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**INDONESIA
URBAN WATER SUPPLY
SECTOR POLICY
FRAMEWORK**

SUMMARY REPORT

By Alain Locussol
Principal Water Supply and Sanitation Specialist, EASUR



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SUMMARY

URBAN WATER SUPPLY SECTOR POLICY FRAMEWORK

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With only about 40 percent of the urban population of 70 million having access to piped water service in 1997, the Government of Indonesia (GOI) is seeking new directions to rapidly increase coverage, in particular through private sector participation in the delivery of service. This paper argues that the urban water sector could possibly "graduate" from Government financial assistance during the next ten years, provided that the many current obstacles to attracting commercial financing are removed. GOI may have no other option if it wants to free public funds to finance sewerage service and waste water treatment that are currently provided to less than 5 percent of the urban population and unlikely to attract commercial financing in the near future.

DISCUSSION PAPERS PRESENT RESULTS OF COUNTRY ANALYSES UNDERTAKEN BY THE DEPARTMENT AS PART OF ITS NORMAL WORK PROGRAM. TO PRESENT THESE RESULTS WITH THE LEAST POSSIBLE DELAY, THE TYPESCRIPT OF THIS PAPER HAS NOT BEEN PREPARED IN ACCORDANCE WITH THE PROCEDURES APPROPRIATE FOR FORMAL PRINTED TEXTS, AND THE WORLD BANK ACCEPTS NO RESPONSIBILITY FOR ERRORS. SOME SOURCES CITED IN THIS PAPER MAY BE INFORMAL DOCUMENTS THAT ARE NOT READILY AVAILABLE. THE WORLD BANK DOES NOT GUARANTEE THE ACCURACY OF THE DATA INCLUDED IN THIS PUBLICATION AND ACCEPTS NO RESPONSIBILITY FOR ANY CONSEQUENCE OF THEIR USE.

INDONESIA

URBAN WATER SUPPLY SECTOR POLICY FRAMEWORK

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This report was prepared at the request of BAPPENAS by a team led by Alain Locussol (task manager) with major contributions from Messrs./Mmes.: Raja Iyer, Frida Johansen, Dong Liu, Jae So, Keiichi Tamaki, Risyana Sukarna (Bank staff), Imam Krismanto, Ian Wetherill and Michael Whitbread (consultants). Inputs were also provided by Messrs. Vincent Gouarne, Klas Ringskok and Anjum Altaf who commented on the report's main recommendations.

PRINCIPAL ABBREVIATIONS AND ACRONYMS USED

ADB	Asian Development Bank
BAPPENAS	National Development Planning Agency
BPAM	Non Autonomous Municipal Water Company
Bintek	Technical Directorate
BOOT	Build, Own, Operate and Transfer
BPKP	Government Audit Agency
DG Cipta Karya	Directorate General of Human Settlements
DG Pengairan	Directorate General of Water Resource Development
DG PUOD	Directorate General of Public Affairs and Local Autonomy
FINPRO	Financial Projection Model
GOI	Government of Indonesia
KUDP	Kalimantan Urban Development Project
ICB	International Competitive Bidding
ITB	Institute of Technology of Bandung
IUIDP	Integrated Urban Infrastructure Development Project
JICA	Japanese International Cooperation Agency
JUDP	Jabotabek Urban Development Project
LG	Local Government
MoHA	Ministry of Home Affairs
MOU	Memorandum of Understanding
MPW	Ministry of Public Works
NGO	Non Governmental Organization
NSWA	National Water Supply Authority
PAM JAYA	Jakarta Municipal Water Supply Company
PDAM	Autonomous Municipal Water Company
PERPAMSI	Indonesian Water Distributors Association
PJM	Five Year Development Plan
PJP	Government's Long Term Development Program
PLN	National Power Company
PMDU	Provincial Monitoring and Development Units
PPPAB	DG Cipta Karya's Provincial Water Supply Unit
PVC	Polyvinyle of Chlorure
Telkom	National Telecommunication Company
Tk I; Tk II	Provincial Level; Local Level
TNA	Training Needs Assessment
WTP	Willingness to Pay

URBAN WATER SUPPLY SECTOR POLICY FRAMEWORK

EXECUTIVE SUMMARY

a. At the end of Repelita V in 1994, 36% of Indonesia's urban population of 67 million, or 24 million, had access to piped water. Aiming at serving 62% at the end of Repelita VIII in 2008, or 66 million people out of 106 million, could appear ambitious. It would however just reduce the unserved population from the 1994 level of 43 million to 40 million. To meet this objective about Rp7,000 billion and Rp10,800 billion would have to be invested during Repelita VII and Repelita VIII respectively, to be compared with the Rp3,000 billion scheduled for Repelita VI. If the water supply sector is not able to attract commercial financing, because it is perceived as too risky, this level of investment would become an unbearable burden on the Government's budget.

b. Yet financial forecasts show that gradually phasing out of the Government financial support during Repelita VII, and financing development of the water supply sector only from cash generation and the capital market, as of 2004, is affordable. To do this, the average tariff in large PDAMs would have to be gradually increased from Rp650/m³ in 1995 to only about Rp950/m³ in 2008. In smaller PDAMs, the tariff would have to be gradually increased from Rp650/m³ to Rp800/m³. In DKI Jakarta, the average tariff could, in theory be decreased if efficiency gains could be achieved.

c. However, the "graduation" of the water supply sector can be achieved only if an integrated set of policy changes is introduced to transform the current collection of municipal water supply companies into an autonomous and creditworthy customer-oriented service industry. The Urban Water Supply Sector Policy Framework (WSPF) identifies six major policy changes, aiming at increasing the water supply sector's creditworthiness, with the ultimate goal to serve all customers better and at a lower cost. The Government may have no other option if it wants to free some public funds to finance sewerage service and waste water treatment, that are currently provided to less than 5% of the urban population and unlikely to attract commercial financing in the near future.

Establish an Arm Length Relationship between the Owner of Water Supply Assets and their Manager

d. Indonesia's municipal water supply industry currently counts some 300 companies. Their autonomy from their local governments is limited, so they cannot really be held accountable for their operating efficiency. Most PDAMs are far too small to attract good quality managers and staff. Their efficiency is typically low, as evidenced by high staffing ratios or high unaccounted for water. Their revenues are limited because of inadequate commercial policies reflected by low tariff levels and tariff structures

distorting consumption. Strict financial discipline is not enforced and the Government has recently made loans to poor performing and non creditworthy PDAMs. As a result, the financial health of most PDAMs, measured according to a set of criteria related to efficiency, profitability and debt structure, is questionable. Finally, most local governments expect revenues from their PDAMs and extract dividends even if the level of service justifies that any profits be invested to improve and expand the service.

e. Separating ownership of water supply assets from their management could help limit political influence in the day-to-day management of the water supply operations. This move could be further supported through the participation of professional managers and user representatives in the Board of the operator. This action could also favor the setting and monitoring of performance objectives within the framework of enforceable "performance contracts". While worldwide experience with contracts between governments and companies they owned is not always encouraging, separating ownership and management functions would in fact lay the basis for private sector participation in the provision of water supply. Separation could allow for the consolidation of operations among neighboring local governments to take advantage of economies of scale. The notion of dividends to be paid by a PDAM to its only shareholder could be replaced by the notion of an operating fee to be paid by the operator to the owner of the facilities.

Establish a Regulatory Framework for Private Sector Participation

f. Private sector participation could be the main development in the water supply sector during the years to come. But under the present conditions, participating in the financing of the sector's development is perceived as a risky business by private lenders and equity investors. This perception is further supported by the absence of a transparent regulatory framework, as evidenced by the many memoranda of understanding that have failed to lead to any significant deal.

g. Indonesia could take advantage of worldwide experience in private sector participation in water supply. The experience shows that all options -- from simple service contracts to sophisticated long term concessions -- must be envisaged with the assistance of independent consultants before soliciting proposals from private operators. Standard contracts and selection procedures, serve as the basis for the regulatory framework, must be prepared urgently. Worldwide experience has also shown that transparent competition leads to lower prices and shorter transaction periods than direct negotiations. It also shows that even tightly specified contracts cannot remove the need for direct regulation, to provide a quick response to changing economic, social and technical conditions, and that an independent regulatory body should be operational as soon as contracts with private operators become effective. Since it is difficult to

transform a former public utility into a regulatory body it could be advantageous to consider outsourcing some of the regulatory functions to reputable auditors or certification agents, at least in the short term.

Streamline Water Sector Financial Management

h. PDAMs have so far financed their development mostly from Government grants and concessional loans, and very little through cash generation. Because of the indiscipline in Government lending and subsidized loan conditions, very few PDAMs may be considered creditworthy.

i. To finance extensions, the Government must emphasize PDAM cash generation, resulting from both efficiency gains and tariff adjustments. Access to Government grants and concessional loans could be clarified and PDAMs should compete for them, with the best performing having access to more favorable terms. In parallel, loans should not be made to PDAMs with weak debt service capacity, and lending conditions could be more strictly enforced. Decentralization of lending functions to domestic banks could be envisaged, albeit cautiously, as a means to move lending conditions closer to commercial ones, increase flexibility in funding PDAM projects and establish the needed discipline. Also, alternative financing means, such as bonds or securitization should be pursued.

j. To reduce the current perception of high risk, it would be necessary to provide investors with reliable sectoral data, certified by independent auditors. A quality data base could also allow the benchmarking of PDAMs performance and help local governments link tariff adjustments to a PDAM performance improvement plan and help the central Government direct its financial support first to PDAMs that improve their performance. Private sponsors of water supply projects would seek guarantees against a variety of risks (revenue, payment, termination and regulation), and the Government should focus mostly on providing guarantees only on termination and regulation risks.

