governments world-wide at a pace that leaves many in a state of confusion or with a focus primarily on the global markets and investments. In either

case, the benefits of the economic boom are not being fully distributed and disparities are being seen between nations, cities, neighbourhoods and households with the end result of people being socially polarised or segregated or left behind. This marginalisation of the impoverished masses has become a rallying cry for anti-globalisation protesters as seen outside the offices of the WTO, World Bank, IMF, OECD or ADB since early 2000 worldwide.

Despite these mounting problems, opportunities and solutions do appear where by building partnerships with the private sector, citizens' groups and other Megacities facing similar challenges, some of the roles and responsibilities could be transferred to other parties to drive development forward. National governments for their part will continue to play a pivotal role in the governance of cities, strategic planning and crucial matters of justice, equity and social cohesion. These functions need to be intertwined with whatever partnerships are being developed to help deliver on the delicate balance between economic development and the socio-environmental needs of the urban population.

## Cities & globalisation

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The overall political challenge for all national governments and the international community at large will be to make urbanisation and globalisation work for all people, both now and for future generations.

### Common Issues

Megacities, consisting of urban cores and nearby hinterlands, in theory should be able to address all kinds of technical problems, including urban service provision and environmental management. However, due to the massive nature of the problem and speed that changes occur, cities face difficult governance challenges due to obsolete political structures, inadequate budgets or funds and self reliant inhabitants that are forced

to consider their own immediate needs and local neighbourhood interests rather than their role in a common future as citizens of the same city.

## Cities as Agents of Change

Facilitated by advances in information and communication technologies and liberalisation of policies, globalisation has created an international market place where products have to be bought and sold. Given that the metropolitan areas are the arenas for global competition in this new market place, the product that needs to be marketed is the Megacity itself, restructuring the city so it is more interesting to global investors. To do this, cities need to act as a collective whole. However, as explained above, growing social, political, economic, and physical polarisation hampers the cities capacity to build coalitions, mobilise resources and develop good governance structures.

Hence, Governments must allow cities to change their roles from ‘engines for growth’ to ‘agents of change’<sup>1</sup> by giving cities greater authority and autonomy to provide the enabling environment and fulfilling a regulatory role to include not only market controls but also responsibilities for social cohesion, equity and conflict resolution. These new functions and roles must be communicated not only to global investors but also to the city’s communities. Effectively, all sectors of the city must be ready to accept this agent of change role before it attempts to create partnerships. If not, unnecessary energies and resources will be used to convince a reticent population that a change was required while the administration moved ahead regardless.

## Contract models

### Types of Infrastructure Services<sup>2</sup>

There are two types of urban infrastructure. One could be considered as ‘hard’ infrastructure like roads, bridges, ports, rail, tunnels, airports and

public buildings. The hard infrastructure can be considered as passive where the end users effectively ‘self serve’ when required. The other is the ‘soft’ infrastructure such as water, sanitation, electricity, solid waste collection, telephone, communication and information systems. The soft urban infrastructure is more active and need to be operated by someone to deliver the service. The assets (pipes, cables, wires, masts etc) associated with the soft urban infrastructure are largely silent and usually invisible to direct view until something goes wrong!

In the latter type of urban infrastructure, it is the function of the asset that is more important rather than the form of the asset. That is, we should be looking at the function of what type of service that the infrastructure is required to perform rather than the structure, building or network. It is ultimately the service to the community that matters and this is clearly a market driven view of the subject inherited from employing private sector thinking.

## Public - Private Sector Models

What has happened in the western economies and what is now happening in the developing economies under the forces of urbanisation and globalisation, as discussed above, highlights that a clearer role of Government is emerging. What is absolutely clear is that the roles of the private sector and the public sector should not be considered separately but rather as complementary. The clearer the roles, the more effective each player can be in making their contribution to society.

In this vein, a summary of the models<sup>3</sup> for cooperation is presented in Figure 1. This figure effectively synthesises the essence of over 100 years of ONDEO (ex Lyonnaise des Eaux) activity in providing infrastructure services to Governments, municipalities and communities worldwide. From this figure, one can see that the development model for utilities (‘soft’ infrastructure) can fall into either a contractual relationship with central or municipal authorities, that remain the sole

<sup>1</sup> Cities in a Globalising World - Global report on Human Settlements 2001 by United Nations Centre for Human Settlements (Habitat)

<sup>2</sup> World Bank - World Development Report 1994

<sup>3</sup> Private Sector Development Theme Paper to ADB by J Moss 1995

custodian of the assets, or the private sector becomes the outright owner (totally or partially) of the supply company and the assets (full privatisation or a joint venture with the public sector).

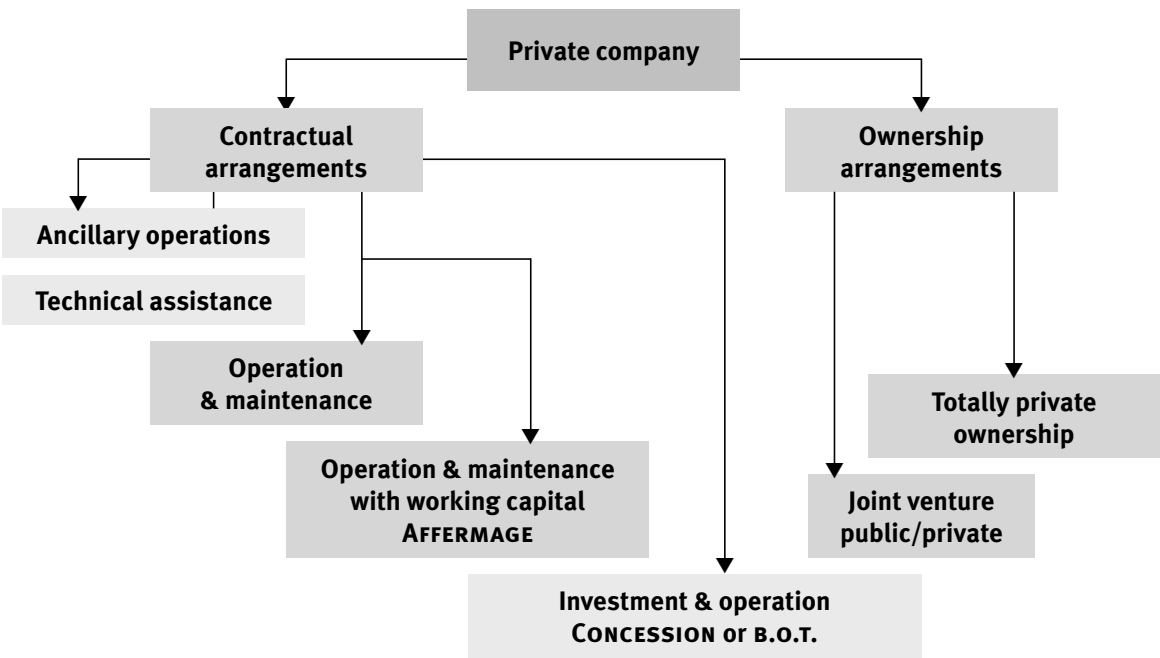
Due to the sensitive nature of water assets, either from a constitutional or psychological standpoint, and that actions in this sector may impinge on communal existence, many authorities decide to retain the outright ownership of such communal assets, and delegate their management to the pri-

vate sector over a fixed period (25/30 years) of time. For the case of Jakarta, the long term concession model was chosen.

The trend toward using the private sector more is not new. The western economies have been moving toward using the private sector for the last two decades after a consolidation period of social overhead capital with the public sector since the post war reconstruction period and social democracy<sup>1</sup>.

<sup>1</sup> «La Privatisation des services urbains en Europe» La Decouverte Paris 1995 by Dominique Lorrain.

### Options for private sector involvement



## Indonesia

### Country Profile

Indonesia is the world's largest Archipelago spanning a land area of 1.9 million sq kms. It is made up of 13,500 islands spread over 5,000 kilometres and is rich in natural resources. Based upon the recently completed 2000 census, the population of Indonesia is now quoted as being 203.5 million. Thus based upon the census, the growth

rate over the last decade has dropped from 1.98% (1980 - 1990) to 1.35% (1990 - 2000). An inverse relationship between economic growth and fertility rate is usually seen in fast developing countries. The four most populated islands are Java with 120.5 million, Sumatra 42.7 million, Sulawesi 14.5 million and Kalimantan 11 million. The population density for Indonesia is 110 versus 1010 for Jakarta. There are approximately 300 ethnic groups known in Indonesia with the predominate religions being Muslim (87%), Protestant (6%), Catholic (3%), Hindu (2%) and Buddhist (1%).

