

Indonesia

Water Supply and Sanitation Sector
Assessment, Strategy, and Road Map



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Water Supply and Sanitation Sector Assessment, Strategy, and Road Map

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Currency Equivalents

(as of 1 October 2012)

Currency Unit	=	Rupiah (Rp)
Rp1.00	=	\$0.00010429
\$1.00	=	Rp9,589

Abbreviations

APBN	–	central government budget for income and expenditure
BAPPENAS	–	Badan Perencanaan dan Pembangunan Nasional (National Development Planning Agency)
CDM	–	clean development mechanism
CSS	–	city sanitation strategies
DGHS	–	Directorate General of Human Settlements
ICWRMIP	–	Integrated Citarum Water Resources Management Investment Program
IKK	–	<i>ibu kota kecamatan</i> (subdistrict main town)
IndII	–	Indonesia Infrastructure Initiative (AusAID)
ISSDP	–	Indonesia Sanitation Sector Development Program
IUWASH	–	Indonesia Urban Water, Sanitation, and Hygiene (USAID)
LSM	–	local community organization
MDB	–	multilateral development bank
MDG	–	Millennium Development Goal
MOF	–	Ministry of Finance
MOHA	–	Ministry of Home Affairs
MPW	–	Ministry of Public Works
MSMHP	–	Metropolitan Sanitation Management and Health Project
NRW	–	nonrevenue water
OCR	–	ordinary capital resources
PDAM	–	subnational government water supply enterprise
PerPres	–	Presidential Decree
PNPM	–	National Program for Community Empowerment
PPP	–	public-private partnership
RPJM	–	Rencana Pembangunan Jangka (National Medium-Term Development Plan)
SANIMAS	–	Sanitation by Communities
SUSENAS	–	National Socioeconomic Survey
WOP	–	Water Operators' Partnership (ADB)

1. This sector assessment, strategy, and road map (ASR) documents ADB's current assessment and strategic investment priorities of the Government of Indonesia and the Asian Development Bank (ADB) in Indonesia's water supply and sanitation sector. It highlights sector performance, priority development constraints, government plans and strategy, past ADB support and experience, other development partner support, and future ADB support strategy. The ASR is linked to and informs ADB's country partnership strategy (CPS) for Indonesia. It will be updated as strategic developments and program changes are needed and will help to provide sector background information for investment and technical assistance (TA) operations.

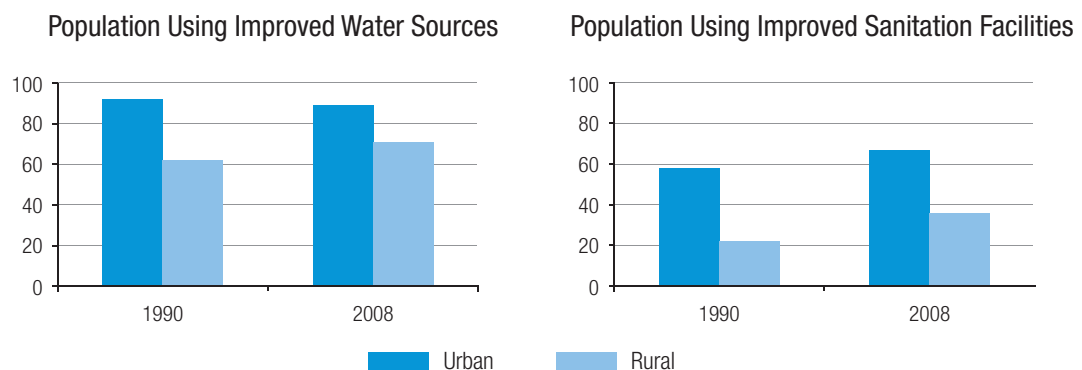
Sector Assessment: Context and Strategic Issues

A. Overall Sector Context

2. At independence in 1945, the population of Indonesia was 45 million, increasing to 100 million by 1970. Over the next 30 years, this figure has more than doubled. The 2010 census recorded the population of Indonesia at 238 million with a 1.49% growth rate in the period 2000–2010. Despite political changes and the economic challenges of the 1998/99 Asian financial crisis, as well as an expanding population, economic growth has been strong and gross domestic product (GDP) per capita rose from \$2,952 in 2002 to \$4,394 in 2008, a rise of almost 50% in 6 years.¹

3. As with most Asian countries, increasing economic activity in urban areas is driving Indonesia's economic growth. This causes massive rural to urban migration. With this rapid urbanization, the urban population has more than doubled from 56 million to about 128 million from 1990 to 2010.² Previously, population distribution and agriculture-based livelihoods reflect naturally the relative availability of water resources across the country. Stress on water resources in urban areas of the two main islands of Java and Sumatra, where over 80% of the current population lives, is especially high. The significant increase in water demand has resulted in water demand exceeding the natural availability of the supply. Similarly, the problems of pollution, erosion of the landscape, and damage to groundwater are growing.

Figure 1 Indonesia Performance with MDG Goal 7c



Source: ADB. 2011. *Key Indicators for Asia and the Pacific*. Manila.

¹ United Nations Development Programme (UNDP). 2008 Purchasing Power Parity (PPP) US\$. *Human Development Report 2010*. New York.

² Source: World Bank staff estimates based on United Nations, World Urbanization Prospects. Urban population refers to people living in urban areas as defined by national statistical offices. It is calculated using World Bank population estimates and urban ratios from the United Nations World Urbanization Prospects.