Simplify Pricing Policy

k. PDAM tariffs do not meet any of the economic, financial, social equity and administrative simplicity principles of water tariff-setting. Current tariffs discriminate against lower income households by charging high connection fee and force large consumers to use substitutes such as ground water, thus depriving PDAMs of substantial revenues. They also invite manipulation of meter readings, a suspect in increasing commercial unaccounted for water.

l. An improved tariff structure could consist of a small fixed fee for covering administration and meter maintenance costs and a rate per cubic meter of water

consumed. The latter could include only two consumption blocks. The first could be a “life line” block of up to 10 m³ per month and a rate such that the first block would not represent more than 4% to 5% of the total expenditure of an average low-income household. The second one could be a “base rate” set such that the overall average tariff represents a balance between economically efficient marginal cost and financially viable average costs. Low-income households could be offered connections free of charge, provided that the tertiary distribution network is reasonably close by, in exchange for a refundable advance payment on their water bill.

m. While tariff negotiations could take place every four to five years only to encourage the operator of the water supply system to implement its performance improvement plan, tariff must be automatically adjusted between two negotiations, using a cost index formula reflecting actual cost composition. The economic cost of providing water could also take into account the cost of collecting and disposing of the waste water. Adding a sanitation surcharge to piped water could, under the current conditions, encourage some users to revert to poorly regulated alternatives. For now, a sanitation fee using the property tax as a basis appears more equitable.

Improve Planning, Design and Implementation of Water Supply Projects

n. As water supply systems are capital intensive, it is essential to develop them within the framework of systematic, long term planning with the objectives of seeking least cost solutions and reaching a broad consensus among all stakeholders on the technical, institutional, financial and cost recovery options chosen. This practice is not yet part of the PDAM culture. An important way of reducing costs and enhancing project quality is to improve procurement practices by grouping works in larger packages to attract better quality contractors, by combining supply and laying of pipes, or by awarding design-and-build contracts for water treatment and pumping plants. Reducing construction costs also means that real competition becomes the rule; since at present too many contracts seem to be awarded on a “rotational” basis for predetermined prices. Finally, since the water supply sector depends very much on consultants for project identification, preparation, implementation and institutional development, it could be beneficial for all parties to take a step back and closely identify those current practices that limit access to the best available expertise.

Emphasize the Identity of the Indonesia Water Supply Industry

o. To help build the Indonesian water supply industry an identity, PERPAMSI could be given a larger role. PERPAMSI could take the lead in setting up the “quality” data base mentioned above. PERPAMSI could also be given enhanced responsibilities in human resource development, and it could assist PDAMs in improving recruitment,

productivity and training plans, and in preparing and implementing medium-term staffing plans. PERPAMSI could update existing selection criteria for various key positions, and help develop a mechanism to advertise vacancies much more widely. PERPAMSI could also take the lead in carrying out independent testing and certification of new technologies, equipment and software available on the market, and support dissemination of best practice among PDAMs. Finally, PERPAMSI should actively “lobby” for the implementation of a water resource policy that addresses the main concerns of the water supply industry with regards to the timely availability of sources and the protection of water quality.

URBAN WATER SUPPLY SECTOR POLICY FRAMEWORK

A. INTRODUCTION

1. The main objective of the “Urban Water Supply Sector Policy Framework (WSPF)” is to identify the changes that have to be introduced to transform Indonesia’s collection of municipal water supply companies into an autonomous customer-oriented service industry.
 2. The WSPF is based on a main report that includes seven chapters. The first one describes the current situation; the second addresses issues related to the management of the municipal water supply companies; the third discusses private sector participation in the delivery of water supply services; the fourth describes human resources development (HRD); the fifth covers issues of planning and implementation of water supply projects; the sixth discusses pricing of water supply services, and finally the seventh addresses the financing of the water supply sector.
 3. This summary will provide a brief description of the current situation and an analysis of the main problems the sector is facing. It suggests a series of integrated policy changes centered around the following themes:
 - establishing an arm-length relationship between the owners of water supply assets and their manager and introducing incentives to perform;
 - designing and implementing a regulatory framework for the private provision of water supply services;
 - streamlining financial management of the water supply companies to make the water supply sector more attractive to private financing sources;
 - simplifying the pricing policy;
 - improving the planning, design and implementation of water supply projects; and
 - emphasizing the identity of the water supply industry through increasing the role of its professional association.
-

B. THE URBAN WATER SUPPLY SECTOR AT A GLANCE

4. **Distribution of Responsibilities.** The provision of urban water supply services is mostly the responsibility of local governments (LGs). By end 1994, autonomous water supply companies (PDAMs) had been created in 276 LGs; in 20 smaller LGs, piped water is still supplied by interim water supply companies (BPAMs) under the control of the Directorate General of Human Settlements (DG Cipta Karya) of the Ministry of Public Works. Until 1996, DG Cipta Karya assisted PDAMs in the preparation of projects funded by the Central Government; DG Cipta Karya still maintains a supervision role of all technical and construction aspects. The Directorate General of Public Affairs and Local Autonomy (DG PUOD) of the Ministry of Home Affairs (MoHA) supervises and monitors LGs' enterprises, including PDAMs, and trains their staff on financial and administrative matters. PERPAMSI, the professional association of PDAMs, is involved in training activities and disseminates best practices; it has, however, a very limited staff and still acts very much as an arm of the Central Government, with day-to-day activities guided by DG PUOD.

5. **Service Levels.** By end 1994, 35% of Indonesia's population of 192 million, or 67 million, lived in urban areas. According to the available information, piped water supply service was provided through 2.85 million domestic connections and 36,500 standpipes. An additional 350,000 connections served administrations, businesses and industries¹. Altogether, it was estimated that about 25 million people, or 36% of the urban population, had access to piped water, of which 20 million through direct connections. There is no major difference in service ratio among the various provinces; even in DKI Jakarta, only 32% of the population had access to piped water. However, while the urban population with access to piped water increased 2.7 times from 9 to 25 million between 1980 and 1994, the number of urban settlers without access to piped water also went up 1.8 time from 24 to 42 million during the same period.

6. **Substitutes to Piped Water and Water-Borne Diseases.** Many households, businesses and industries rely on their own source of water such as shallow or deep aquifers, street vendors or even bottled water. A survey carried out in small towns of Eastern Islands revealed that people without access to piped water were not too dissatisfied with their alternative supplies, but were also willing to get piped water and even pay a tariff higher than the current tariff for a better service than the one currently provided by the water company. It is traditional to boil water for drinking purposes whether obtained from the piped network or other sources, and this practice is unlikely to

¹ These numbers were expected to reach 3.22 million domestic connections, 38,000 standpipes and 430,000 non-domestic connections by the end of 1996.

change soon, even if the piped water delivered is potable. The incidence of water-borne diseases has been stable during the 1990-1994 period².

7. **The Water Supply Industry.** At the end of 1994, the 276 PDAMs and 20 BPAMs managed about 1,600 piped water supply systems. Total production capacity was estimated at 6.25 million m³/day, and actual production and distribution at 5.0 and 3.0 million m³/day respectively³. This implies that about 40% of the water produced is unaccounted for and thus generates no revenues. The Indonesian water industry is a collection of small businesses: at the end of 1994, only four PDAMs served more than 100,000 connections and 230 served less than 10,000 connections. The industry employed a total of 33,200 staff -- an average of 10.4 per connection. Total assets were estimated at about Rp2,365 million (US\$1,000 million). Total revenue of Rp855 billion (US\$365 million) was just sufficient to cover current costs (operation, maintenance and debt service) of Rp875 billion (US\$370 million). Since 1990, PDAMs had borrowed was about Rp1,750 billion (US\$740 million). Compared with the water industry of neighboring countries, Indonesia's scores rather poorly on service ratio. High unaccounted for water (UfW) and low staff efficiency, as measured by the number of staff per 1,000 connections are widespread problems in developing countries of East Asia.

C. MAJOR PROBLEMS THE URBAN WATER SECTOR IS FACING

8. Apart from access to water sources of good quality, Indonesia's urban water supply sector is facing problems that are due to: (a) the lack of autonomy of the PDAMs; (b) the financing mechanisms and lack of discipline; (c) the financial performance of the PDAMs; (d) the tariff level and structure; (e) the planning and project implementation practices; (f) the size and geographical limits of the PDAMs, and as a result (g) the lack of attractiveness to the private sector.

9. **Water Resources.** Indonesia is blessed with abundant rainfall and fresh water resources, although unevenly distributed between the various islands and regions. While irrigation remains the biggest user, by far, of surface water, competition between from urban and industrial users is now intense during low flow seasons, in particular in heavily urbanized river basins of Java. In the past, the focus has mostly been on developing new supplies, while the issue of conservation and demand management have attracted less attention. Quality, a key element for urban water supply, has deteriorated rapidly in these river basins and its protection would require a higher commitment, in particular when it comes to urban waste water collection and disposal. The economic good aspect of water is now accepted, but a comprehensive pricing policy to manage demand has yet to be developed and enforced.