## The Economic Crisis

Like most countries of Asia experiencing the forces of urbanisation and globalisation, Indonesia was doing its part in the collective economic miracle of the region. After two decades of robust gross domestic product (GDP) growth, Indonesia's economy, hit by the regional Asian Economic Crisis, faulted in the second half of 1997 and contracted dramatically in fiscal year 1998 caused primarily by an exit of investment capital. To provide a social safety net to cushion adverse social impact effects, Government expanded substantially public expenditures. This was done in parallel to maintaining debt service payments and supporting the fiscal costs of bank re-capitalisation. These efforts accounted for 42% of total expenditures in fiscal year 1999 with debt service payments as the single largest expenditure. Currently, GDP growth is running at 3.5% down from 5% last year effectively due to the worldwide economic slowdown, especially from Japan and the US, Indonesia's two biggest trading partners

Inflation increased dramatically during this period hitting a high of 78% in 1998 as measured by year on year change in Consumer Price Index. Up till the crisis, controls on money supply keep inflation in a range of 8-9% pa. For 2000, it finished the year at 9.4%. The Bank Indonesia (BI) forecast for 2001 was to maintain inflation in the range of 6 to 8.5%. The CPI year to date August is 7.5% and CPI year on year is 12.2% although it has recently spiked in the month of September due to the current world events following the New York World Trade Centre terrorist bombings.

Exchange rates during the same period fluctuated widely and depreciated from a pre-crisis average value of Rps 2500 per US dollar in 1997 down to Rps 17,000 in March 1998. It is now holding to a level of Rps 10,000 per US dollar.

Although the economic crisis effectively ended for most Asian countries by the end of 1998 allowing recovery efforts to take hold, the story did not end there for Indonesia. The economic crisis

began to unravel the tight political rule of the time and the ensuing events would plunge Indonesia into a prolonged economic downturn from which it is presently trying to emerge.

## Political Environment

Up till the economic crisis, the middle class grew and social peace was maintained. Although the poor (and gaps between rich and poor) were still prevalent, there was an overall feeling that economic growth would continue, which created much optimism and confidence that the system would ultimately provide the people with the living standards they desired. However, as the economic crisis deepened, it triggered violent social and political unrest leading to the resignation of President Soeharto in May 1998. His Deputy B J Habibie replaced him despite allegations of Korruption, Kollusion and Nepotism (KKN) which were exposed by the crisis in all sectors. Free elections organised in June 1999 lead the country to choose Abdurahman Wahid as the first democratically elected President of Indonesia (appointed October 1999). Up till recently, the President's power relied on a very loose coalition, which maintained a climate of political uncertainty. This Political climate remained vague until the fall of Abdurahman Wahid's government at the end of July 2001, when a General Assembly (MPR) was conducted to replace Abdurahman Wahid, with Megawati Soekarnoputri who becomes the fifth President of the Republic of Indonesia.

## Enabling Environment

The basis for the legal structure relating to water in Indonesia is found in Article 33 of the 1945 Constitution which refers to land, water and natural resources - controlled by the State and utilised for the benefit of the people. The law relating to water specifically is Law 11 of 1974 (Law11/74) where the Government is given authority to manage, develop, regulate and supervise the use of water and water sources including farming out those activities. Government regulation 22 of 1982 (GR 22/82) is the implementing regulation of Law

11/74 expanding on the management and planning functions and establishes the authority of the Ministry of Public Works (MoPW) to coordinate the overall management of water and water resources. The regulation GR 22/82 allows the MoPW to delegate to Regional Government its authority and functions relating to water and water resources. The ability of Regional Government to set up regional water authority enterprises (PDAM) is set out in Law 5/74 and recently again in Law 22/99. A major outcome of the economic crisis in Indonesia is the trend towards decentralisation of Government into 36 Provinces. This is effectively encompassed in Law 22/99 and reflects a key development for establishing future partnerships with municipalities and districts.

## Cooperation contract history

Having already anticipated well before the Asian Economic Crisis, the need for a water supply program for the rapidly increasing urban population of Jakarta, the Central Government initiated studies and negotiations with the private sector for provision of these vital services. This was enabled by the Instruction of the Ministry of Home Affairs Number 21 of 1996 which set out the procedures to be followed by a private party if it wished to cooperate with a PDAM (for DKI Jakarta - Pam Jaya) in the provision of water services. This historically allowed the possibility of direct negotiations with Government for Private Sector Participation (PSP) once a Memorandum of Understanding was signed. The other alternative open to the Government was going to tender. The timeline (opposite page) highlights the key milestones of the Cooperation Agreement's history.

### Form of Agreement

In determining how the private sector should be involved, the Government had a choice of considerations:

- Existing Law allowed for a negotiated or tendered contract to be placed,

- The Government wished to retain control of the politically sensitive issue of water tariffs.
- Contract designed to determine the objectives rather than the means of achievement.
- A contract that would attract long-term investment into what could be seen as a political and high risk field was required.

The Government decided to pursue a negotiated agreement providing for a 'Win-Win' outcome for the Parties. It further decided that it would develop a suitable contract via negotiations with two leading International Water Companies, both of whom were familiar with the situation in Jakarta at the time. The two companies were chosen to operate one half each of DKI Jakarta, to provide for an element of competitive comparison over the term of contract.

The Cooperation was developed and negotiated with officials from DKI Jakarta City Government, PAM Jaya, Ministry of Public Works, Ministry of Home Affairs, Ministry of Finance and Ministry of Planning (Bappenas). International and local consultants funded by the World Bank, advised the Government of Indonesia (GOI). The first proposal for private sector participation using a concession model framework was submitted in March 1995. A feasibility study was submitted in March 1996 and an agreement on principles was concluded in July 1996. The Agreement was signed in June 1997 and became effective in February 1998.

### Objectives of the Cooperation Agreement

The Cooperation Agreements were designed to benefit the people of Jakarta by acceleration of and improving access to good quality water at an affordable price. At the end of the first five-year contractual period the service coverage ratio by population was planned to increase from 28% to 55%. This would be made possible, without developing additional water resources, but by reducing Non Revenue Water (NRW) and distributing this water to new customers. Total volume sold targets was planned to increase for this first five year period and if these were not achieved the Private Partners would be penalised.

## Timeline

Time	Milestone	Remarks
March 1995	First private sector participation (PSP) Proposal submitted	Using a concession model framework
March 1996	Feasibility Study submitted	Negotiation with Government commences
July 1996	Agreement on Principles reached	
June 1997	Signature of Initial Cooperation Agreement	
February 1998	Contract became Effective	
May 1998	Resignation of President Soeharto	
	Riots in Jakarta + Takeover by Pam Jaya for a week	Evacuation of Expatriate Families
July 1998	Finalisation of Financing	Agreement becomes unconditional
May 1999	Strikes and Demonstrations	Numerous strikes throughout 99/00
October 1999	Democratic election of President Abdurahman Wahid	
January 2000	Negotiation of Principles for re-negotiation	
April 2000	Initialling of a first restated Cooperation Agreement	Agreement did not become effective
	Negotiation on FINPRO	Financial Projections and rebasing
August 2000	DPRD approval to proceed with re-negotiation of Cooperation Agreement	House of Representatives
September 2000	Agreement with Union regarding staff issues	
October 2000	Tariff Committee set up	Commissioned by DKI Administration as no Regulatory Body had been set up to date
February 2001	DPRD approves average tariff increase of 35 %	
April 2001	Initialling of restated Cooperation Agreement	
July 2001	Megawati Soekarnoputri assumes post of President	Impeachment of President Abdurahman Wahid
September 2001	Signing of the restated Cooperation Agreement	
	Decree for Regulatory Body signed by Governor of DKI Jakarta	
	Start of 2 year Transition Period process	Confidence and Trust Building. Regulatory Body to monitor and mediate
October 2001	Escrow Account Agreement becomes effective	Based upon changes in the restated Cooperation Agreement
<b>Forthcoming</b>		
November 2001	Single Status Employee transfer decree	
January 2002	Single status to be implemented	
December 2002	End of Transition Period	

The accelerated increase in the coverage ratio is also fundamental in another government objective which is to decrease the pumping of underground water. The current practice of using wells has led to a deterioration of underground water due to intrusion of saline water in the North of Jakarta and caused land subsidence making a large part of the city prone to flooding.