4. **Water-related Millennium Development Goals.** Figures for water and sanitation coverage vary between sources, yet statistics consistently show that rural areas lag behind urban areas in both water and sanitation coverage. The figures also show that much work is needed in both rural and urban areas.

5. The key indicator for water supply and sanitation is Millennium Development Goal (MDG) 7: Ensure Environmental Sustainability.³ Economies other than Indonesia are having more success providing improved drinking water than improved sanitation. In Indonesia, however, the population using improved water sources in urban areas has decreased, although overall, the total population using improved water sources has increased from 71% in 1990 to 80% in 2008 due to advances in rural water supplies and declining rural population (Table 1).

Table 1 Millennium Development Goals—Water and Sanitation

Indicators		Baseline, 1993 (%)	Current, 2009 (%)	MDG target, 2015 (%)
Goal 7: Ensure Environmental Sustainability				
Target 7C: Halve, by 2015, the proportion of households without sustainable access to safe drinking water and basic sanitation				
7.8	Proportion of households with sustainable access to an improved water source, urban and rural	37.73	47.71	68.87
7.8a	Urban	50.58	49.82	75.29
7.8b	Rural	31.61	45.72	65.81
7.9	Proportion of households with sustainable access to basic sanitation, urban and rural	24.81	51.19	62.41
7.9a	Urban	53.64	69.51	76.82
7.9b	Rural	11.10	33.96	55.55

Source: BAPPENAS (2010).

6. Significant advances have been made in improved sanitation facilities in both urban and rural areas. The total population using improved sanitation facilities has increased from 33% in 1990 to 52% in 2008 with advances in both urban and rural areas. In the water supply and sanitation sector, ADB contributes to the outcome access to urban and rural water supply and sanitation provided, improved, and maintained. The government's assessment of progress with the MDGs was detailed in a report prepared by National Development Planning Agency (BAPPENAS) in 2010.⁴

7. The BAPPENAS report was based on National Survey on Social and Economy (SUSENAS) data which showed a continued rise in access to improved drinking water although it was acknowledged that development of drinking water infrastructure in urban areas has not kept pace with urban population growth. The lack of proper maintenance of existing facilities was also cited. Provinces with higher percentage access included DI Yogyakarta, Bali, and Sulawesi Tengah; whereas those with the lowest proportion of access were Banten, Aceh, and Bengkulu. Figures indicate the enormity of the task of achieving the goal of access to improved water source, especially in urban areas.

³ The target is: Halving by 2015 the proportion of people without sustainable access to safe drinking water, and significantly improving by 2020 the lives of at least 100 million slum dwellers through improved sanitation and other measures. ADB. 2011. *Key Indicators for Asia and the Pacific*. Manila.

⁴ BAPPENAS. 2010. *Report on Achievement of Millennium Development Goals*. Jakarta.

8. The SUSENAS data showed a reasonable increase in access to improved sanitation facilities in both urban and rural areas. The government concedes that achieving the sanitation goal will require special attention, including improving the quality of sanitation infrastructure. Jakarta has the highest level of access to basic sanitation at over 80%, while Nusa Tenggara Timur has the lowest at 15%. These figures highlight the disparity across the country. Bearing in mind the current pollution level of streams and groundwater in the Jakarta area, the MDG indicators are insufficient to monitor the condition of the environment.

B. Legal and Regulatory Environment

9. Following the economic crisis of the 1990s, the government became aware that further reforms in policy, regulation, and institutions were required along with the development of favorable conditions for private investment in infrastructure. Indonesia's national sector framework is still being developed. Many aspects of the current framework are new and require time to be appropriately adopted and implemented by donors and government. Law 7/2004 on water resources aims for an integrated and sustainable water resources management and clarifies the responsibilities of the central government and subnational governments. The provincial government is primarily responsible for allocating resources.

10. Law 32/2004 on regional government fulfills the commitment to decentralization by transferring all powers, except certain specifically enumerated powers, to the subnational government. Law 32 provides greater authority and responsibility for the subnational governments in planning, financing, implementing, and managing regional and/or local infrastructure services, including water supply and sanitation. Law 33/2004 on the fiscal balance between the center and the regions greatly increased the revenue base for subnational government. Government Regulation 38/2007 clarifies roles and responsibilities for infrastructure provision between central, provincial, and local governments. This report initially focused on water but more recently paid greater attention to sanitation.

11. Government Regulation 16/2005 and Presidential Decree 67/2005 on cooperation between the government and business entities, or public-private partnerships (PPPs), formulated the roles, responsibilities, rules, and procedures for the subnational government to develop the participation of the private sector in service utilities including water supply and sanitation. Presidential decrees 13/2010 and 56/2011 further clarified some areas of PPP procurement. Some of the more important provisions include an elaboration on dealing with unsolicited proposals, and guidance on fiscal government support and government guarantees. Presidential Regulation 78/2010 further elaborates on the conditions for government guarantees in PPPs.

12. Ministry of Finance Regulations 168 and 169/2008 provide for channeling of foreign loan funds as grants to subnational governments. These regulations provide a mechanism for "output-based aid" such as what is being employed in the Water *Hibah* program.⁵ Government Regulation 10/2011 covers Procurement Procedures for Foreign Loans and Acceptance of Grants. Government Regulation 30/2011 revises its predecessor (Presidential Decree 54/2005) on subnational government borrowing.