² The number of cases of diarrhea has remained at about 25 per thousand people and the number of deaths due to diarrhea has been constant at 25 cases per thousand cases of reported illness. Statistics show that morbidity and mortality due to water-borne diseases are higher in Eastern Indonesia.

³ The average gross domestic consumption was estimated at 130 lcd.

10. **Autonomy.** Although PDAMs issue financial statements and prepare budgets that are distinct from the ones of the LGs, most PDAMs are in fact no more autonomous than “dinas”, i.e., municipal departments relying on the municipal budget. Their Boards of Supervisors, headed by the Bupati or the Walikota and composed of local civil servants, rarely provide the guidance needed to develop the service on a sustainable basis. Boards tend to intervene too much in decisions that should be left with the PDAM management, such as staff selection, technical options or contract award. Most LGs see their PDAMs as a potential source of income and tend to extract dividends from them, even if they are not profitable or if the level of service justifies that earnings be retained to finance system improvement or extension. At the same time, LGs tend to delay tariff adjustments, either for political reasons or because they focus too much on short term cash flows. *In fairness, PDAMs cannot really be held accountable for their operating efficiency, because they usually do not have the autonomy needed to make relevant decisions.*

11. **Financing Sources and Financial Discipline.** PDAMs are not financially autonomous either. Currently, PDAMs finance their investment programs mostly from Government grants and loans, and little from internal cash generation⁴. To generate more cash, PDAMs routinely request tariff increases, but have seldom been encouraged by their LGs to implement cost reduction programs. Rarely do PDAMs accumulate surpluses for future investment, but LGs sometimes contribute equity to the PDAM. A significant share of the funds have been Government grants either directly to the PDAM or to the LG which in turn makes an equity contribution to the PDAM or under the form of facilities designed and built by DG Cipta Karya.

12. The two main sources of Government loans are: (a) the Subsidiary Loan Agreements (SLAs) that onlend funds borrowed from international financing agencies, and (b) the Regional Development Account (RDA), administered by the Ministry of Finance, that lends funds provided by the budget. Conditions of both the SLAs and the RDA are more favorable than domestic private banks would currently provide⁵. When inadequate tariff increase are granted by the LG, the central Government tends to reschedule loan repayments and to finance further extensions with grants. No RDA loans are reported to have been rescheduled, but SLAs have been transformed into grants for

⁴ During Repelita V (1989/1994), about Rp1,800 billion were invested in PDAMs. While the Government made substantial contributions in the form of grants, about 50% of this amount was borrowed by the PDAMs and a small proportion was self financing. The investment was only 50% of the originally planned amount of Rp4,000 billion. Repelita VI's (1994/1998) target for urban water supply to serve an additional 22 million people is ambitious, and its allocation of Rp3,000 billion seems low to meet the increased service expectations. It takes into account implementation shortfalls under Repelita V and the expected availability of private sector financing.

⁵ RDA conditions vary depending upon the PDAM with repayment periods of 3 to 30 years, interest rates of 0 to 11.5%, grace periods of up to ten years, and the possibility of capitalization of interest during the grace period (not construction period, which is a more standard practice), and equal installments of principal (thus declining principal and interest). SLAs typically have repayment periods of 15 years of which 5 years of grace and interest rates of 11.5%.

several PDAMs of East Java, so that they can borrow under new SLAs for further service extension. *By allowing defaulting PDAMs to borrow again from the Government, and by providing poor performing, and thus non-creditworthy, PDAMs with the cheapest financing through grants and concessional loans, the incentive to improve financial performance is very limited.*

13. **Financial Performance.** Not surprisingly, despite Government support, not all PDAMs show good financial performance. Because accounting practices vary among LGs, financial statements presented by PDAMs do not easily allow to evaluate and compare performance. BPKP, the Government's auditor, was able to audit about 85% of the PDAMs at the end of 1995, but only 78% of them had generated enough information for adequate financial analyses. Also, the rapid increase in quantity of PDAMs audited may have affected the quality of audits conducted. DG PUOD rates the financial performance of PDAMs according to 12 criteria measuring efficiency, profitability and debt structure. In 1995, about 57% of large PDAMs (50,000 connections and more) were reported "healthy" or "very healthy" but only about 20% of small PDAMs (20,000 connections or less) were reported "healthy". There is, however, no direct relation between the size of a PDAM, the tariff it is allowed to charge and its technical and financial performance.

14. **PDAM Tariffs.** The PDAM tariff structure usually does not meet any of the four basic principles of water tariff-setting: economic, financial, social equity and administrative simplicity⁶. While the average PDAM tariff was Rp485/m³⁷ at the end of 1994: (a) cash costs (operation and maintenance plus debt service) would require that it be set at an average of Rp510/m³; (b) compliance with MoHA regulation (O&M, depreciation and interest on loans) would lead to an average Rp 765/m³; and (c) the long term marginal cost (LTMC) would be an average Rp710/m³. Further, the tariff structure may include more than 20 categories which typically range from 0.8A for social users to 10A or more for large industrial users (with "A" being the base rate). Official connection

⁶ Pricing Principles. *Economic efficiency* requires that the price be set at the long term marginal cost (LTMC) of providing incremental supply of water, because it maximizes the sum of the consumer and water distributor benefits, signals the cost of supply capacity expansion to users and implies that no excessive profit would be earned by the water utility; however, marginal cost pricing should be practiced in a manner that does not reward inefficiencies, such as high UfW or staff ratio. *Financial viability* requires that the price of water be set at a level that covers operations and maintenance, depreciation expenses and provides an acceptable rate of return on revalued assets. *Social equity* in pricing water supply aims at ensuring that the poor can obtain an adequate quantity of water at an affordable price. *Simplicity and stability* of pricing over time is necessary so that customers understand it, be able to respond to signals and adjust their consumption accordingly, and the utility can administer prices easily.

⁷ The average tariff per m³ here is obtained through regression analysis, rather than through simple or weighted averaging. Regression analysis is such that it reflects the majority of tariffs and discounts the effects of a few extreme high or low tariffs. All other figures mentioned in this paragraph have been obtained by regression analyses and are comparable to an average tariff.

charges of about Rp300,000⁸ can often be paid in installments, but connections are considered a profit center.

15. Because the average tariff is lower than the LTMC, those who are connected are encouraged to use more water than socially justified; at the same time those who are not connected, but willing to pay cannot have access to service because many systems are operated at design capacity. Actually, those who benefit from subsidized tariffs are higher income households, while lower income households rely on water from vendors at a much higher price. Also, because the higher block is higher than the LTMC, it forces large water consumers, such as businesses and industries, to use substitutes, thus depriving PDAMs of substantial revenues. The complex tariff structure also tends to encourage "manipulation" of meter readings so that customers are charged lower rates. The tariff structure is thus suspected of increasing commercial UfW. Finally, the connection fee, even if paid in monthly installments, is often too high for low income households.

16. **Planning and Project Implementation.** Because the water supply sector is capital intensive, it is essential to seek the least cost solution through quality planning, but medium term planning (10 to 15 years) is not yet a standard PDAM practice. Also, current practices in contract packaging for the procurement of goods and works, implementation arrangements and the use of technical assistance have the tendency to increase the cost of inputs, sometimes substantially.

17. **Size and Geographical Limits of Operations.** As of end 1994, 230 PDAMs served less than 10,000 connections. Because of such small operations⁹, PDAMs cannot attract nor afford good managers. At the same date, of 33,200 PDAM staff only about 100 were sanitary engineers or about 5% of the 1,900 Indonesian graduates in this specialty (about 30 graduate each year). In addition, there is currently no labor market in the water supply sector, and many PDAM managers, even in large kotamadyas, are senior municipal civil servants on a rotational assignment. Staff training is an ad hoc activity: most PDAMs do not have training plans and budget. PERPAMSI plays a role in human resources development and training and has begun work in career planning and certification for manager. Even so, PDAM staff are too often identified with their LGs rather than with an Indonesian water supply industry. Also, since PDAMs' activities are constrained to LG boundaries, it is currently difficult to jointly address technical or managerial issues in neighboring PDAMs to provide better service at a lower cost.

18. **Attractiveness to the Private Sector.** Although the Government has indicated that it wishes to limit its financial support to the water supply sector and that PDAMs would have to finance their own capital expenditures programs increasingly through cash

⁸ A survey of 27 PDAMs of various sizes show an average revenue of Rp380,000 per new connection in 1995 prices.