Meter reading, billing and collections are all required as part of the Cooperation Agreement and collections have been increased granting a level of financial security to the project despite major hurdles during the political and economic crisis that hit Indonesia. This has been achieved by development and implementation of a strong customer database (monthly billing) specifically designed for the tariff structure of Jakarta. The implementation of tariff bands being a Government of Jakarta responsibility required this local development to best manage a rapidly changing environment and thus avoiding an imbalance in the socio-economic situation of poorer consumers in Jakarta - the domestic population constitutes more than 90% of Jakarta customers.

The Cooperation Agreement also provides for additional service standards such as:

- Potable Water Standard at the customer tap shall be met by year 10 based upon a review of investment projections every five years.
- The pressure at customer connection level shall reach 7,5 meters of water at the end of year 5
- Standard times are provided for repairs on net work, response to complaints and new connections installation.

Finally, it is also one of the objectives of the Cooperation Agreement to transfer know how and enhance the skills of the existing PAM Jaya operational staff transferred to the Private Partners.

### **Basic Principles of the Cooperation Agreement**

- During the Cooperation period (25 years) the Government delegates to the Private Partners the operation, maintenance and extension of the water supply system and customer services

management which includes meter reading, billing and collection.

- The Cooperation Agreements are contracts of 'ends' rather than 'means'. Annual volume targets have to be achieved each year, if not the Private Partners pay a penalty. However the Private Partners have full discretion as to methods to reach these targets.
- All existing operational Assets owned by PAM Jaya have to be maintained in good operational condition by the Private Partners, including necessary renewal, until the end of the Cooperation Period.
- The Private Partner has the responsibility to arrange all funding necessary for their investments programs; corresponding Assets shall be handed over to the Government when they are fully depreciated or at the end of the Cooperation period with payment by the Government of an agreed to residual book value.
- Targets and objectives have been agreed for the first five years period. Further rebasing exercises shall take place every five year between the DKI Jakarta administration and Private Partners in order to agree on each of the new five year objectives, targets and water charges.
- The water tariff paid by the Customers remains fully set by DKI Jakarta, following guidelines laid down by Ministry of Home Affairs and the recommendation of PAM Jaya. The water charge per m<sup>3</sup> paid to the Private Partners, which covers their operational and investment costs, is set according to the initial charge negotiated for the first five year period and adjusted every six month using an indexation formula based exclusively on actual costs or indices published by the Indonesian Statistics Office (BPS). These indices represent the following costs:
  - Construction (BPS Index)
  - Consumer Price Index (BPS Index)
  - Indonesian staff (actual cost)
  - Power (actual cost)
  - Chemicals (BPS index)
  - Pipes (BPS index)
  - Raw Water Purchase (actual cost)
  - Treated Water Purchase (actual cost)
  - Forex on foreign debt



- This arrangement was made so that the Government would be free to set the water tariff as it wishes, taking into account the socio-economic requirements. The gap between the water tariff and the water charge paid to Private Partners is used mainly to service PAM Jaya's debt and pay for PAM Jaya's remaining overhead costs and the Regulatory Body overhead.
- Revenues coming from customers (billed and collected) are paid into an Escrow Account and paid out to PAM Jaya and the Private Partners in accordance with an Escrow agreement, by the escrow manager which is a combination of one International Bank and one Local Bank.
- All operational staff from Pam Jaya (1500 people in West but 2800 in total) are to be transferred to the Private Partners. The employees cannot be terminated by the Private Partners upon transfer and guarantee that their Take Home Pay (THP) is at least equivalent to what it was before the Cooperation.
- The Private Partners shall implement education and training programs designed to upgrade the technical skills of these employees and transfer know how and technology so as to provide better career opportunities.
- All aspects of the Cooperation Agreement in terms of targets, objectives, penalties, water charge and tariff will be monitored and mediated upon by a Regulatory Body.
- Force Majeure and termination clauses, as per international standards, are inserted in the Agreement together with a dispute resolution clause. If agreement were not reached, the dispute would eventually lead to arbitration under UNCITRAL rules in Singapore.

### **Risk Management**

The Cooperation Agreement aims at a balance of risk and reward. Under the terms of the contract, and in general, the risks are carried by whichever party can be deemed to be best able to influence and best manage/mitigate the area of risk. For example: DKI Jakarta and GOI carries risks associated with inadequate tariff or quality and quantity of untreated water supplied to the Private

Partners. Whereas risks, associated with under performance of assets or problems in collecting billed revenues, are carried by the Private Partners. Other risks may be covered by external insurance where appropriate.

These also exists within the contract a number of provisions aimed at retrospective correction of 'windfall' gains or losses to ensure that the burden of unforeseeable circumstances falls evenly between the Parties.

### **Problems & Solutions**

Since the Cooperation Agreement came into effect in February 1998 and as summarised above, Indonesia has experienced a period of turbulent economic and political change. These circumstances have presented a number of challenges and problems that have now been resolved. However, the turbulent events did have an effect on the contracts implementation and effectively forced all Parties to spend a great deal of time and effort to focus on the key issues that make such a long-term contract workable and allow it to deliver sustainable results in the long term. The main hurdles encountered and solutions found are summarised below.

### **Contract Viability**

As a negotiated contract under the previous presidential regime, this contract, like many others, was subjected to close scrutiny for legality and fairness. The new Government of Indonesia had made it clear that it will honour contracts that legally conformed to prevailing laws. In regard to this contract, and after appropriate due diligence under the new Government, all Parties were satisfied that it complied with all current laws and therefore is legal.

On the issue of fairness, all Parties have agreed to review the provisions of the Contract with the assistance of World Bank experts and Pam Jaya consultants to test that it contains a fair balance of risk and reward. This was necessary as the

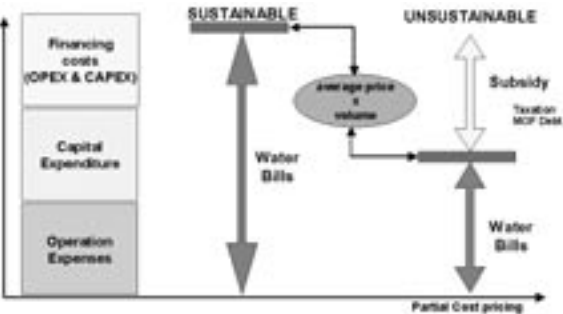
turbulent events created by the Asian Economic Crisis and then the Political crisis caused the contract to fall out of equilibrium. This was the subject of a two-year re-negotiation, where the prime target was to re-establish the intended economic equilibrium to the contract. It was, in fact, an early re-basing exercise within the first five year period and represents a very important characteristic of such a concession contract i.e. flexibility.

### Tariff

This represented a major problem. As summarised above, very high inflation had driven the cost of delivering water and investing in improvements to a point where a significant tariff increase was justified. However, in the socio-economic climate at the time in Jakarta such an increase would have presented major problems for the Government. The DKI Jakarta administration decided to freeze the tariff since beginning of contract for what turned out to be a three year period. This caused a major imbalance between the water tariff and the water charges that continued to increase.

Under the initial intent of the contract, full cost recovery was projected in all financial projections. Figure 2 summarises the situation clearly. Full cost recovery meant that the tariff was structured to cover all the water systems financial obligations arising from the operation expenses, capital expenditure and their respective financing costs. Under previous public sector management, there was an option for subsidies to pay for the difference that could occur between actual tariff received and full cost for the service (partial cost recovery). The subsidy under those circumstances came from taxpayer revenues, far removed from the service being provided, but nonetheless available. By freezing the tariff for three years, the contract was forced into a partial cost pricing scenario. Under a public - private sector cooperation, the option of taking advantage of subsidies is not available, so another solution had to be found. The solution involved reconsidering the investment plans during the first three years coupled with a rescheduling of certain objectives and

### Balance of economical costs



making maximum use of the flexibility that is allowed by not directly coupling tariff and water charges paid to the Private Partners.