13. Specific to the water supply subsector, the Ministry of Public Works Regulations from 2006 and 2007 established a National Water Board (BPPSPAM) to support and provide assistance to expand piped water supplies. BPPSPAM has significant roles in fostering PPPs and in performance monitoring of water supply companies (PDAMs). Ministry of Public Works Regulation 21/2009 provides a technical guide for investments in piped water supply systems. Ministry of Public Works Regulation 12/2010 provides guidance for development of joint ventures in the water supply sector.

⁵ The water *hibah* or water grant program provides for the central government to pass on grant funding to local governments who are prepared to invest in the development of their water systems to expand service to the urban poor.

14. Ministry of Home Affairs Decree 23/2006 provides guidelines for water tariff setting and stipulates that tariffs should fully recover costs including a rate of return of 10% on investments. Ministry of Finance Regulation 120/2008 provides for PDAM debt restructuring through partial or full write-off of accumulated interest, arrears, and late payment penalties on subloans provided the subnational government and PDAM agree to governance conditions including full cost recovery tariffs, fair and open staff appointments, preparation of business plans, subnational government support for loan repayment, and authorization of “intercepts” on the general allocation of funds from central to subnational governments in the event of noncompliance with debt servicing. Presidential Regulation 29/2009 provides for the central government to give loan guarantees and interest subsidies for PDAM commercial borrowing. PDAMs must be rated “healthy” or be approved by the Ministry of Finance (MOF) for debt restructuring; central government will guarantee 40% and subnational governments are required to guarantee 30% of a PDAM commercial loan, with the lending bank taking the risk on the 30% balance.

15. Specific to the sanitation subsector, Ministry of Public Works Regulation 16/2008 provides a national policy and strategy for management of wastewater systems, which includes (i) increased coverage of sanitation with priority for the poor, (ii) increased role for the community and the private sector in sanitation, (iii) development of a regulatory framework for urban sanitation, (iv) capacity building for wastewater management, and (v) increased investment including development of alternative funding sources for wastewater infrastructure. Ministry of Public Works Decree 21/2006 provides a strategy for waste reduction at the source, which requires participation of householders and local community organizations. Government of Indonesia Law 18/2008 and Government Regulation 16/2005 on Waste Management cover the management of municipal solid waste. The waste management law requires the metropolitan city government to close, by May 2013, any waste management final disposal sites using the open dumping system.

16. The national water and sanitation policy recognizes current environmental problems, such as water shortage and pollution, and promotes environment-based development consistent with the values of environmental conservation. The national water legislation shares this goal. The scale of the challenge is huge and the investment levels required are considerably beyond present sector resources. Though the national policy and water law emphasize the importance of the environment in water and sanitation, the Ministry of Environment’s participation in the sector has been constrained due to limited funding.

C. Core Sector Issues, Causes, and Effects

17. Tackling Indonesia’s water problems lies at the heart of protecting its resources and the associated environment in the years ahead, and of the country’s ability to effectively combat poverty and reduce infant mortality to accepted world norms. The challenge is to connect an additional 45 million people to clean water supply and provide sustainable access to basic sanitation, to another 25 million people before 2015, the MDG target date. The challenge is enormous and will need extensive investment. While the central government’s political will is there, successful implementation of policy will also need further streamlining of bureaucratic structures, in parallel with upgrading of technical and management skills throughout the country.

18. A recent central government assessment (footnote 4) listed the following sector challenges:
- (i) Inadequate regulatory framework for water supply and sanitation.
 - (ii) Inadequate cross-sector policy coordination on the provision of improved facilities for water supply and sanitation; too many institutions and organizations are involved in development of water supply and sanitation and more intensive coordination is required.

- (iii) Decline in the quality and quantity of drinking water in urban areas. Many households in urban areas still rely on non-piped drinking water sources of poor quality, and the demand for water exceeds the supply from these sources.
- (iv) Rapid growth of urban population has been greater than the development of improved water and sanitation infrastructure. Investments for connections of urban water supply have failed to keep pace with the growth in urban population.
- (v) Low community awareness on the importance of clean water use and sanitation practices remains.
- (vi) Limited provision of improved drinking water by PDAMs and by privately owned water supply companies, especially in urban areas.
- (vii) Limited capacity of subnational governments to ensure that improved drinking water and sanitation systems are in place or operating correctly.
- (viii) Inadequate investments in improved drinking water supply and sanitation systems, both for public and private sources, resulting from a dependency on the central government's budget allocation to support initiatives related to drinking water and sanitation facilities. The weak financial performance of PDAMs is the reason they are unable to obtain alternative funding.

19. **Rapid urbanization.** Coping with urbanization requires a major change in the approaches previously adopted for the planning, development, and use of water resources. The change needs to be properly reflected in the regulations guiding, controlling, and prioritizing the current and future uses of water while at the same time ensuring equity of access. It also needs to be reflected in the sources of finance to support the implementation of the many projects required. In short, as Indonesia emerges as a middle-income economy, the strategy for the country's water resources does not adequately reflect the dramatic changes in supply and demand, particularly for the core island of Java, where over 80% of Indonesia's industry is based. For example, the areas to the east of Jakarta around Bekasi and Karawang, which historically provided the major portion of Java's rice supply, have in the past 20 years seen extraordinary industrial and associated residential developments resulting in dramatic changes in the demand for water in the region.