⁹ The annual revenue of a PDAM serving 10,000 connections is typically in the range of US\$200,000 equivalent.

generation or from the capital market, the current incentives for PDAMs and LGs to follow this strategy are very weak. As said above, this is due, at least in part, to the fact that PDAMs cannot be rewarded for efficient delivery of services and shortfalls of poor performers can be made up through grants and concessional loans. *Because of the technical and financial status and management conditions described above, financing the development of the water supply sector is still perceived to be a risky business by private lenders and equity investors.*

19. The Government expects the private sector to become a major actor in the provision of water supply services; however, the private sector participation (PSP) initiatives have experienced many difficulties because the conditions that would provide some confidence to potential investors or international operators do not exist yet. Also, domestic capabilities are still limited. Dozens of PDAMs have been approached by potential partners and have signed memoranda of understanding (MOUs) with private companies, mostly for the development of new water production capacities. Negotiations are generally not concluded because PDAMs often cannot clearly define their objectives or lack the know-how and accountability to arrive at contracts that would serve the public interest best and be attractive to private companies. Thus far, too much emphasis has been put on providing additional production capacity and accessing private financing sources and not enough on expanding distribution and improving technical, commercial and financial operations, an obvious prerequisite to improving access to capital markets.¹⁰

D. THE CHALLENGE AHEAD

20. **Urban Population Forecast.** Indonesia's total urban population, estimated at 67 million at the end of Repelita V (end of 1993 - beginning of 1994), or about 34% of the total population, should reach 76 million at the end of Repelita VI (end 1998), and 91 million and 106 million at the ends of Repelita VII (end 2003) and Repelita VIII (end 2008) respectively. The share of the urban population would gradually increase from 37% in 1998 to 45% in 2008. Just under 70% of the total urban population is currently located on Java, 17% on Sumatra and 14% on Kalimantan, Sulawesi, Bali and the Eastern Islands combined. Also, about two-thirds of the urban population is currently located in metropolitan areas or clusters of cities of more than half a million people. This percentage is not expected to change in the near future. Between 1993 and 2008, the average growth rate of the urban population is expected to be about 3.4%, meaning that an average of three million people will be added each year to Indonesia's cities.

21. **Future Development Scenarios.** In order to estimate the investment and financing needs of the urban water supply sector during Repelita VII and VIII, as well as their consequences on the water tariff, four main scenarios have been simulated using a model. The model was run by major region of Indonesia (Sumatra, DKI Jakarta, Java

¹⁰ Except in Jakarta, where the Government is seeking a solution to PAM JAYA's stagnating performance through long term concessions with joint ventures of local investors and international operators.

excluding DKI Jakarta, Bali, Eastern Islands, Kalimantan and Sulawesi) and for the entire country and by category of PDAM (DKI Jakarta, metropolitan PDAMs and smaller PDAMs). For each scenario, basic assumptions were made on: (a) consumption elasticity to tariff and income increases; (b) construction and O&M costs; (c) reduction of UfW and of the cost of inputs; and (d) financing conditions¹¹. For all scenarios, revenues are supposed to cover O&M costs, debt service and contribute at least 25% towards the investment program.

22. **Scenarios 1a: "Business as Usual"**. Scenario 1a envisages no significant changes in the way the water supply business is conducted. In particular UfW would remain at about 40% and the cost of inputs would continue to suffer from the current procurement practices. Also, connection fees would remain at the current level, and limit the growth rate of residential connections to about 6.25% per year, as it is currently. The tariff structure would still discriminate against non-domestic users, thus limiting commercial and industrial demand. Tariffs would be increased by an average of 25% every three years, as it is the current practice, with a first increase in 1998. **Table 2 shows that despite investment levels of Rp4,300 billion and Rp5,300 billion, at 1995 prices, during Repelita VII and VIII, somewhat higher than what is currently planned for Repelita VI, the overall "service" ratio of 38% in 1995 would increase only to 43% and 49% in 2003 and 2008 respectively. However, the unserved urban population of 42 million in 1995 would increase to 52 and 54 million respectively at the same time.**

23. **Government grants and loans on concessional terms would still cover about two-thirds of investment needs** and total Rp2,500 billion and Rp3,300 billion, at constant 1995 prices, for Repelita VII and Repelita VIII respectively. Loans on commercial terms,

¹¹ The following assumptions were made for financial forecasts:

- consumption elasticity to tariff increase: minus 0.3 for domestic consumers and minus 0.1 for non domestic consumers;
- consumption elasticity to income increase: plus 0.4;
- all earnings are retained by the PDAM for reinvestment in expansion programs, and thus no dividends are paid out to local governments for their equity share throughout the projection period, because the service level would remain below 75%;
- construction cost - production facilities: Rp50 billion and Rp30 billion per additional m³/s for metropolitan and smaller PDAMs respectively;
- construction costs - distribution facilities: Rp1.8 billion and Rp1.2 billion per additional 1,000 connections for metropolitan and smaller PDAMs respectively;
- O&M costs: Rp420/m³ for metropolitan and smaller PDAMs; Rp525/m³ for DKI Jakarta;
- concessional loans from the Central Government to PDAMs: repayable over 15 years, including three years of grace and 11.5% interest rate;
- private financing of water supply project: 20% equity investment, 80% commercial loan for metropolitan PDAMs and 100% commercial loans for smaller PDAMs;
- return on private equity invested in water supply projects: 26%;
- loans on commercial terms: repayable over 10 years, including three years of grace and average 18% interest rate;
- PDAM bonds: maturity of ten years, with an annual coupon of 18%.

private equity and bonds would be limited to DKI Jakarta and would represent a total of only about 12% of the overall investment program during the next two Repelita. There should be no need to increase water tariffs in Jakarta at 1995 prices, that could remain at about Rp1,500/m³. After the 1998 tariff increase, tariffs in metropolitan and smaller PDAMs would have to be marginally increased at 1995 prices from Rp650/m³ in 1998 to Rp830/m³ in 2008.

24. **Scenario 1b: “Business as Usual, but with 62% Service Coverage in 2008”.** It is hardly acceptable to envisage an increase in the unserved population, as a consequence of the “business as usual” scenario. Thus, scenario 1b aims at a 70% service ratio in 2010, that would be translated into a service ratio of 62% in 2008 and a slight reduction in the unserved population at the same date. For this however, a more aggressive commercial policy would have to be implemented towards residential customers, by providing small consumers with a new connection at a very low fee¹², as well as commercial and industrial customers by implementing a tariff structure that does not discriminate against them. If implemented, such a scenario would require investment levels of Rp7,000 billion and Rp10,800 billion during Repelita VII and VIII respectively. Five million residential connections would be built between 1998 and 2008, at an average growth rate of 8.7% per annum and non residential consumption would be multiplied by a factor of 3.3 between these two dates. However, with the overall sector performance remaining similar to what it is now, in particular with regards to UfW and cost of inputs, and tariff increases of an average 25% every three years limiting the sector’s borrowing capacity, the cash shortfall would have to be met through a Government financial support on the order of Rp4,500 billion and Rp7,500 billion for Repelita VII and VIII respectively, at 1995 prices, compared to Rp2,500 billion and Rp3,300 billion for scenario 1a.

25. **Scenario 2a: “62% Service Coverage in 2008 with Increased Private Sector Participation”.** Under scenario 1b, the level of Government support to the water supply sector becomes unsustainable, especially if the water supply industry does not improve its performance. Experience in countries having faced a similar situation shows that this cannot be achieved if major changes in the attitude of the main actors in the sector, are not pursued. Thus, *scenario 2a envisages increased private sector participation in service delivery, because this is the simplest way to implement financial incentives to improve performance.* In scenario 2a, it is assumed that overall UfW would be reduced by about one percentage point per year, thus decreasing operating costs by the corresponding amount, and that all equipment or works procured under privately sponsored projects would be about 15% lower than for those under publicly implemented projects. Obviously, the private sector would have to rely exclusively on commercial sources to finance its projects. Scenario 2a also envisages that Government support to metropolitan PDAMs would be gradually phased out; however, Government support to

¹² In the proposed connection policy, about 75% of the new residential customers would be provided a connection free of charge; cost of construction would be financed by a small surcharge (about 5%) on the water tariff (see below discussion on pricing of water supply services).

smaller PDAMs would remain significant. As in scenario 1b, adjustments in the current pricing policy would be made to favor new residential connections and increased consumption of businesses.

26. Scenario 2a envisages a tariff increase in 1998, that would be followed by annual adjustments sufficient to meet cash requirements (O&M, debt service and investment program). Table 2 below shows that the amount to be invested in the sector would reach Rp6,350 billion and Rp9,600 billion during Repelita VII and VIII respectively, at 1995 prices. Tables 5 and 6 give a breakdown of the investment program for the two next Repelita by region and size of PDAM. For Repelita VII, about 85% of the investment program would be absorbed by Sumatra (17%) and Java (68%, of which 11% for DKI Jakarta).

27. Despite a much larger investment program than for scenario 1a, and a much larger share of it financed on commercial terms, the tariff level required by scenario 2a would still be affordable. In fact, the water tariff in Jakarta does not have to be increased in 1998 and could even be decreased (in 1995 terms) before the end of Repelita VII as a result of expected increased efficiency in operations. For metropolitan and smaller PDAMs, the 1998 tariff increases should be in the range of 16% and 4% respectively to reach an average Rp755/m³ and Rp675/m³ (in 1995 terms). The tariff would reach Rp890/m³ and Rp680/m³ respectively for metropolitan PDAMs and smaller PDAMs in 2008 (in 1995 terms).

28. **Scenario 2b: “62% Service Coverage in 2008 with Maximum Private Sector Participation”.** Scenario 2b tries to measure the consequences of the hypothetical case where, after a transitional period (Repelita VII), the Government would completely cease subsidizing the water supply sector, starting with Repelita VIII. All other assumptions being similar to the ones of scenario 2a, table 3 below shows that it would not be unrealistic to envisage such an option in the medium term, because the tariff level required would remain within the range of what consumers say they are willing to pay if the water supply service is reliable¹³.