### Tariff Structure - Increase

	Tariff after Increase (Rp/m3)		
GOL	0-10	11-20	>20
K1	375	375	375
K2	375	375	850
K3A	1,035	1,330	1,560
K3B	1,335	1,520	2,100
K4A	2,500	2,500	3,500
K4B	5,200	5,200	5,200
Khs	7,000	7,000	7,000

A Tariff Committee was also commissioned by the DKI Jakarta administration to investigate what would be the level for an initial tariff increase. An average 35% increase of tariff was finally approved and ratified by the House of Representatives in March 2001. This increase was socially driven and designed to deliver an increase of 0% for the poor and 43% for the high end users. Thus a cross subsidisation between different types of customer categories was employed and generally well accepted.

### Personnel

In the initial Cooperation Agreement, transfer of personnel from Pam Jaya to the Private Party was to be effected under the principles as highlighted above. However, this transfer was effected by a secondment of personnel from Pam Jaya rather

than direct employment by the Private Party. This was the limit of the Government's transfer policy at the time. As the timeline indicates, union/staff issues arose during the economic and political crisis with many stoppages of work in the critical start-up years of the contract.

The solution to this problem was to incorporate the previous public sector personnel under a single status scheme with other direct employees of PALYJA. The secondment of personnel creates a dual management structure and does not permit the employees to feel committed to one company with its own company policies and regulations and quite different from the public sectors. After the re-negotiations and with the agreement of DKI Jakarta, they now have the option to become direct employees of the Private Parties or for those public service employees not wishing to join the Private Parties, take an attractive golden handshake (GHS). Culturally, this is a positive step forward and of major importance to making the contract sustainable in the long term.

### **Exchange Rate & Inflation**

As summarised above, since the Agreement was signed, the collapse of the Rupiah and subsequent high inflation put a tremendous strain upon a contract with a significant dollar based investment and a Rupiah earning stream. Operating costs in rupiah also increased drastically. This was further compounded by the lack of locally available rupiah financing due to the turbulent economic situation.

However whilst there may need to be some short term adjustments to the program, the fact that the Agreement covers 25 years gives investors and their lending agencies confidence that current problems need not invalidate the long term prospects.

### **Investor Confidence**

Coupled with the first four points the wider issues of investor confidence i.e. the Private Partners

and the lending agencies (European Investment Bank and Syndicates of Private Banks) during these times has been a major concern.

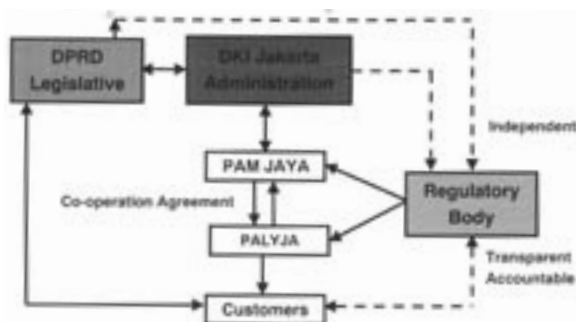
Through their continued support and understanding of the re-negotiation efforts, the investors showed that they maintain confidence in the long term prospects for the Indonesia political and economic situation. The Indonesian authorities are conscious of the need to maintain key elements in the contract that underpin the viability and security of the return on investment.

### **Regulation**

At the time of the Initial Cooperation Agreement, the Government of Indonesia did not have a national regulator to monitor infrastructure contracts or mediate on disputes that may have arisen during implementation and performance against contract. The original intention within the contract was to have a Regulatory Body set up soon after the signing of the contract, after a World Bank study to suggest the form of such a mediation and regulation body. In the mean time, the contract was regulated by the First Party to the contract i.e. Pam Jaya. This clearly highlighted a major conflict of interest that could endanger the long term viability of the contract and clouded the real roles and responsibilities that Pam Jaya had to serve in the contract.

The solution was to create a locally based Regulatory Body for DKI Jakarta (Provincial), independent with regard to the contract and both transparent and accountable to the community with regard to its rulings on performance, complaint, environment and tariff.

This fits exactly with the autonomous and decentralised role model for cities of the future. This may be considered as a first step towards a future National Regulator for Indonesia, however, until that time and since the contract is Megacity based, it was imperative that an independent regulator was established immediately to regulate the Cooperation Agreement. This is now included



in greater detail in the restated contract and a DKI Government Decree has been signed to set up the formation of the Regulatory Body officially.

### Public Perception

Private sector participation in water is a sensitive issue in many parts of the world including Indonesia. The public is very suspicious of enterprises that make profits out of water supply. The GOI is convinced of the benefits of private sector cooperation in the Indonesian water sector, but also fully realise the importance of selling this to the community. However, a particular problem is the length of time before benefits can be demonstrated.

A solution is to ensure that all aspects of the progress of the project are open and well publicised. Important public information programs on what is happening and why, form a key point of our policy and will be followed through with help from the Regulatory Body.

## Conclusions

Despite a bumpy start that arose due to the Asian Economic Crisis and ensuing political crisis within Indonesia, much has been achieved. The crises and the resulting re-negotiation highlighted the benefits of the Cooperation Agreement and the need for a clear separation of roles and responsibilities and the important complementary nature of the Parties to the contractual arrangement. It also showed its flexibility to adapt to the various conditions during an investment period, earlier than expected, and the need to rebase the investments over time taking into account the changing needs of the community. It highlighted the importance of having a full transfer of personnel from the public sector to create the unity needed for long term success.

It also clearly demonstrated the need for a fair and independent Regulatory Body to regulate and mediate the contract, while being transparent and accountable to the community - as the end customer for the services that are provided.

Overall, it showed that the community in general and the poor in particular will not benefit unless the cooperation for the water system as a whole delivers a technically workable and financially viable service which is socially appropriate, environmentally sound and delivered by an organisation which endures.

The decision by the Government of Indonesia showed remarkable foresight in adopting the first private sector concession model within Indonesia to help deliver the water supply system for the fast growing Megacity of Jakarta. It was correct in making this judgement call for initially creating a 'win-win' situation, however, with the formation of a Regulatory Body, the cooperation will evolve to the next dimension of 'win-win-win' by better integrating the needs of the community. With continuing trust building, further achievements will no doubt be made. ■



Jabotabek Region, Indonesia (Soegijoko and Kusbiantoro, 2000).



# Environmental aspects of sustainability in the water supply system for the city of Jakarta

**Idris Maxdoni Kamil**

Department of Environmental Engineering  
Institut Teknologi Bandung, Jakarta, Indonesia

## Abstract

Jakarta is the Capital City of Indonesia and its biggest city. Under our constitution, water management should be controlled by the government. Therefore, the water supply system in Jakarta is operated by PAM Jaya-DKI, a local government owned company. The performance of the system is very low. The service coverage is 45% and the remaining population uses groundwater and surface water. The exploitation of groundwater for domestic and industrial use has resulted in salt-water intrusion that has been detected about 10 km inland. In addition, Jakarta does not have a municipal sewerage system. Most of the domestic waste is treated using septic tank or pit latrine. As for houses located near the stream, they discharge their waste directly into the stream. For some people, the polluted stream is used as source of water.

Since 1998, the government of DKI has decided to invite the private sector to involve in managing the water supply system in Jakarta. Two investors won concession contracts for 25 year. At present time, the UFW (unaccounted for water) is about 50%. In addition, some of the customers still can't get water for a week.

With the increasing in population, the pollution problem becomes worse. Most of the raw water available for Jakarta is below standard set by

the government. Unfortunately, the water supply enterprise does not have any authority to control their water resource.

Unless the government manages to control the decentralization process, the water management problem will increase the water supply problem in Jakarta. The Government of Jakarta should collaborate with local governments that have authority on water source for Jakarta. Otherwise, Jakarta should look at a desalination process as an alternative for future source of water supply system.

A concept of environmental sustainability should be introduced in the management of the water supply system in Jakarta. The government should develop a comprehensive plan for sustainability of water supply in Jakarta. This plan should review all related aspects with water supply system.

## Background

It is a common problem in the water supply system throughout Indonesia that a water company has problems of low level of professionalism, low water tariffs, high Unaccounted For Water (UFW), high debt, source of income for the owner, in this case the local government. Data show about 190 out of 300 water company still have high debts. Privatization is one of the solutions available for the PDAMs (the local water supply companies). A number of PDAMs have chosen this



solution. Those companies are PDAM/PAM of Jakarta, Batam Island, Pekanbaru, Denpasar, Sidoarjo, and Medan. The types of corporation implemented vary from one company to another. Despite some problems still unsolved, privatization has been promoted by the Government of Indonesia to be used as one of the approaches for the PDAM to reengineering its management and operation system.