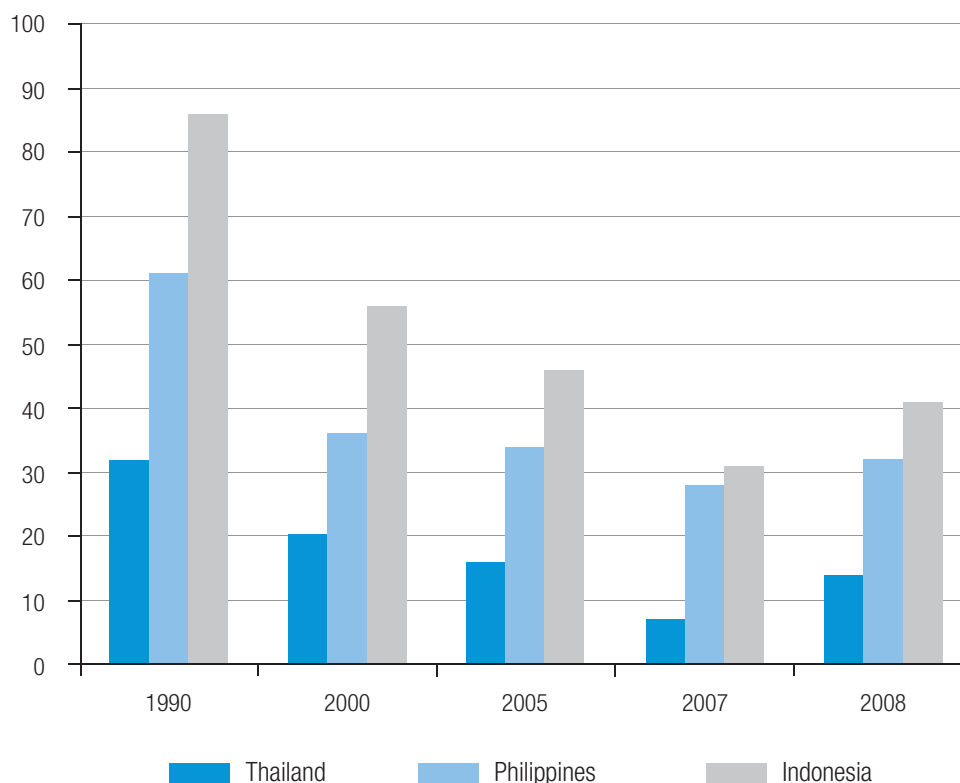
20. **Health.** The combined effects of poor water supply and sanitation conditions explain the high incidence of waterborne diseases. Indonesia has the highest incidence of typhoid in East Asia, and diarrhea is the second largest cause of death among young children. Although improvements are being done, Indonesia still lags behind its neighbors. Seventy percent of groundwater sources are polluted, and 75% of rivers are heavily polluted.⁶ This condition leads to gross threats to public health (e.g., 40 out of 1,000 babies die from diarrhea) plus severe detriment to other beneficial uses of both water sources (Figure 2). There is a strong correlation between the inadequacies in wastewater and solid waste management and water resources contamination such that water quality is directly proportional to the quality of municipal services delivery.

21. **Utility services.** As a result of the effects of incomplete decentralization and low capacity of water service provision, water supply and sanitation are in poor technical and financial condition. Only about 40 million people, or 18% of the total population, are connected to piped water supply from PDAMs.⁷ Of this number, about 10%–15% are urban poor. Even in urban areas, only 31% of people receive piped water. This percentage has been declining as service coverage has failed to keep pace with the increasing

⁶ BAPPENAS. 2010. *Settlement Sanitation Development Acceleration Program ("PPSP") 2010–2014*. Jakarta.

⁷ Directorate General of Human Settlements (DGHS) data provided during interview with director for water supply. December 2011.

Figure 2 Under-5 Mortality per 1,000 Live Births



Source: UNDP. 2010. *Human Development Report*. New York.

urban population. The remaining urban population depends on individual wells, small-scale providers, or water vendors, often at high cost. In rural areas, the situation is such that about 12% of households get drinking water from piped supplies, with PDAMs accounting for about two-thirds of this. Most rural households rely on shallow groundwater extraction or rainwater collection, or use surface water from nearby rivers or springs. The poor are affected most by this unsatisfactory situation. Countrywide, less than 20% of the poor have access to safe drinking water, compared to more than 80% of the rich. The poor pay water vendors up to five times more than the rich who use piped water.

22. Little has been done to deal with a very extensive lack of sanitation across the country. As elsewhere, tackling sanitation lags behind water supply provision, but becomes an increasingly urgent matter for large and expanding urban areas such as Jakarta, Surabaya, and Bandung. The disease and sickness caused by the lack of sanitation results in significantly reduced productivity. In extreme cases, lack of attention to this matter can lead to dangerous epidemics.

23. **Large investment needs.** In the rapidly expanding urban areas, the national government recognizes that water supply and the provision of sanitation services are priority needs. It is also aware that providing access to suitable services for low-income communities requires further special attention. The scope and depth of work to be undertaken throughout the water sector are extremely large. Annual investments of about \$600 million are estimated to meet the MDGs for water supply and sanitation.⁸

⁸ BAPPENAS. 2010. *Water and Sanitation Assessment for APMC*. Jakarta: BAPPENAS.