29. Table 4 shows that aiming at increased private sector participation would halve the Government support needed per additional person served with piped water from Rp340,000 to Rp180,000 (scenarios 1b and 2a). ***However, the level of the Government financial support to the water supply sector would be significant during Repelita VII.*** For example, in scenario 2a, likely to be a feasible option, out of a total investment of Rp6,350 billion, the Government would still have to provide Rp2,400 billion. Table 5 shows that ***more than 80% of the Government support, or about Rp2,000 billion,***

¹³ A survey carried out in 1996 in five small urban centers of Kalimantan, Sulawesi and West Timor, (Tenggarong, Banjarbaru, Maros, Tomohon and Soe) show that depending upon current water supply conditions, between 50% and 100% of households with a connection are willing to pay Rp1,000/m³; these figures fall to 40% and 90% for a tariff of Rp2,000/m³. Among households without connections about 50% are willing to pay Rp1,000/m³ and 40% Rp2,000/m³.

should go to the Java and Sumatra regions, although about 90% of the financing on commercial terms, or Rp2,000 billion, is expected to take place in these two regions (all figures in 1995 terms).

30. The main assumptions and consequences of these scenarios are summarized in tables 1 and 7 below.

**Table 1: Comparison of Scenarios 1a, 1b, 2a and 2b
Main Assumptions**

	Scenario 1a	Scenario 1b	Scenario 2a	Scenario 2b
UfW	Remains at average current level of 40%	Remains at average current level of 40%	Decreases by one percentage point per year	Decreases by one percentage point per year
Cost of Inputs	Remains at current level	Remains at current level	Minus 15% on all privately financed and implemented project	Minus 15% on all privately financed and implemented project
Residential Connection Fee	Rp380,000 (at constant 1995 prices)	75% of the new residential connections would be provided free of charge	75% of the new residential connections would be provided free of charge	75% of the new residential connections would be provided free of charge
Tariff structure	Discriminates against non residential customers	Two blocks only	Two blocks only	Two blocks only

**Table 2: Comparison of Scenarios 1a, 1b, 2a and 2b
Service Ratio, Investment Program and Financing Plan**

	Scenario 1a		Scenario 1b		Scenario 2a		Scenario 2b	
Service Ratio ¹⁴								
1995	31%	38%	31%	38%	31%	38%	31%	38%
1998	33%	40%	35%	41%	35%	41%	35%	41%
2003	38%	43%	44%	49%	44%	49%	44%	48%
2008	44%	49%	58%	63%	58%	62%	58%	62%
Served population								
end of Repelita VI (1998)	30 mn		30 mn		30 mn		30 mn	
end of Repelita VII (2003)	39 mn		44 mn		44 mn		44 mn	
end of Repelita VIII (2008)	52 mn		66 mn		66 mn		66 mn	
Unserved population								
end of Repelita VI (1998)	46 mn		46 mn		46 mn		46 mn	
end of Repelita VII (2003)	52 mn		46 mn		46 mn		46 mn	
end of Repelita VIII (2008)	54 mn		40 mn		40 mn		40 mn	
Invest. and Financing Plan								
Repelita VII	Rp4,300 bn		Rp7,000 bn		Rp6,350 bn		Rp6,200 bn	
Internal cash generation	26%		26%		27%		27%	
GOI grants	36%		39%		29%		13%	
GOI loans on concess. terms	23%		26%		9%		9%	
Loans on commercial terms	10%		6%		26%		42%	
Private equity	3%		2%		5%		5%	
PDAM bonds	2%		1%		4%		4%	
Repelita VIII	Rp5,300 bn		Rp10,800 bn		Rp9,600 bn		Rp9,100 bn	
Internal cash generation	26%		25%		28%		28%	
GOI grants	38%		41%		26%		0%	
GOI loans on concess. terms	25%		28%		0%		0%	
Loans on commercial terms	7%		4%		35%		60%	
Private equity	2%		1%		6%		7%	
PDAM bonds	2%		1%		5%		5%	

¹⁴ The first figure corresponds to the “connection” ratio, the second figure corresponds to the “service” ratio, that includes households served by residential connections and public standpipes.

**Table 3 : Comparison of Scenarios 1a, 1b, 2a and 2b
Tariff Increases Needed (1995 Rp/m³)**

	Scenario 1a	Scenario 1b	Scenario 2a	Scenario 2b
Average Tariffs				
DKI Jakarta				
1995	1,500	1,500	1,500	1,500
1998	1,350	1,350	1,300	1,300
2003	1,350	1,350	1,150	1,150
2008	1,350	1,350	1,150	1,150
Metropolitan PDAMs				
1995	650	650	650	650
1998	680	680	750	760
2003	640	640	770	780
2008	740	740	890	950
Smaller PDAMs				
1995	650	650	650	650
1998	680	680	670	670
2003	640	640	680	680
2008	740	740	680	800

**Table 4: Comparison of Scenarios 1a, 1b, 2a and 1b
Government Financial Support (1995 Rp)**

GOI Financial Support	Scenario 1a	Scenario 1b	Scenario 2a	Scenario 2b
Repelita VII				
GOI grants	Rp1,500 bn	Rp2,700 bn	Rp1,800 bn	Rp 800 bn
GOI loans on concess. terms	Rp1,000 bn	Rp1,800 bn	Rp 600 bn	Rp 500 bn
Total	Rp2,500 bn	Rp4,500 bn	Rp2,400 bn	Rp1,300 bn
Add'l population served	9.5 mn	13.3 mn	13.3 mn	13.3 mn
Per add'l pop. served	Rp265,000.	Rp340,000	Rp180,000	Rp100,000
Repelita VIII				
GOI grants	Rp2,000 bn	Rp4,500 bn	Rp2,500 bn	-
GOI loans on concess. terms	Rp1,300 bn	Rp3,000 bn	-	-
Total	Rp3,300 bn	Rp7,500 bn	Rp2,500 bn	-
Add'l population served	12.2 mn	21.6 mn	21.6 mn	21.6 mn
Per add'l pop. served	Rp275,000	Rp350,000	Rp120,000	-

Table 5: Scenario 2a - Repelita VII
Investment Program and Financing Plan per Region (1995 Rp billion)

Region	DKI	Metro	Smaller	Total	Financ. Plan		
	Jakarta	PDAMs	PDAMs		Cash generat.	GOI Support	Comm. Financ.
Sumatra		530	540	1,070	290	470	310
Java	960	1,530	1,840	4,330	1,180	1,510	1,640
Bali		180	-	180	50	60	70
Eastern Islands		-	190	190	50	100	40
Kalimantan		160	110	270	70	120	80
Sulawesi		160	150	310	80	140	90
Total (Rp bn)	960	2,550	2,840	6,350	1,720	2,400	2,230
Total (%)	15	40	45		27	38	35

Table 6: Scenario 2a - Repelita VIII
Investment Program and Financing Plan per Region (1995 Rp billion)

Region	DKI	Metro	Smaller	Total	Financ. Plan		
	Jakarta	PDAMs	PDAMs		Cash generat.	GOI Support	Comm. Financ.
Sumatra		750	880	1,630	450	470	710
Java	870	2,450	3,230	6,550	1,800	1,700	3,050
Bali		320	-	320	100	30	190
Eastern Islands			290	290	70	130	90
Kalimantan		240	150	390	110	90	190
Sulawesi		240	210	450	120	120	210
Total (Rp bn)	870	4,000	4,760	9,600	2,650	2,530	4,420
Total (%)	9	42	49		28	26	46

Table 7: Scenario 2a - Evolution of the Financing Conditions

	Repelita VII (1999-2003)	Repelita VIII (2004-2008)
DKI Jakarta		
Internal cash generation	30%	30%
GOI grants		
GOI loans on concess. terms		
Loans on commercial terms	48%	48%
Private Equity	12%	12%
Bonds	10%	10%
Metropolitan PDAMs		
Internal cash generation	25%	30%
GOI grants	from 45% to 10%	10%
GOI loans on concess. terms	from 30% to 0%	0%
Loans on commercial terms		40%
Private Equity		10%
Bonds		10%
Smaller PDAMs		
Internal cash generation	25%	25%
GOI grants	45%	45%
GOI loans on concess. terms	from 30% to 0%	0%
Loans on commercial terms		24%
Private Equity		6%
Bonds		

E. KEY ELEMENTS OF THE POLICY FRAMEWORK

31. **Can the Water Supply Sector “Graduate”?** If indeed the above assumptions are correct: (a) financing a “significant share” of the investment program on commercial terms would still be affordable by the users; and (b) the financial support to be provided by the Government for each additional person served with piped water could be reduced by half if the private sector were to provide this financing. Then, it is clear that the highest return activity for the sector is putting in place the framework required to make private participation and financing happen. The saving to the economy would even be higher because raising tax revenue (to fund the non-internally generated sources) involves other economic costs, that could also be reduced. Also, attracting commercial financing for developing the water supply sector would free Government financing for developing sewerage and sanitation, a sector that is currently under-developed and unlikely to attract private financing in the near future.

32. *But access to affordable commercial sources to finance the development of the water supply companies would not materialize on a large scale if conditions that make the perception of the sector risky are not alleviated.* For example, investors would certainly feel more comfortable if: (a) the decision-making process, in particular with regards to the choice of investment programs, procurement or the setting of tariffs were

transparent; (b) the framework for the private provision of service were comprehensive; and (c) reliable technical, commercial and financial data on the current operations were more available. Also, the “graduation” process would be greatly facilitated if Government’s financial support to the sector followed a pattern similar to that of the private sector. This would imply being more selective by directing financing first to PDAMs that are improving their overall performance, and thus their creditworthiness.