To start with, from the beginning of introducing privatization in the water supply sector, the government lacks a regulatory framework. Under our constitution, the basic need of people will be provided by the government. This rule is one of the major obstacles to introducing privatization in the water supply sector.

Privatization of the Jakarta water supply is the first concession to have ever occurred in the Indonesian water supply sector. Many problems surfaced during the preparation and operation stages.

A number of disputes between the owner and the concessionaires have occurred during this privatization process, for example on issues such as tariff increase proposed by the contractors before it is planned, revising the contract and the price of raw water proposed by the owner.

Two of concessionaires, PT Tirta Jaya II and PDAM Tangerang, have increased their price for the raw water that they supply to Jakarta. The contract signed between PAM Jaya and PT Tirta Jaya (Executing agency of Jatiluhur dam that supplies about 14 m<sup>3</sup>/s of raw water for PAM Jaya) only guarantees quantity.

The quality of surface water supply to water treatment plant has been polluted by industrial and domestic wastewater.

The contract between PAM Jaya and PDAM Tangerang concerns bulk treated water. The latest increase of the bulk water price has put the Jakarta water supply in a difficult position. On June 29th, 2001, PDAM Tangerang proposed to increase by about 60% the price of water, from Rp 915/m<sup>3</sup> to Rp. 1.500/m<sup>3</sup> (currency exchange rate US\$ 1.00 = Rp. 10.000). The proposed increase will increase the operation cost of PDAM Jaya up to 22%. This increase will affect the water tariff for the customers. During the negotiation, PDAM

Tangerang reduced the supply from 2200 to 1500 liter per second. And the customers suffered the consequences.

Recently, a regulatory board for Jakarta water supply has just been established. After facing a number of disputes with the concessionaires, Government of Jakarta has established a regulatory board to represent the owner in controlling the operation of all companies in implementing the contracts.

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## Existing condition

For more than 50 years, Indonesia has had a centralized government system. All decisions must go through the central government. This makes Jakarta the busiest city in Indonesia with a total population of more than 10 million people within an area of 692.20 sq km. In this situation the local government is responsible for providing urban services.

Water supply of Jakarta, with 50% leakage, should fulfill the community expectation in providing water supply. With the increase of the population who lives and works in Jakarta, the step taken by the company to improve the system must be a giant step. This will cost money for investment. In the present situation, the rate of growth for the service cannot be expected to be significant.

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## Jabotabek region

Jakarta has been impacted by integration into the global economic system. Jakarta has experienced rapid economic development over the past ten years during the economic boom in East and South East Asia. The economic development has spread out to adjacent areas surrounding the city, namely Bogor, Tangerang, and Bekasi (Botabek region). Jakarta and Botabek region together known as Jabotabek make up the largest metropolitan area and the most dynamic region in Indonesia (Soegijoko and Kusbiantoro, 2000).



The Botabek region is also a supporting area for Jakarta in providing not only human resource and land for housing but also for providing water sources and for receiving solid waste. The sources of water for the water supply system in Jakarta are located in the Botabek region. The spring source, Ciburial spring, is located in the Bogor regency. The largest open dump area for domestic solid waste is located in Bekasi. Although, the Botabek area received most benefit from the function of Jakarta as an Indonesian capital, lately the cooperation between the Government of DKI-Jakarta and the government of the Botabek region does not run smoothly. This can be seen in finding solution for several problems such as solving the open dump and water price problems.

## Sustainable supply

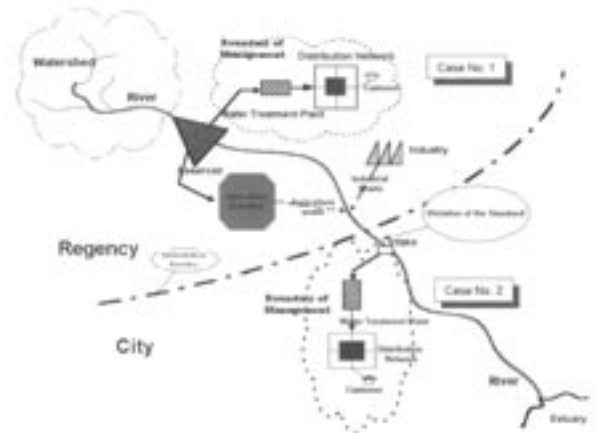
With a target service of 83% by 2019, Jakarta water supply system should have a reliable source. At the present time, the source of supply is surface water from Citarum (80%), Cisadane river (15%), Ciliwung, Krukut, dan Pesanggrahan (total 5%). The Citarum is managed by PT. Tirta Jasa II a company owned by the Ministry of Housing and Regional Planning. In addition, Jakarta water supply is buying about 2800 liter per second bulk water from PDAM Tangerang. There are no groundwater wells operated by Jakarta water supply. The extensive use of groundwater is mainly that of industry and community living in area without piped supply.

In the last ten years, the water quality of river has been deteriorated by human activities. Most of the river flows through several industrial and housing areas. Since there are no sewer collection system, the rivers have been used as receiving body for industrial and domestic waste.

In terms of quantity, the change on watershed area due to housing development in the upstream area has created flood on the downstream area. The impact of the change on the upstream is the variation of minimum and maximum flow : it is very significant. Furthermore, development has

prevented aquifer recharge because the ground has been covered with road and concrete.

The Government of Jakarta does not have any control on managing the development in the upstream part of the rivers for administrative reason. Unfortunately, the local government does not feel concerned about the negative impact of the development on the downstream area. Although the case has attracted national attention, there is no action taken to prevent further damage to the environment. This situation has become worst since the end of the era of New Order regime and the implementation of decentralization.



Since decentralization has been implemented (Act No. 22/1999), a number of cities in Indonesia experience water shortage due to new arrangement of authority in managing water resource. Decentralization gives the local government full control on water resources within their administrative boundaries. They realize that the environment or watershed boundaries are not the same as the administrative boundaries, but local governments know how water resources can benefit to their local income.

Decentralization has had a negative impact on the Jakarta water supply system. The water charge from other areas has been increased without considering all the problems faced by Jakarta. The water charge is not only increasing operation cost but also the impact on the customer. If the water

charge keeps increasing, at one point Jakarta should look for a better alternative source.

## Current issues in privatization

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After at least three years of operation, the contractors are still facing a number of problems. A number of customer complaints still can be heard through the mass media (newspapers, magazines, radios & TV). This indicates that the customer satisfaction is still low.

The contractor is facing technical problem such as reducing leakage in the distribution network. The first approach to leakage reduction is understanding the condition of the distribution network. This understanding can be gained through a complete set of map, data on pressure monitoring, behavior of flow during peak flow. Not all information are available yet. Some customers still have never received water from the distribution system.

The contractors do not have any role and authority in preventing or controlling the development in the upstream watershed. The governments of each cities and regencies, including Jakarta, should work together to prepare a comprehensive plan of water resources management, especially for the JABOTABEK region.

A regulatory board for water supply was established September 2001. The agency will work with all parties connected with the privatization of the Jakarta water supply system. The agency will balance the interests of the customer, owner, and contractor. It is expected that the agency will play a significant role in maintaining the sustainability of water supply in Jakarta.

## Environmental management in Jakarta

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Jakarta as a modern city is facing a number of environmental problems. The degradation of the environmental quality is partly due to the lack of awareness of decision-makers regarding prevention action. The current condition of environmen-

tal aspects in Jakarta is as follows:

- **Wastewater management.** The Government of Jakarta only handles 2.8% of wastewater produced by domestic activity. The system only serves a small part of population in Setia Budi area. Most industrial wastes are handled by each industry unless they are located inside industrial estates. JIEP (Jakarta Industrial Estate Pulogadung) provides a centralized wastewater system to serve all activities on the site. The waste is treated before discharge into the stream.
- **Solid Waste Management.** With the increase of population, the volume of solid waste to be handled by the government also increases. Recently, it is estimated that the volume has reached 25.600 m<sup>3</sup>/day and only 83% can be handled. The remaining 17% is used for land-filling, composting, burning and disposal into the stream. The main constraint is limiting land available for final disposal. Today, the final disposal site for solid waste of Jakarta is located at Bantar Gebang-Bekasi. The final disposal system used in Bantar Gebang is open dump. Besides the distance that causes high transportation cost, the site cannot be used anymore. The local government and people in the surrounding area have asked the Government of Jakarta to find another site for the final disposal. The local government wants to ban the site, to stop its use as a dumping site (Warta Kota, Sept. 30th,



1999). A number of public health problems have been discovered and noted in the surrounding area. The quality of groundwater also has been contaminated by leachate from the landfill. The quality of life of people near the site is very low due to the activity on the uncontrolled landfill.