24. Since the 1998/99 Asian financial crisis and occurrence of major political changes toward a decentralized government system, investment in the sector has been almost negligible, and cost recovery was considered irrelevant, despite recent legislation. The water and sanitation sector is not highly prioritized at the subnational level, partly because of competing priorities from other sectors. Few subnational governments use their own resources to implement water and sanitation activities. Most funding for the sector comes from the national level, while subnational funding is often “hidden” as it occurs in several government departments.

25. **Public and private financing.** Substantial participation of the private sector will be vital in addressing Indonesia’s water problems. For 2012, there was an estimated shortfall of \$9 billion in the required overall budget for infrastructure development.⁹ The calculation was based on an infrastructure budget required by the Ministry of Public Works for 2012 at \$42 billion, whereas the known funding sources available could provide up to \$33 billion. This funding is made up of the state budget (APBN) worth \$12 billion, \$8 billion from local government budgets (APBDs), \$7 billion from state-owned enterprises, and an amount of \$6 billion from the private sector. Further private sector participation (PSP) is expected to assist in addressing the shortfall.

26. In the water supply sector, 14 PSPs are ongoing, representing an investment value of about \$670 million. Three projects are currently being tendered and 18 projects, with estimated value of \$2 billion, have potential for PSP. These projects are mostly bulk water supply projects. The main issue with expanding private sector investments in water distribution improvement and expansion is the weak regulatory framework.

27. **Climate change.** Indonesia and its population are extremely vulnerable to climate change effects especially sea level rise. With over 42 million people living in areas less than 10 meters above sea level, increased floods and extreme rain events are likely to be major disruptions. The continued reliance of much of the population and industry on groundwater has resulted in serious subsidence of landforms. In low-lying areas adjacent to the coast, especially in Jakarta, Semarang, and Bandar Lampung, this situation provides an even greater challenge in dealing with the effects of climate change. In such locations, the need to expand piped water supply system becomes even more vital.

28. **Gender.** Women form the most active community group in the water and sanitation sector because of their roles, such as collecting water, using water to cook, and managing household waste. However, women tend to have little influence on sector management. Action to encourage women’s participation in community decision making is one of the national water and sanitation policy’s implementing strategies. The key challenge for communities is to transfer the policy into a process where women’s participation is meaningful. Women’s participation in the public sector as public servants and politicians also contributes to an appropriate gender perspective in water and sanitation programs and activities. Despite this, Indonesia has a lower-than-average percentage of female politicians at all government levels and women tend to be excluded from decision making in the public service.¹⁰

29. **River basins.** There are about 133 river basins across Indonesia, with 16 of particular importance to current and future economic development. Some basins have river basin management units; their work is expected to lead to improved environmental conditions. Upper catchments have suffered deforestation and ensuing topographic degradation and soil erosion, impacting river courses through detrimental downstream sedimentation. This results in excessive treatment costs for water supply because of the high turbidity of water sources. These units require the proper authority and

⁹ *Business Indonesia*. 2012. Construction Development Agency of the Ministry of Public Works. 27 January.

¹⁰ Indonesia currently ranks no. 65 in the world for woman parliamentarians, i.e., 18% of parliamentarians are women compared with the world average of 20%. *Women in National Parliaments*. 2011. November. <http://www.ipu.org/wmn-e/arc/world301111.htm>

establishments to undertake their tasks, in cooperation with the various stakeholders that have an interest in the use of the river basin waters. Of particular importance to the national economy, dominated by the output of industry and commerce in Java, are the badly polluted Citarum Basin in West Java, which is the lifeblood of the key cities of Jakarta and Bandung, and the Brantas Basin in East Java for the major city of Surabaya and the satellite towns on its periphery.

30. **Water management.** Attention to the many critical issues associated with water management has been constrained due to several events, particularly since the onset of the 1998/99 Asian financial crisis. With regionalization introduced in 1999 and the devolution of many governmental powers to the provinces and districts of the country, the difficulty in promoting and carrying through key and overdue infrastructure developments has increased. This has been due, in part, to the slow pace of local bureaucratic understanding and assumption of responsibility, combined with an inadequate skills base, and insufficient funding for skills development in the regions. The water and sanitation sector particularly comes into this category.

D. Subsector Issues

31. The water supply and sanitation subsectors are in a very weak organizational and management state. Constraining factors being urgently addressed include poor management, which have led to bankruptcy of many water authorities; insufficient political will below top level, as evidenced by minimal subnational government investment in the sector; poor governance; and underdeveloped implementing regulations. While water and sanitation policy is the responsibility of the central government, supplying water and sanitation services is the responsibility of municipal or subnational governments. The country is divided administratively into 33 provinces and 497 municipalities and/or districts.

32. **Water supply.** Non-piped or self-supply systems are abundant and form the major source of domestic water supply. Piped water supply systems are mainly managed by 341 PDAMs, which are under the jurisdiction and ownership of subnational governments. Majority of the PDAMs are struggling, with their financial situation deteriorating and service quality falling. In 1999, legislation that transferred the responsibility for developing water and sanitation infrastructure to subnational governments was enacted. The implementation had mixed results such that the net effect has been a decrease in the levels of service with urban water coverage through PDAMs declining from 39% of the population covered in 2000 to 31% in 2010.