33. Six main policy directions are proposed to achieve rapid expansion of the water supply service to unserved households and businesses, to improve the quality of service and to reduce the cost of its provision, and to make the water supply sector more attractive to commercial financing.

Policy Direction 1. Establish an “Arm Length” Relationship between the Owner of Water Supply Assets and their Manager

34. **Separate Ownership of Assets from their Management.** A LG ultimately responsible for the provision of piped water should be mainly concerned with the rapid expansion and reduction of the cost of service to make water affordable to all consumers. The simplest way of achieving these two objectives is to link them to financial incentives within the framework of enforceable contracts. *This sets the basis for separating ownership of the facilities from the management function. This could help address some of the shortcomings identified above. More specifically it could: (a) limit ad-hoc local political interference in the management of the water supply service; (b) facilitate “performance contracts” and private sector participation in the delivery of water supply service; and (c) allow “managing companies” to group themselves to more efficiently address issues common to adjacent water supply systems.*

35. **Limit Political Influence.** To limit political influence in the day-to-day management of water supply companies and increase transparency of the decision-making process, it could be beneficial to: (a) *avoid having the head of a LG being systematically appointed as chairman of the PDAM Board of Directors; and (b) include representatives of customers and professional managers to support, or even replace, the government employees who are de facto members.* A training program of the members of Boards members should focus on policy issues such as planning, procurement, pricing, private provision of public services and regulation.

36. **Envisage Performance Contracts, but with Caution.** Another step towards improving quality of service would be through “performance contracts” between the PDAM Board and its management and staff. Performance contracts could fix performance objectives such as number of connections per category of customer, continuity of service, water quality, UfW, and include clauses that would allow for the distribution of profits to PDAM management and staff upon achievement of the set objectives. *Experience worldwide has shown, however, that success stories are few, because performance contracts between two public entities are rarely enforced and enforceable.* Often the granting authority does not meet its obligations with regards to

the timely allocation of a water right or approval of tariff increases; also, independent measurement of performance could become an issue. Prototype performance contracts would have to be drafted and could be tested in selected PDAMs of all sizes, but *the best way to improve performance is to involve the private sector in the delivery of service, because contracts can more easily be enforced* (see paras 39 and following).

37. **Regroup Operations.** International experience tends to show that the minimum efficient size of a water utility company includes between 50,000 and 100,000 connections. On Java and Bali, and to a lesser extent Sumatra and Sulawesi, *separating asset ownership from management could more easily allow PDAM to regroup their technical and/or commercial operations. This regrouping could result in either (a) the formation of public regional service companies jointly owned by participating PDAMs, or (b) the provision of service by private companies under contract with each PDAM or, better their representative “syndicate”.*

38. **Replace Dividends to LG by Operating Fees.** Most LGs expect their PDAM to distribute dividends. *The separation of ownership from management should encourage the central Government to replace the concept of a “dividend”, by the one of an “operating fee” that would come, as a substitute source of revenue for the LG, on top of the water tariff and be collected by the manager on behalf of the owner.* In the case of a PDAM under a performance contract with a LG, the “operating fee” should at least cover the operating costs of the Board. In the case of a private operator under contract with the PDAM or the LG, the operating fee would have to be set at a level that should allow the LG to meet its financial commitment, in particular the debt service.

Policy Direction 2. Establish a Regulatory Framework for Private Sector Participation in the Delivery of Water Supply Services

39. **Take Advantage of Worldwide Experience.** Private sector participation (PSP) could very well be the main development in the water supply sector during the years to come, but worldwide experience shows that is more likely to succeed if: (a) political commitment at all levels of government is ensured; (b) consensus among the many stakeholders has been reached; and (c) the public authority has defined its objectives clearly and has put in place a transparent decision making process and a conflict resolution mechanism. Consequently, *PSP requires careful preparation and cannot be achieved overnight.*

40. **Do the Homework First.** Once PSP is envisaged, *all options must be first analyzed with the assistance of independent and experienced consultants.* In particular, risks of all types (political, economic, financial, technical and legal) must be assessed and appropriate mechanisms to mitigate them should be adopted. Table 7 gives the main characteristics of the various options that are suitable for Indonesia. Among these options, *service and management contracts* are the easiest ones to implement, in particular for PDAMs where the private sector is not yet willing to take commercial or financial risks. *Concession contracts* are much more elaborate options that transfer these

risks to the private party, typically for 20 years or more; they require thorough analysis prior to soliciting proposals. **Lease contracts**, i.e., concession contracts where only the commercial risk is transferred to the private company (the public authority still remains responsible for financing and implementing the major capital expenditure program) are worth considering, when financing the development program from commercial sources is not feasible. **BOOT** (Build, Own, Operate and Transfer) schemes are appropriate solutions only for new water production units; they **cannot address key problems of rapid expansion of service to customers, improvement of its quality and reduction of its cost**.

41. **Prepare Standard Contracts.** In Indonesia, as in most other countries, **private provision of water supply services will mostly be regulated directly by a contract**. Therefore, it is essential that the regulatory framework to be put in place address issues such as the feasibility, clarity and accuracy of contracts, award and approval procedures, and enforceability of contracts. Contracts also have to be accurate, and **standard service, management, lease and concession contracts should be prepared for the use of local governments and PDAMs**. Transparent and streamlined bidding, evaluation, and approval procedures are also needed to give private companies a clearer picture of the framework in which they would have to operate.

42. **Open the Selection Process.** **Open competition** for the selection of a private partner, after proper prequalification on technical and financial grounds, is often the preferred solution, because it **provides the most transparent result, and allows users to benefit from the lowest bid**. Direct negotiations or competitive negotiations could be justified when innovative solutions have to be found or proprietary technologies are chosen, e.g., for water treatment. However, this method lacks transparency, in particular because it is often difficult to check if a service of similar quality could not have been provided at a lower cost. **Experience has shown that direct negotiations do not really shorten the process of arriving at a reasonable deal and do not significantly reduce the cost of preparing proposals**. In any case, direct negotiations could be carried out only with reputable contractors and with the assistance of experienced technical, financial and legal advisors. Throughout East Asia, the Memorandum of Understanding (MOU) process, mostly for unsolicited proposals for BOOT for new production facilities, has failed because of the absence of independent prior analysis and the public sector's lack of experience in negotiations of this nature. **Open competition should therefore also be the preferred solution for more complex contracts such as concessions, leases and BOOTs**.

**Table 8: Main Features of Various Contractual Arrangements
for Private Provision of Water Supply Services**

Option	Service Contract	Management Contract	Lease Contract	Concession Contract	BOOT (for production facility)
Main Objective Pursued	limited improvement of operations	overall improvement of operations	overall improvement of operations (with transfer of commercial risk)	overall improvement of operations and mobilization of private capital	mobilization of private capital
Typical Contract Duration	1 to 2 years	3 to 5 years	5 to 10 years	20 to 40 years	20 to 40 years
Contractual Relations with Users	public authority	private manager on behalf of public authority	lease contractor	concessionaire	no direct relation with users
Commercial Risk Taken by	public authority	public authority	lease contractor	concessionaire	public authority through "take or pay" arrangement
Financing of Investment	public authority	public authority	public authority and lease contractor	concessionaire	concessionaire
Financing Working Capital	public authority	public authority	lease contractor	concessionaire	concessionaire
Financing Risk Taken by	public authority	public authority	mostly public authority	concessionaire	concessionaire
Remuneration of Private Company	lump sum, work done, unit price	cost-plus and productivity bonus	part of user rate	user rate	bulk water rate
Responsibility for Setting User Rates	public authority	public authority	public authority	concession contract	BOOT contract

43. **Create the Function of Regulator.** It is often argued that a tightly specified contract can remove the need for direct regulation. For more complex concession or lease contracts, while a very detailed contract can help protect the private company from politically motivated changes in service requirement, specifications that are too rigid, may also limit quick response to changing economic, social and technical conditions; the latter may be needed especially when the initial information base is limited. Even for simpler management contracts, there is always a need to closely monitor performance against the contract or to allow minor variations in contract specifications. *There is, therefore, a rationale for creating a regulatory function whose main duties would be to determine allowable increases in water tariffs and appropriate service standards, to monitor private companies' performance and contractual compliance, to arbitrate complaints between private companies and their customers, or disputes between the granting authority and the contractor, and to impose sanctions for failure to meet agreed standards.*

44. Experience has shown that having the regulatory framework in place when the private operator starts operations is essential. To ensure accountability, the regulator's duties should be clearly specified by law. Also, a transparent decision-making process should be prescribed, and decisions should be subject to review by courts. Regulatory activities should be subject to annual audits. To ensure independence from politicians and/or the regulated industry, appointments must be made only on professional criteria. The regulator and his key staff should be protected from arbitrary removal from office before the end of their tenure and should be paid competitive salaries to minimize the risks of corruption. Staff should also be barred from political activity and having financial interests in the water supply industry or its substitutes, e.g., the drilling industry or bottled water. *Also, the regulatory function should be funded out of direct levies on utilities and consumers, not from the Government budget.*