- **Air Quality Management.** In terms of air quality, Jakarta is known as the third most polluted city in the world after Mexico City and Bangkok. The main source of pollution is the transportation sector. The latest data show that the concentration of CO is 796 300, CO<sub>2</sub> is 12 470 090, SO<sub>2</sub> is 547 000, and NO is 43 000 metric ton/year (Ozon, 2001). Starting this year, the government will implement a new regulation for car emissions. The renewal of car licenses will be based on the result of emission tests. In several locations acid rain has occurred in Jakarta (Kompas, March 6th, 1997).
- **Water Resource Management.** Groundwater in the Jakarta region is the only source of water that can be controlled directly by the Government of Jakarta. But the water supply authorities do not do it. The focus of the control is more toward preventing land subsidence in Jakarta (Purnomo, 2001). Some experts have predicted that Jakarta will suffer a water crisis due to the destruction of watershed on the upstream regions. This protection of the watershed region is required for surface water and also groundwater (Aji, 2001). Water pollution



has occurred in most of rivers in Jakarta. The quality of the Ciliwung river is categorized as bad and not suitable for raw water for municipal water supply. A comprehensive plan for water resource management is needed in order to maintain the sustainability of the source of water for Jakarta

## Summary

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In summary, several points can be said:

- Privatization is one of the available solutions for PDAMs in Indonesia to improve their performance. The process should be executed under a well prepared regulatory framework.
- Privatization for Jakarta Water Supply is one way to sustain the supply of water to the community. But the concessionaires still face some challenges.
- Sustainable supply of the source can become a big problem due to pollution and uncontrolled development on the watershed area.
- Decentralization has many negative impacts on water resources management and privatization
- Environmental Management for Jakarta needs a new approach with appropriate capital investment.
- Privatization of Jakarta water supply is still at its beginning, and customer expectations have not been fulfilled yet.
- Uncertainty of the political and economical situation has reduced investor interest in water privatization in Indonesia.

## References

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**Aji, N. U.**, Penerapan Model Indeks Konservasi Air Untuk Pengendalian Pemanfaatan Ruang Kawasan Bopunjur, Master Thesis, Dept. of Environmental Engineering, ITB, Bandung, 2001

**Chotrani, R.**, The Jakarta Concessions, Asian Water, April 2000, pp. 18-19

**Gani, H. A.**, Skenario Kebutuhan Air JABOTABEK, Teknologi, 151, Th. XIV, April 2000, pp. 36-38.

**Kompas** (Daily newspaper),

- Hujan Asam di Jakarta dan Bandung, March 6th, 1997.
- Air Citarum tak Dapat lagi Dikonsumsi, Oct. 16th, 1997.
- Udara Jakarta Kian Parah, Nov. 11th, 1997.
- Repotnya Mengurus Limbah Warga Jakarta, May 25th, 2001.
- Mitra Boleh Global, Pelayanan Masih Lokal, May 25th, 2001.
- Sebagian Pelanggan Masih Kesulitan Air Bersih, May 25th, 2001.
- Air Bersih Siap Minum, Baru Cita-cita, May 28th, 2001.
- Buntu, Perundingan PDAM Tangerang-PAM Jaya, July 7th, 2001.
- Gawat, Tangerang Tutup Keran Air Jakarta, July 9th, 2001.

**Koran Tempo** (Daily newspaper),

- Obsesi Menyajikan Minuman Air Keran, Mei 3rd, 2001.

**Ozon** (Magazine),

- Kemitraan antar Lembaga Diprioritaskan, Vol3. No. 2, 2001.

**Purnomo, A. B.**,

- Jakarta: Parasite City and City of Parasites, in « Cities of the Pacific Rim», Ed. Dubois-Taine and Henriot, PECC Sustainable Cities Task Force, PUCA, Paris, 2001.

**Radzicki, M. J., and Trees, W. S.**,

- A System Dynamics Approach to Sustainable Cities, Sytem Dynamics '95. Proc. Of the 1995 International System Dynamics Conference, Cambridge, MA, 1995.

**Republika**,

- Jakarta, Terancam Kekurangan Air, June 7th, 2001.

**Roseland, M.**,

- Toward Sustainable Communities, New Society Publisher, Gabriola Island, 1998.

**Soegijoko, B. T. S., and Kusbiantoro, B. S.**,

- Globalization and the Sustainability of Jabotabek, Indonesia, in Globalization and the Sustainability of Cities in The Asia Pacific Region, Edited by Lo and Marcotullio, UNU-IAS, 2000, pp. 348-408.

**Teknologi** (Magazine),

- Konsep Baru Aquifer Jakarta, Teknologi, 151, Th. XIV, April 2000, pp. 33-34.

**Warta Kota** (Daily newspaper),

- Masalah Sampah DKI: Solusi dan Refleksi, Oct. 1st, 1999. ■

# Jakarta

## Discussion

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### Introduction

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#### **Dr. Kusbiantoro**

The problem of Jakarta is that there are too many actors involved. The raw water for Jakarta is controlled by different agencies from neighboring regions, e.g. whether it is related to water charge or water quality. In addition, the piped water tariff is set by one government agency, while the ground water one is controlled by another agency. This in turn creates environmental problem as ground water is over exploited by big business and industries. The water is also polluted by industrial wastes and others from various regions. Furthermore, as the water tariff is lower than the water cost, it may create economic un-sustainability. The water in Jakarta is also related to social un-sustainability. For the poor, as most of them live on illegal land, the government does not provide the piped water for them. They have to buy water sold by vendors at a higher price than the government tariff, i.e. they can pay but on a daily basis. With the above background, given government limited resources, the procedure for PSP is involving many actors with different and sometimes conflicting interests. The procedure is too long as well.

### Regulatory body

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#### **Michel Valin**

I was very interested in the Jakarta case because I was a resident for the Jakarta water supply system improvement project, financed by the World Bank from 1992 to 1995, on behalf of SOGREAH, for the West of Jakarta particularly. As a matter of fact, SOGREAH was also involved in 1996 & 1997 in the preparation of the concession agreement for the case of Manila water and MWSS. What about the

regulatory body to be implemented in Jakarta? Could you explain, in more details, what are the intentions of the Indonesian Government and the DKI Jakarta for that issue?

#### **Kris Tutuko**

For the regulatory body, I would like to clarify that when the regulatory body was not established, part of supervisors of our company acted as a regulatory body. Our company is not a regulatory body, but the board of our supervisors of our company is part of this regulatory body. In September 2001, we established an independent regulatory body. This regulatory body is not only to supervise the implementation of the co-operation agreement but also to analyze, to propose and to adjust tariff increase. It also acts as a facilitator, as a mediator if there is any conflict between the private partner and our company and also there is conflict with customers. The regulatory body also makes sure that the customers have enough water from the private partner. I still have expectations that this co-operation agreement will continue until the end of the term because the policy of the government is to utilize the private partner for investment in the water supply project.

#### **Manfred Giggacher**

Concerning the importance of the regulatory body. The scope of the regulatory body is very important, not only does it bring the message from the community, who is the end user and may not be satisfied with something, to the government level, it also sends a message to the private sector. This has to be factored into the contract, into future investment profiles. If they are not happy today, and the government realizes that these people, their voters, are not happy then they are going to start reviewing the investment profiles, and they will make those requests known to the private parties - to make those modifications to

the investments profiles. What is important here is that the tools have to be available. That is, the enabling environment, around a contractual framework, needs to be available.

The second thing I wanted to say about the current regulatory body is that it is a stepping-stone. Nobody mentioned specifically this morning that DKI Jakarta is a megacity but it is also a province; it is under a Governor. The regulatory body that is going to be set up here is a provincial regulatory body, first, as a stepping-stone. Why? Because we've been saying, from the private sector side, that you need to have a regulatory body but the government, from their side, has been saying, to get something nationally done in the time-frame available is virtually impossible. So, this we regard as a stepping stone, because it will be provincial today, perhaps two, three, five, ten years from now, it will be national.