33. The subnational governments have historically viewed the PDAMs as independent entities sourcing their own development financing. Currently, PDAMs have around 8 million connections on their systems. About 70% of the PDAMs are heavily indebted, having on their books more than 400 outstanding loans from the Ministry of Finance, which need to be restructured; almost two-thirds are in arrears or default. Hence most of them are not considered creditworthy. Although some advances have been made in recent years, tariffs are often set well below cost-recovery levels, and generally do not even cover the costs for operation and maintenance. Levels of nonrevenue water (NRW) are more than twice what might be considered acceptable. Asset management systems are much less than optimal, operating on a breakdown, rather than preventative, maintenance approach, which is further constrained by lack of funding. Systems operate on an intermittent basis with inadequate pressures further jeopardizing water quality. Funds for system rehabilitation and expansion have not been provided as necessary. The PDAMs generally function with little autonomy from subnational governments, which keep tariffs artificially low. Subnational governments often demand dividends, which reduce funds for maintenance and investments. They generally operate with poor governance and institutional inefficiency. A further, more recent burden is the requirement for PDAMs to pay full industrial rates for electricity.

34. Through the 1980s and 1990s, the Government of Indonesia, through two successive five-year national development plans, accelerated provision of piped water supply in and around subdistrict capitals known as *Ibu Kota Kecamatan* (IKKs). The provision of water in these smaller urban areas was also supported by ADB, through a sector-lending approach. The IKK program objective is to provide water supply to underdeveloped areas and lower-income people. Currently, management of 1,700 of these systems is divided between PDAMs and subnational government technical units. About 100 new systems are being added each year. Many of these IKK systems are not operating mainly due to non-site specific designs and poor selection of materials in construction. The demand for the service often exceeds the system capacity, with many systems limited to 10 liters per second.

35. New housing estates have proliferated in the last 30 years because of urbanization. These have generally been provided with piped water supply systems, which are either operated privately by the estate managers, or the assets are transferred to the local PDAM for operation. In some instances, funds for distribution system expansion have been lodged with the subnational government by developers, with construction being deferred until bulk supply facilities can be expanded. Water consumption in these locations is often constrained by inadequate bulk supplies. In some locations, pipes remain empty, waiting for PDAMs to expand their bulk supply systems, while house owners use interim self-supply systems.

36. Apart from the abundant self-supply systems, it should be noted that at the community level, the private sector plays a significant role in water infrastructure construction and maintenance. Civil society is very active in the water sector. Nongovernment organizations are implementing numerous water and sanitation activities and religious leaders are influential in changing hygiene behavior in communities. About 15% of rural households get drinking water from pipe or pump sources. The community-based approach is particularly effective in rural areas, with several World Bank and official development assistance (ODA) projects leading advances. This approach has been found to be vital from the viewpoint of sustainability. Funding for materials and equipment is provided by the central government with communities being required to provide counterpart funding, usually in the form of labor.

37. **Sanitation.** With regard to the inadequacies of current sanitation systems, the potential economic loss is tremendous and has been estimated to reach \$5.6 billion per annum or 2.3% of GDP.¹¹ Different workable solutions, some of them very affordable, are appropriate in some instances; however, tackling sanitation issues is a formidable task for subnational governments. Wastewater treatment and disposal are almost entirely managed in on-site systems. Indonesia has one of the lowest rates of conventional off-site sewerage coverage in Asia. Only 11 cities have some form of sewerage network. Nationally, the coverage of sewerage systems is less than 1% of the total urban population.¹² Over 70% of urban households have on-site sanitation, mostly in the form of septic tanks, which do not function effectively. Less than 25% of human waste delivered to on-site systems is dealt with properly. About 80% of bathroom, kitchen, and laundry wastes are passed direct to surface water drains. In rural areas, less than 30% of households have toilet facilities, and only about 20% have septic tanks. The lack of adequate sewerage systems, combined with inadequate solid waste management, is causing widespread contamination of both surface and groundwater.

38. The government is keenly aware of sanitation shortcomings and is exerting efforts to address sanitation in substantive ways. Sanitation in Indonesia has traditionally been a private matter. Historically, the focus has been on “self-provision” of sanitation facilities, however, the government acknowledges that this approach has clearly failed.

¹¹ Napitupulu, L. and G. Hutton. 2008. *WSP: Economic Impacts of Sanitation in Indonesia*. Jakarta: World Bank.

¹² Based on ADB estimate of approximately 1 million persons served by current systems.

39. The inadequacies in current wastewater and solid waste management systems are evidenced by (i) open defecation in drains, (ii) a proliferation of makeshift latrines in low-income areas, (iii) partially treated domestic wastewater being passed to drains, (iv) solid waste in drains and streams, (v) discharges of inadequately treated industrial waste, (vi) illegal dumping of sewage sludge, and (vii) the poor having to wash and bathe in polluted streams.

40. In the sanitation sector, the limited number of sewerage systems is managed by either the local PDAM, specially constituted public enterprises (PD-PAL) or public service agencies (BLU-D). In the initial urban projects of the 1980s, communal facilities known as MCKs were included in low-income areas; however these failed, due mainly to lack of community ownership in their development and implementation. Subnational governments have generally given little regard to provision of proper wastewater management services.

41. Challenges that are being met in the sanitation sector include (i) incomplete policies and regulations, (ii) low priority on sanitation especially at the local level, (iii) under investment and limited funding resources, (iv) limited availability of master plans for dealing with the sanitation challenge, and (v) lack of expertise and qualified personnel for proper sanitation management.