45. **Subcontract Some of the Regulatory Functions.** All necessary conditions to establish a successful regulatory function may not currently exist in Indonesia. However, Government should envisage its creation as soon as possible to meet expected demand. *Since regulatory skills are still scarce*, it is advisable to consider initially establishing a regulatory function at the national level. It might possibly even cover several infrastructure sectors such as power, telecommunications, toll roads, water, and sewerage. Experience has shown that it is very difficult to convert a public utility company into a regulatory body because of the very different skills needed. *The feasibility of contracting out some elements of regulation* (such as the monitoring of compliance with service standards and the financial audits) *to reputable private auditors and certification agents should be examined.*

46. **Promote Domestic Private Expertise.** The number of companies that can, based on their past international experience, implement long term concession contracts is limited to only about half a dozen in the world. Because demand for their expertise may exceed their supply capacity soon, these companies are very selective and are involved in joint ventures with local business partners in only the most promising operations. *To*

*develop a domestic private capacity, it is essential to: (a) create a market by encouraging PDAMs to outsource some of their activities, as part of their performance contracts, and (b) adapt the market to the capacity of the potential providers*¹⁵. The provision of water supply is a collection of several areas of expertise (commercial, O&M, financing and construction...) that could initially be unbundled. Awarding small to medium sized service and BOOT contracts, after a properly organized bidding process, is the most obvious solution to the problem. Depending upon the performance of such contracts, consolidation of expertise could later be favored through inviting purely domestic firms to submit proposals to more comprehensive management, lease or concession contracts. In LGs which consider PSP through service or management contracts, current PDAM staff should be given the possibility, or even encouraged, to create their own companies and submit proposals.

Policy Direction 3. Streamline Water Sector Financial Management

47. Access to the capital market would be possible only if commercial lenders or equity investors perceive the water supply sector as a much less risky business than it is the case now. All the proposals included in this Policy Framework aim at achieving this objective.

48. **Emphasize PDAM Self Financing.** Throughout the industrialized world, the water supply industry finances its development mainly through cash generated from operations. Because of the shortcomings identified earlier, very few PDAMs are currently able to contribute significantly towards their investment program. *PDAMs' cash generation must be enhanced through increased revenues and reduced costs.* Often tariffs need to be increased, but many PDAMs, the easiest way to increase revenues is through additional sales those currently using substitute sources of water. In many PDAMs also, costs need to be reduced to efficient levels through more careful planning of complementary investments (production and distribution capacity for instance), improved procurement practices, streamlined commercial management, increased staff efficiency, or reduced UfW. This can be achieved only if PDAMs operate in the incentive framework suggested above.

49. **Clarify Transitional Conditions for Government Grants and Loans.** During Repelita V, PDAMs absorbed about Rp1,800 billion or 43% of the total investment made by the Government in the urban sector. About 50% of PDAM investment was in the form of loans, a small proportion was self financing and the remainder was provided in the form of grants. In order to achieve a 50% service ratio at the end of Repelita VII (2003), the Government would need to inject at least Rp2,400 billion if private sources of funds can be mobilized, and up to Rp4,500 billion if this does not materialize (table 4).

¹⁵ Public utilities (power, water, sewerage...) are already privately managed in the large private real estates that are being developed outside of Indonesia's large urban agglomerations.

50. So far the Government has given grants to PDAMs to meet basic coverage targets. As of 1998, block grants to LGs will be increased. LGs could use part of these grants to support their PDAM's investment program, but it is likely that this would only be a limited contribution, given the competing demands. Above forecast show that it is feasible to gradually move Government concessional loan¹⁶ conditions closer to commercial ones, as a means to improve PDAMs creditworthiness, and thus to phase out loans on concessional terms during a transitional period that could in theory be limited to Repelita VII. ***With higher cost of borrowed funds, specific grants for the water supply sector would still be needed during Repelita VII, but on a declining basis*** (table 7). Criteria for accessing grants directly from the central budget or loans on concessional terms would have to be defined. The respective share of the grant and loan elements should depend upon typical PDAM sizes, financial situation, but first of all performance. ***PDAMs should compete for Government funds.*** Those that have shown a performance improvement and can demonstrate demand for expanded service should be able to access more favorable financing terms.

51. ***In parallel, loan repayment to the Government should be enforced better.*** The current lending instruments, whether SLAs or RDA, are not operating according to financial principles since loans have been made to PDAMs with weak or non-existent debt service capacity, and had to eventually be transformed in grants. ***Transferring the loan initiation and appraisal responsibility to domestic banks that would take the financial risk is an option that should be pursued during Repelita VII.*** Such banks could onlend funds borrowed by the Government, in particular from the ADB and IBRD as a means to (a) move lending conditions closer to commercial ones¹⁷; (b) increase flexibility in funding PDAM projects; and (c) establish the needed discipline. However, such domestic banks are still unfamiliar with the PDAM market and would need assistance to develop their appraisal capacity. ***Thus, initially, their role should be limited to financing smaller extension projects, while the SLA arrangement should be retained for larger loans,*** with conditions that should remain the same regardless of the ultimate source of funds.

52. **Promote Alternative Financing Means.** Bonds could be issued by the larger PDAMs, consortia of PDAMs, LGs or domestic banks on their behalf. The prospects have been assessed at some Rp200 billion per year. Assistance for bond issuing is

¹⁶ Concessionary loans were a means to reduce grants and to introduce PDAM to the healthy notion of borrowing, since commercial loans were not available to PDAMs and the latter could not afford them without parallel grants. Interest rates have regularly been increased to the current conditions, with the ultimate objective of reaching commercial terms. For a PDAM, what matters is the average cost of financing; a mix of 50% grant with 50% concessional loan at 11.5% costs the same as a mix of 75% grant and 25% loan at 20%. The Government prefers a higher proportion of loans at a lower interest rate because it is sufficient to cover the cost of its borrowed funds and it reduces the need to raise tax for the grants at a high cost to the economy.

¹⁷ Such loans would be made on "commercial" terms, even if the funds onlent are provided by the Government, because these banks would add to the cost of funds a spread that would cover their processing costs and risk factor.

warranted as is a review of investment guidelines from MoF for insurance companies and pension funds, that limits holdings to 10% of any issue. Other financing means, such as shares and securitization of existing loans to improve the PDAM debt structure should also be explored.

53. **Facilitate Access to the Capital Market.** Potential commercial lenders or equity investors perceive high risks in the water supply sector, and all proposals on this Policy Framework aim at reducing this risk. *To further reduce the risk, there is also a need to produce more reliable data on the technical, commercial and financial situation of the PDAMs, past trends and expected revenues.* Collecting these data should be one of the PERPAMSI responsibility, however, certification of these data by independent technical and financial auditors is essential to providing comfort to potential private investors.

54. MoHA already practices some kind of “benchmarking” of PDAMs performance by classifying them in “very healthy” to “non healthy” categories, using a series of 12 financial criteria. *More elaborated benchmarking techniques should be introduced in particular to analyze costs drivers and establish industry standards and best practices. This would help public or private investors make decisions on appropriate financing and attached conditionalities, and would help LGs negotiate performance contracts with the PDAM or private providers of service and, of course, tariff increases or adjustments.* This task is typically that of the independent “regulator” of the public water supply sector, but such an agency does not exist yet in Indonesia. The Government may want to consider the creation of a “National Water Supply Authority” that would regroup some of the responsibilities that are currently with DG Cipta Karya and DG PUOD. In the meantime, DG PUOD should be requested to *initiate the benchmarking exercise by outsourcing it to independent technical and financial auditors or rating agencies.*

55. Until the changes recommended in this paper, regarding autonomy of PDAMs management and tariff level and structure, are implemented and a track record of improved management has been established, *private sponsors of water supply projects will seek guarantees against, among other, the revenue risk* (for example through “take or pay” contractual arrangement for BOOTs), *payment risk by the purchaser* (in particular for BOOTs where there is only one or a very limited number of clients), *early termination risks and regulatory risks.* Private guarantors and insurers should primarily be providing guarantees against revenue and payment risks, while the Government should focus the guarantees it would provide against termination and regulatory risks. Government owned banks or instruments put in place by international organizations such as the World Bank or its affiliate MIGA can be used for this purpose.

Policy Direction 4: Simplify Pricing Policy

56. **Simplify the Tariff Structure.** The major elements of the recommended tariff structure are: (a) a two-part tariff, consisting of a small fixed fee for covering administration and meter maintenance costs and a tariff rate per cubic meter of water consumed; (b) two consumption blocks, with the first one being a “life line” block of up

to 10 m³ per month; (c) no minimum consumption required and minimum charges limited to only the fixed fee; (d) a life line rate set such that the first block would not represent more than 4% to 5% of the total expenditure of an average low-income household; (e) a base rate set such that the overall average tariff represents a balance between economically efficient marginal cost and financially viable average costs; and (f) slightly lower tariffs for public taps, schools and hospitals, and slightly higher tariffs for businesses and industries.

57. **Set a Life Line Rate** so that consumption within the first block would not cost more than 4% to 5% of the total expenditure of an average low-income household. For example, for a household of seven with a per capita monthly expenditure of Rp15,000 (i.e., per household monthly expenditure of Rp105,000), a life line rate of Rp400/m³ would supply the first 10 m³ of water at a cost of Rp4,000, which is 3.8% of the total household monthly expenditure; a rate of Rp500/m³ would mean a 4.8% of the total expenditure. The resulting consumption of about 50 liters per capita and per day (lcd) is consistent with available PDAM data that show that 20% to 30% of households connected to piped water use less than 10 m³ of water per month.