In terms of the question to the sudden discovery of the complexities of the contract, and implementing the concession contract, nothing is new. If the economic crisis did not occur, if the political instability did not occur, then, the contract would have functioned and worked itself out over the course of the 25 years; there was nothing new! It is just that everything was focused into a funnel, for these last 2 or 3 years of the crisis. That's why I said, the message here from all of us, to yourselves is: What has been learned here, please listen to it, because it will help us all in the long run.

#### **Col. Angel Efren J. Agustin**

I have noticed from the presentations that there are many similarities between the Jakarta case and the Manila case. I would like to ask about the problems that you are encountering as far as regulations are concerned. You said that the regulators are actually the owners. Within the concept you are implementing:

What are the problems you have encountered as far as that set up is concerned?

Knowing that this is posing some problems on your system, what are your remedies or your pro-

posals in order to improve your water regulations in Jakarta?

#### **Manfred Giggacher**

As I said before, there was a conflict of interest and a confusion of roles and responsibilities. Despite the fact that the contract was signed way back in 1997 (and would probably have continued normally without the economic crisis and the political crisis) a regulatory body still needed to be set up. But the scope of that regulatory body was not worked out until after a World Bank study was completed. But even then, after that was completed, nothing happened, and therefore, by default, the responsibilities of the regulation aspect of the contract fell automatically to the supervisory board of PAM Jaya. I did not make that clear in my slide that is true. But the fact is, it was formally the First Party of the contract...the effective owners! Under those conditions, from the standpoint of independence, it is non-existent and conflicts effectively occurred. The new structure (Slide 24 - New Contractual Relationship) is effectively a regulatory body one level up, which is being put into place by the government of DKI Jakarta. Yes, it is the Parent of Pam Jaya, however, that is why we have insisted upon independence since the beginning, everyone has insisted upon the independent aspect. We hope this will work.

In terms of how it would be established and function, a typical example would be that the regulatory body board would be a group of respected individuals, well known within the community and academic circles, or within the economy business environment etc...People that would be effectively trusted, well known and impartial ...hopefully and their application or the appointment of those people cannot be, from one day to the next, controlled by the Executive without the City Council having a say in its change. That's where the first level of independence comes in, if you like. If the Executive, for instance, wanted to control the regulatory body, and hires and fires people on the regulatory body to influence them, then that would never work. Independence is a question of trust building. Since the appointment of the indi-

viduals requires a dual prong approach in terms of the Local Council and in terms of the Executive, the Government, then I think independence can actually be achieved in the longer run.

### **Kris Tutuko**

I would like to give additional information to the gentleman from the Philippines regarding the regulatory body. At the beginning of the co-operation agreement, our regulatory body is the board of supervisors of our company, because we did not have an independent regulatory body. The second step is that we have established a regulatory body appointed by the Governor, and the next step is that the regulatory body is not appointed by the Governor, but by city counselors. When the regulatory body is appointed by the city council, I think this will be a very independent regulatory body. So, this regulatory body established by my Governor last month, is the first independent body but I hope a more independent regulatory body will be appointed by city counselors. The members of the regulatory body are appointed for three years. So, in 2004, the city counselors will appoint the new regulatory body. The requirements for the members of the regulatory body are: citizen of the Republic of Indonesia, minimum age of 30 and maximum age of 65, possessing publicity sound and appropriate accountability and credibility and experience or knowledge and skills in water management field, either in economic, technical, industrial and professional....

## **Water catchments, administrative boundaries, decentralization.**

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### **Dr. Jing-Sen Chang**

We only talked about water development resources, but M. TUTUKO showed us a plan and I wonder if in Jakarta, you have the town-scheme of « DDN18», the water resources protection area or if you have some sort of urban growth management to protect water resources for the long-term future?

### **Arlene Inocencio**

In the first two presentations (which were very good and very informative), I was wondering on the point of environmental component, which is supposed to enter the contract, are there specific programs addressing this concern? So, how is this environmental component taken into account specially in pricing in the second presentation? The concept of sustainability has no reference at all to the state of the environment and growing scarcity of water. As mentioned, you have already worsening water pollution problems and groundwater depletion also appears to be a very urgent issue that needs to be addressed, and then there is no mention at all of sanitation or wastewater management program, which all of us can learn from. There was also a brief mention of establishment of a water catchment authority. Unfortunately, this was not well developed.

### **Idris Maxdoni Kamil**

I would like to answer part of the question concerning water resources management in Jakarta. The groundwater management is controlled by the government, but the water resources on the upstream are controlled by the provinces. At the present time, during decentralization, it is up to the government and the local government to sit together to talk about this problem on water resources management. If you see the area in Boghor, upstream of Jakarta, the increase on housing development in this area is very significant and it affects the flow coming to the rivers. In recent studies, we saw some significant changes on the flow in the rivers. Jakarta is Jakarta, Boghor is Boghor, this is the problem we are facing now.

### **Kris Tutuko**

We actually have a plan to protect the southern part of Jakarta. The implementation is different. The law enforcement is different, this is the problem. The groundwater is controlled by the government, but this in theory only, because we have a lot of illegal deep wells for the industry. We presently have an environmental problem. That's why water supply is very important. There are too many actors involved with the raw

water. With the decentralization, we have even more problems than solutions. Many agencies are concerned about how to get something from this fund. On the other hand, because formerly it was under the central government, but now the central government has no money, and then they give the authority to the local government. This is the problem.

### **Manfred Giggacher**

In terms of the water catchments, in terms of current dynamic forces and trends, if autonomy and decentralization continue to occur, more and more administrative boundaries appear. The problem is that rivers do not follow administrative boundaries and as such, there will always be issues associated with those rivers flowing through different sectors, different land plots and self-interests will prevail. The concept of the water catchments authority is someone that is above those administrative boundaries, because at the end of the day, it cannot work any other way. What we are seeing today is that because of the pressures of autonomy and decentralization, that the provinces or districts wish to include or suddenly impose a retribution tax on the water which is flowing through their areas of administration, and going somewhere else. The tax just gets passed down the line and at the end of the day, if all is accepted, it is the end user, the customer, who will have to pay. So, there's definitely a need for some form of management, in relation to the water resources.

There is currently an organization, government-controlled, which takes care of the raw water infrastructure along the West Tarum canal. But unfortunately like many government departments, their Central Government funding has stopped. So, once again, they find themselves in the predicament where they do not have the funds to maintain the assets. We certainly understand their problems, but those problems then end up in our backdoor, in Jakarta. That is definitely a problem that needs to be resolved for the future.

Once again, as I said, this is also another opportunity perhaps that needs to be thought about in

terms of some other types of partnership. But the water catchments authority has to be imposed first. I mean, that's the critical step here. People will have to start thinking in a systemic manner, not just in « my backyard only».

## **Social aspects and people's involvement in the decision process**

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### **Arlene Inocencio**

On the point of social components that are supposed to be taken into account in the contract, are there specific programs addressing the needs of the poor? You will see in the case of Metro Manila that the poor now enjoy the benefits of piped water through the public-private partnership. The private sector has made possible provision of piped connections for residents of squatter communities or informal settlements in either public or private lands, which was not possible before privatization because of stringent application requirements of the water utility. You will see that what most believed to be impossible or a difficult task to do, was accomplished by the private concessionaires who now manage the operation of the water utility by partnering with the community organizations, local governments, and the non-government organizations.

### **Manfred Giggacher**

In terms of the contract and the social and environmental aspects, it was a very interesting point that you have raised; whether social and environmental aspects are taken into account in our contract? Yes, they are, but specifically they may not be sufficient. In my view, we operate in markets, and markets, despite what Wall Street says, are not perfect markets. Markets have a tendency to exclude things. One of the things they exclude are things like the social and the environmental aspects. The costs associated with environmental and social aspects are usually excluded from market place dynamics, unless someone brings them back into the marketplace, imposes them onto the marketplace.



**Ms. Lye Lin Heng**

I am wondering if someone from the panel could address some issues such as:

How the needs of the population's affordability and the local cultures are taken into account and whether the inhabitants and NGOs etc... are involved in the process?