42. Although some decentralized wastewater treatment solutions were initiated earlier by nongovernment organizations, it was in 2002 that the Sanitation by Communities (SANIMAS) became a national program. SANIMAS was pilot in seven cities and, by 2010, had expanded to more than 100 cities and regencies in 22 provinces. It is a demand-driven approach whereby residents who wish to improve sanitation services in a particular area are encouraged to participate in the implementation of new facilities. The residents choose from a menu of improvements, including communal septic tanks; elaborate communal bathing, washing, and toilet facilities; and small communal wastewater treatment plants with local piped collection systems. The local and central governments contribute to funding, and the community is encouraged to provide labor for constructing the facilities. SANIMAS was considered a response to the national policy of encouraging community involvement during planning and development of infrastructure facilities. The approach was an option for a quick response to providing sanitation services for low-income communities in peri-urban areas. In residential areas with higher population densities, the SANIMAS approach can be a first step toward the gradual implementation of community-based, simplified, or condominium sewer networks.

43. The Indonesia Sanitation Sector Development Program (ISSDP), implemented in 2006–2010, was a breakthrough program in the sanitation sector. It established a framework for planning sustainable, poor-inclusive urban sanitation services in Indonesia through effective and coordinated policy making, institutional reform, strategic planning, and awareness building. The Citywide Sanitation Strategy (CSS), as prepared by the 12 cities involved in ISSDP, takes into account lessons learned from the SANIMAS pilot cities and the results of the scaling-up of the SANIMAS program in recent years. In the context of the government's ongoing PPSP (Acceleration of Sanitation Development for Human Settlements) project in 2010–2014, the ISSDP approach for policy making, institutional reform, strategic planning, and awareness building is being scaled up at the national level and implemented in 330 cities and regencies throughout Indonesia.

44. In the 1980s, several projects, including ADB's urban development projects in Bandung and Medan, developed conventional waterborne sewerage systems. At present, about 11 cities have significant sewerage systems, with average coverage of about 5% of city population, although Bandung claims 20% coverage.¹³ These systems have suffered from poor connection rates, with householders preferring to construct septic tanks rather than pay for the more expensive connection to a centralized system.

¹³ Based on ADB assessment of total population in 11 cities of 20,000,000 persons with 1,000,000 served.

Some confusion on levels of coverage is caused through inclusion of interceptor pits for drains emanating from narrow ways at the rear of properties (*brandgangs*), which are considered to provide coverage for the local area. These drains were constructed during the Dutch period and provide a convenient means of capturing highly polluted domestic drainage. However, the need for the design to be able to divert excessive storm flows and address problems of clogging caused by solid waste has led to poor performance of these interceptors.

45. During the past decades of urban expansion, new housing estates have generally been fitted with septic tanks, which deal only with toilet waste and deliver partially treated effluent direct to roadside drains. Bathroom, kitchen, and laundry wastes are often delivered untreated direct to roadside drains. Subnational government decrees dealing with building permits are often inadequate in stipulating necessary sanitation arrangements. New housing estates have therefore added to the backlog of work in the sanitation sector.

46. **Solid waste management.** Solid waste management has generally received more attention from city managers as efforts are made to preserve public amenity. The management of domestic waste has been a joint effort between local community organizations and the city government. However, collection efficiencies have been poor, in the range of 20%–60%, depending on location. Much waste is still improperly disposed of, usually to drains and watercourses or by burning in communal heaps. This adds to drainage and water pollution problems as well as to air pollution. Formal disposal has generally been in open dumps, which have an extremely low environmental performance.

47. The urban solid waste management service is generally provided through a subnational government *dinas* or agency. Two enterprises for solid waste (PDs) were set up in Bandung and Medan with ADB assistance in the mid-1980s, however, the Medan PD has now reverted to a *dinas*. In most locations the local community organizations (LSMs) deliver domestic waste to a transfer point, from which the city-managed systems operate, providing transportation and disposal. Market, commercial, and street wastes are collected direct by city waste management services. Considerable informal recycling operates mainly within the LSM systems. Some 90% of waste is disposed of in open dumps with composting pilots, constrained by inadequate marketing of the final product. Environmental damage from disposal operations has been severe.

48. Service levels in urban areas vary from 20% to 60%. Except for Bandung, cost recovery levels have been extremely low, and generally the public sees solid waste as a service, particularly the transportation and disposal services, which should be heavily subsidized by subnational governments. Waste characteristics have changed remarkably, with the organic content of waste dropping from almost 75% in the 1980s to 50% at present.¹⁴ Generation rates per capita are increasing at 2%–4% per annum. New housing estates are often serviced for solid waste through private, estate-managed collection and transportation systems with disposal direct to city landfill sites.

E. Key Development Needs

49. Throughout Asia, the issues around comprehensive and efficient water supply and sanitation systems for many expanding cities and towns are some of the most acute challenges affecting global water resources. For Indonesia, the pattern is similar along with population growth since the number of people migrating to urban areas are increasing steadily. Currently, more than half of its 238 million population is dependent on an urban lifestyle. This is increasing dramatically particularly in Java, the industrial hub of the country, putting a tremendous strain on already overstretched resources. Within 10 years, 40 million

¹⁴ G. M. McManus. 2010. *Bandung Municipality SWM Improvement Project*. Jakarta: APMC Market Sounding.

more people in Java will be living an urban or suburban lifestyle, causing further strain on water supply and sanitation systems.