58. **Set the Base Rate** for consumption above 10 m³/month *so that the overall average tariff is a compromise between marginal full (economic) cost and average full (financial) cost*. Economies of scale exist for the majority of the PDAMs. Smaller PDAMs, selling less than two million m³ of water per year, have higher average costs than corresponding long run marginal costs, while the reverse can be noticed for larger PDAMs. However, the tariff currently defined by MoHA guidelines appears to lie between the financial cost and the long run marginal cost. Consequently, in practical rate design, the MoHA cost can be used as a very useful reference when tradeoffs have to be made between economic efficiency and financial viability.

59. **Favor Connection of Low Income Households**. The typical fee for a new connection often represents a major deterrent for the poorest segment of the population. While several PDAMs now propose payment in installments over a period of up to 36 months, it could also be envisaged to *provide connections free to all customers who can be served by a small diameter (15mm) connection, if the tertiary distribution network exists within reasonable proximity*. The required tariff increase needed to cover the cost of construction of these connections is very small, typically less than 5%. *However, in order to protect the PDAM against inactive connections, the customers could be asked to make a refundable advance payment on their water bill.*

60. **Adjust Tariffs Automatically Between Two Negotiations**. Proper mechanisms to revise tariffs are as important for a PDAM's financial position as proper setting of the tariff level and tariff structure. *Negotiations of the tariff level and structure should take place every four to five years between the PDAM and its Board of Supervisors*. Negotiations should take into account not only the expected investment program and corresponding financing needs, but also improvement of the PDAM's overall performance. Periods shorter than four years would not provide sufficient financial

incentives to PDAMs to implement programs that would improve productivity as part of its “performance contract” with the LG. ***In between two approvals, tariffs should be automatically adjusted using a cost index formula based on actual cost composition*** (manpower, energy, chemicals, pipes,...). This simple principle would avoid (a) erosion of PDAM revenues and undermining their capacity to extend service, and (b) lumpy tariff increases that are difficult to obtain from local governments and local assemblies.

61. **Consider Inclusion of a Sanitation Fee.** In theory, the economic cost of providing water should also take into account the cost of collecting and disposing of the waste water generated. In practice, this is often difficult due to a lack of knowledge about waste water costs. Moreover, in the case of most Indonesian cities, still a large share of the water consumed and disposed of in the water bodies comes from alternative sources such as ground water that are not charged for at all. Adding a sanitation surcharge to piped water could encourage some users to revert to poorly regulated alternatives. ***For the time being, a sanitation fee using for example the property tax as a basis would be more equitable.***

Policy Direction 5: Improve Planning, Design and Implementation of Water Supply Projects

62. **Improve Planning.** ***It is essential to develop water supply systems, that are generally very capital intensive, within the framework of systematic, long term planning, with the main objective of seeking least cost solutions, and reaching a broad consensus among all stakeholders on the technical, institutional, financing and cost recovery options chosen.*** Real demand and willingness to pay for piped service must be properly assessed to avoid inadequate dimensioning, phasing or location of extensions. Reduction of UfW has to be realistic, and the choice of new water sources has to be made in a regional context, taking into account compensation to be paid to those affected. But, seeking the least cost solution should not be limited to comparing technical options, and should also include an analysis of the most appropriate institutional and financing arrangements. The justification for developing joint water production facilities or for seeking proposals for a BOOT for a new production facility should be supported by a detailed analysis. The benefit expected from private sector involvement in a project would not be obtained if negotiations take several years because of uncertainties regarding project justification delay the process of arriving at a deal satisfactory to all parties.

63. **Improve the Quality of Technical Assistance.** The water supply sector depends heavily on consultants for project identification, preparation implementation and institutional development, but it is not clear whether it gets the best out of this TA. Unwritten or misinterpreted rules, unclear criteria for short-listing of firms, lengthy negotiations and contract signing processes may have hampered top firms from injecting new ideas in the sector. Although this issue is not limited to the water sector, ***it would be beneficial for all parties to take a step back and look candidly at what the current practices are that limit access to the best available expertise.***

64. **Improve Procurement.** Improving the packaging of contracts and procurement methods of project implemented by PDAMs would also increase investors' confidence. PDAMs avoid awarding large contracts that need mandatory review from Central Government agencies. They cannot award large contracts because budgeting practices do not allow for award of multi-year contracts for locally financed projects. As a result of the "slicing" of projects in small packages, there is general consensus that the water supply sector attracts very few qualified contractors. *Grouping works in larger packages and using stricter prequalification procedures would attract better quality contractors to the sector.* A water supply project mostly consists of pipelines and plants. *To reduce the cost of pipelines, PDAM should call for bids for combined supply and laying,* with the choice of material being left to the bidder. Already, the domestic manufacturing industry is able to submit competing proposals for large diameter pipes (concrete and steel), and it is only by opening the market further to other materials that local manufacturing of ductile cast iron pipes could be encouraged. *To improve the design of water treatment and pumping plants, PDAMs should consider design and build contracts after open competition among pre-qualified specialized companies*¹⁸.

65. **Improve Competition.** Finally, many supply and civil works contracts seem to be awarded on a "rotational" basis among a limited group of suppliers or contractors, on prices that are calculated using official price lists, rather than after actual open competition. *An independent audit of Government procurement procedures carried out in 1994 showed that this practice likely results in a 30% mark-up on equipment contracts and much lower construction quality compared to results obtained by the private sector.* Real competition, open to international suppliers and contractors, should become the rule for the water supply sector, because it would reduce cost of inputs to the lowest level possible.

Policy Direction 6. Emphasize the Identity of the Indonesian Water Supply Industry through Increasing the Role of its Professional Association

66. **PERPAMSI's role should be strengthened and extended** to help build up the *identity of the Indonesian water supply industry.* PERPAMSI should take the lead in three main areas: (a) setting-up of a quality data base on the water supply sector; (b) human resource development; and (c) certification of techniques and technologies and dissemination of best practice. In addition, PERPAMSI should lobby for implementation of a water resource development program that takes into account the major concerns of the water supply industry with regards to the timely availability of water and the protection of its quality. *PERPAMSI would initially need technical and financial assistance to develop the skills required to deliver the above work program. This assistance could be provided by the central Government, but after an initial period, PERPAMSI's operational budget should be mainly replenished from fees paid by its*

¹⁸ Tender documents should be explicit on processes and technologies that are acceptable, on technical specification for the output, the method used for comparing bids and the penalties that would apply in case of non compliance with standards.

members. One way to develop the needed skills would be to intensify collaboration with water supply associations of countries that have already implemented similar activities.

67. **Establish a Quality Data Base.** As mentioned above, PERPAMSI is the logical choice to establish a quality data base that would have to be certified by independent technical and financial auditors for the sake of credibility.

68. **Enhance the Human Resources Development Role.** PERPAMSI should be given enhanced responsibilities in assisting PDAMs to optimize staffing and improve recruitment and training. *PERPAMSI should develop advisory skills to help PDAMs address staff productivity issues*, which is low by international standards, and to prepare medium-term staffing plans and implement them.¹⁹ *PERPAMSI should also update existing selection criteria for various key positions in PDAMs, and help develop a mechanism to enable PDAMs to advertise vacancies widely* and encourage PDAMs to seek qualified applicants on a province-wide basis if not on a nation-wide basis. PERPAMSI should monitor appointments and promotions to director and manager level positions and report on any violations of industry selection criteria. PDAMs should be encouraged to identify the incumbents of key positions who do not meet minimum criteria, and should be assisted in preparing developmental plans to upgrade skills over a three to five year period.

69. **Intensify Training Activities.** *PERPAMSI should* build on the work it is already doing in the area of training *and conduct a training needs assessment for PDAM staff*. It should work closely with the Bekasi Training Center, as well as leading universities and other important providers of water sector training, to *develop and/or update training curricula for critical needs, especially management training needs*. It should accredit providers of water sector training in Indonesia, and bring out an annual training calendar of water sector training offered at various leading training institutions in Indonesia. *PERPAMSI should provide guidance to PDAMs in developing annual staff training plans, including setting aside the requisite budgets*. All training should, however, be demand-driven and identified by the PDAMs. Training costs should be borne by the PDAMs. The Bekasi Training Center could be converted into an autonomous agency, requiring revenues from fees and other income to meet at least operating expenses. It could eventually be privatized.

70. **Become a Technical Reference Center.** PERPAMSI should take the lead in carrying out independent testing and certification of new technologies, equipment and software available on the market. It should boost dissemination of best practices among PDAMs, since it is essential that actual experience with particular types of meters, pipes,

¹⁹ Options to be considered include: (a) holding staffing numbers steady during periods of expansion; (b) not replacing staff who retire or resign; (c) contracting services to the private sector, and transfer the staff; (d) offering early retirement packages where appropriate; and (e) a combination of the above. PERPAMSI should help develop a consensus on some of these matters, develop industry-wide approaches, and offer necessary guidance to individual PDAMs in implementing them.

treatment processes or commercial management software serve as the basis for making judgments and recommendations for improvement. One important point would be to initiate discussions with the Indonesian industry and participate in the feasibility study for the local manufacturing of ductile cast iron pipes to meet the expected domestic demand. Also, the need for standardization of simple water treatment plants (“package treatment plants”) could be investigated through a independent detailed survey of PDAMs’ actual needs and experience so far with operating such plants.

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