**Kris Tutuko**

Population affordability: according to the Ministry of Home Affairs, the guidance for increasing the tariff is less than 4% of the income of the customer. It is not possible to increase the tariff for more than 4% of the income. I am sure that we can adjust the next tariff increase in January 2002. We can review the tariff every 3 years, but we can adjust the tariff every year. For next January 2002, we are still optimistic to adjust the tariff because the economy is better and the economy is recovering.

**Manfred Giggacher**

Regarding affordability and NGOs being involved within the contract: before it was only the Executive, which is DKI Jakarta, Pam Jaya and the customers. Within that empty space surrounding the diagram in my slide, there are usually agencies, and whatever other bodies that seem to make sense. But they may not all have been listened to. They were physically there, as a force, but it was an ineffective force. The channels of communication were not there; the mechanisms of management were not properly used. So, there was an effective void. A lot of voices, a lot of screaming, lots of emotions, but not being listened to or productively used in any form or fashion. With the new structure, where, on the one hand, the City Council plays now a very important role. The voice of the customers, obviously, plays an important role in their (City Council) decision-making processes, because Councilors are voted in or out, depending upon the seat they represent.

The regulatory body also needs to be, as I said before, independent from the top Executive, but both accountable and transparent to the community. Basically meaning that if the regulatory body

is going to make a decision, if they are going to ask for a tariff increase, or support a tariff increase submission from the private parties and Pam Jaya in relation to the future investment, they have to convince the community that this is justified, that this is realistic, this is the nature of the job, that this is the cost of the service.

Gone are the days when you had artificially low tariffs and then had a supporting subsidy bang on top. The private parties cannot, for instance, take advantages of these subsidies. We have no control or link to the taxation revenue from which these subsidies may have been paid. So full cost recovery is the way to go to guarantee effectively the aspects of sustainability well into the future. The regulatory body will play a very important role and NGOs will play a very important role to make sure that those measures are coming through into the contract and into the government circles. They perhaps do not really fully understand yet the scope of their work but they will, because as I was leaving Jakarta this week, on Wednesday, there was the presentation. The regulatory body had been set up, the board had been effectively nominated and from now on, they will be functioning.

**Idris Maxdoni Kamil**

I am also an advisor to the Indonesian water supply association, so I know a little bit about what's happening in other areas. All the PDAMs are facing the problem on increasing the tariff, and then the Indonesian Water Perpamsi, we help the local PDAMs (local water companies) to establish the customers' groups. So we explained the customers' group what's happening in PDAMs and let them talk to the government about the increase. We have a success on that and the members of the customers' groups are women, housewives because they know the problems, they know what happens when there is no water in the house. That approach should be taken into consideration by Pam DKI, because there is no socialization for the PSP on the year 1995. Community, I think, needs some explanation like Manfred showed to us, about what happens in the public participation and in privatization, because

in Indonesia, we have both privatization in the banking structure and PSP in water sector.

## Water consumption

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### Dr. Jing-Sen Chang

The three papers presented this morning all deal with water resources development in Jakarta and I think we all agree that water supply is very important to residents. I have two questions.

I wonder if I can have the figures of daily water consumption per capita in Jakarta? Is it still increasing or decreasing? Mr. Giggacher mentioned that the water tariff has increased after the privatization of the water resource development and I wonder whether the increase of water tariff has affected the daily consumption of water in Jakarta?

### Yong Jan Lee

What is the percentage for water usage in the industrial sector versus the residential sector? The reason why I am asking that is that there may be a competition between different sectors and because of lot of water may be used in the industrial sector, it may also reduce the amount of water to be used in residential area, which is the problem of Taiwan. Taiwan government tried to develop water-oriented industrial development, which caused the water reservoirs to be built and which causes a lot of NGOs protests against water reservoirs built for industrial sector. So, what is the percentage between different sectors, in terms of water usage, in Jakarta?

### Kris Tutuko

Water consumption decreased in 1998. I mean there is a decreased consumption per customer but the total consumption increased over 3 years. However, consumption per customer has decreased. About raw water protection, Water is protected until the boundaries of the city so the responsibility for raw water lies with the raw water provider, and we have a co-operation agreement with that provider to increase the reliability of the quality and quantity. We still need help from

the central government to invest in improving the raw water canals, and for the environment catchments area and so on....

I would like to illustrate the proportion of the customers. In the East area, 90% of customers are domestic customers or household customers. And if you look at the proportion of the revenues, the low-income customers (end of tape)...

There is a cross-subsidy from commercial customers to non-commercial customers. This is the illustration that we cannot adjust the tariff between commercial customers and non-commercial customers; we have pending criteria that the proportion of the household's customers and the proportion of commercial customers cannot change very much and also the tariff.

### Manfred Giggacher

With the increase of tariff, if you remember, I have highlighted the tariff structure where a cross-subsidization has been built into the tariff structure, which is very important. Unfortunately, the part of the tariff structure for the poor, or lower classes, was not increased. Therefore, the gap between that poor class and the industrial, commercial and richer classes has now widened, which is going to create a problem for the next tariff increase, but that is another thing. For the record, the tariff increase, because the tariff was frozen for the past 3 years, was initially a first step catch-up tariff increase. In terms of elasticity of demand, nothing was seen. There was no decrease in consumption, certainly no increase, it just stayed flat. So, there was no elasticity effect, and I think currently right now, in terms of the domestic consumption, it is about around 150 liters per capita per day. I cannot answer the urban growth management question.

Industrial and residential water use: I do not have information on the split between industry and customers with me, but I do not think there is a problem of competition as you highlighted specifically in your case. Certainly, we have not seen that from the aspects of our water delivery, the biggest problem we've got is to get water to everybody. We have to rehabilitate the network massively to get the water delivery done.

## Clean up of Indonesian rivers

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### **Ms. Lye Lin Heng**

Looking at it from the viewpoint of an environmental lawyer, I recall that a few years back, the PROPER PROKASI (clean-up of Indonesian rivers) was given a lot of publicity. We, as environmental lawyers, looked at it as very good example of a system that is a better way of enforcing the laws than just increasing fines. In countries where the government is less than clean, an increase in the penalties for breaches of regulations will just mean that you increase the coffers of the inspectors. Thus, a reward and humiliation scheme like the Proper Prokasi system is to us, a good example of an alternative form of enforcement. . I am just wondering, in view of the economic and political crisis what is happening to this Proper Prokasi program? Are the rivers in Indonesia, and particularly in Jakarta, continuing to be more and more polluted?

### **Manfred Giggacher**

I am not aware of specifics with the PROPER PROKASI scheme, all I can say though, is that, concerning the West Tarum canal coming into the eastern part of Jakarta, there are numerous rivers crossing the canal. One of them is the Bekasi. We made a risk evaluation of the West Tarum canal and the water sources to help the government along in relation to understanding the risks involved on the canal. Believe it or not, one of the unexpected but «positive» aspects of the economic crisis was that a lot of industries folded. As they folded, you could actually see (measure) the amount of heavy metals, the amount of pollutants decrease because of the economic crisis over the last 3 years. But the reality of the situation is that something needs to be done upstream to control the pollution aspect and right now there is no control. If there is a polluter, he continues to maintain his license and he continues to pollute. So something needs to be put into place to begin to manage the upstream water portions.

### **Idris Maxdoni Kamil**

To answer the PROKASI (« river clean» program), which was started about 3 years ago, by the minister Sarwano I think. But we had the political crisis, the Ministry changed. The new minister was a leading organizer of the Prokasi. We also have the Blue Sky program, which started in a few cities during the crisis. We have problems in receiving the response or activity from the local governments. I think these are the conditions at this time.

### **Kris Tutuko**

Concerning PROKASI; during 5 years, this program was successful, because the decrease of biological and chemical «oxycademon» but increasing the penalties in Indonesia is deposit flow if there is any evidence or any proof that there is any pollution. I want to inform you that more than 70% of the pollution comes from domestic wastewater, not from industrial wastewater.

### **Dr. Kusbiantoro**

I am sorry, time is up. I just want to end this discussion now on the industrial usage versus residential usage. In Jakarta and its neighboring regions, we have also problems related to water for the agriculture. We could learn about the problems of Jakarta water supply from these speakers. As I have mentioned before, what are the processes, what are the related institutions to be involved, and what are the needed legal arrangements? We have learned about the contract, about the need for regulatory body, about the city council, about the government, about the NGOs. It seems that there is still a long way to go to provide water for all if we want economic, social, political and environmental sustainability. We hope that we can all learn from these problems. ■