50. The development needs in both water supply and sanitation are more than substantial. Although these are now clearly included in the government's water and sanitation road maps, they are difficult to enumerate. The total population of Indonesia is expected to grow from 238 million to 250 million in 3 years (the 2015 MDG deadline). In this period, the urban population may be expected to grow from 125 million to 145 million, with the corresponding decline in rural population (footnote 2). The Ministry of Public Works (MPW) has set targets, which require expansion of piped water supply systems from 44% to 68% in urban areas, and from 12% to 20% in rural areas. The overall increase targeted for piped water supply is from 26% to 41%.¹⁵ MPW estimates the number of new connections to be added from 2011 to 2015 to be 8.5 million. If urbanization continues at an accelerating rate, this figure will be an underestimate of the requirement.

51. Problems with PDAMs have received considerable attention in the past 10 years. The short- to medium-term challenge is to develop bulk water supplies that can be made available for systems expansion as PDAMs are restructured to become creditworthy service providers with a capacity to expand their coverage areas. Bulk supply developments across Java and around the major urban centers in Sumatra and Sulawesi need to be addressed. The government has made progress in Java with preliminary arrangements for regional supply systems for smaller urban centers being completed in all provinces except East Java, where the Umbulan project is expected to make a substantial contribution to development as a PPP. Financing plans to support the MPW regional piped water supply proposals need to be formulated, and the work proceeded in parallel with the PDAM restructuring process. The Directorate General of Human Settlements (DGHS) has plans to build a pilot regional supply system in Central Java in 2012 using APBN funds. Based on the preliminary costs for the Central Java SPAM Regional proposal, it is estimated that \$4 billion would need to be invested across the country in order to provide the additional bulk water supplies required to service the MPW target for urban supplies.¹⁶ Although funding for this work will be sourced from APBN, donors, and the private sector, a substantial contribution will be required from multilateral development banks (MDBs). Additionally, some subdistrict main town system developments are expected to contribute to the achievement of MPW targets. For rural water supply, the major portion of the development will need to come from the ongoing community-based initiative Third Water Supply and Sanitation Program for Low-Income Communities (PAMSIMAS).

52. In developing local distribution systems, the government plans to build on the success of the output-based water *hibah* program. This program has had considerable success in improving governance and demonstrated to subnational governments the returns of greater investment in their water utilities. To address the MPW-related target of about 8.5 million new connections by 2015, quite substantial project investments will be necessary to support the *hibah* approach.

53. The existing sewerage systems listed as priorities for 2010–2014 include Medan, Yogyakarta, Jakarta, Bandung, Cirebon, Banjarmasin, Denpasar, Surakarta, Balikpapan, Tarakan, Tangerang, and Prapat. These systems currently have about 220,000 connections. In the 2010 census, these cities recorded a total population of 20,101,586. For 20% service coverage, services will need to be extended from the current population of 1,000,000 to 4,000,000. The cost of expansion of sewerage systems, including connections, is estimated to be over \$900 million.¹⁷

¹⁵ Water Supply Program Presentation by the Minister of Public Works to the Plenary Cabinet Meeting, 26 May 2011.

¹⁶ Extrapolation based on the Central Java SPAM Regional system providing a capacity of 9,550 liters per second (l/sec) at a cost of \$511M.

¹⁷ This is based on a broad estimate of approximately 600,000 new connections costing \$2,000 per household for conventional sewerage and \$200 per house connection. Estimate assumes that about 25% of additional connections can be accommodated in existing sewerage systems and sewage treatment plants.

54. A key requirement to implement the Government of Indonesia's road map 2010–2014 had been to ensure prompt arrangements were made in 2012 to fund new sewerage systems in five more large cities. Cities that do not have sewerage systems at present and have shown interest include Bandar Lampung, Cimahi, Bogor, Balikpapan, Pekanbaru, Palembang, and Makassar. In the 2010 census, these cities recorded an average population of 946,000, ranging from 541,000 in Cimahi to 1,455,000 in Palembang. To achieve 20% service coverage, the cost of complete sewerage systems in five cities will be about \$400 million, based on an average population. The government and Indonesia Infrastructure Initiative (IndII) have already prepared master plans, which include investment plans in several of the above locations. It will be also important for the sanitation sector to ensure that projected climate change effects are taken into account in the design of any wastewater schemes in these low-lying coastal areas. From a strategic viewpoint, another aspect of the sewerage program that will need attention is the generally accepted requirement for waterborne sewerage systems to be developed only in areas where piped water supply is provided.

55. The current intention of MPW is to expand the number of metropolitan cities with sewerage systems from 11 to 19 in the first phase, and from 20 to 25 cities by 2020 in the second phase. MPW also proposes another stage of intensive development of communal sanitation systems. SANIMAS will be implemented in about 1,000 new locations per annum.

56. For solid waste treatment and disposal, the government's objective is to close all open dumping sites by 2014. In addition, Law 32/2009 on the environment places significant responsibilities on subnational governments and includes criminal penalties for continued open dumping operations. Attention is to be given to regional disposal; in addition, MPW is seeking to develop intermediate transfer facilities that will vastly reduce the amount of wastes sent for disposal. The scope of investment required to achieve this objective has yet to be properly assessed since alternative solutions are still under consideration. However, it is expected that this will be more than substantial.

57. The government has a vision for Indonesia to play a key role in addressing global climate change; it thus urges the business sector to join in taking action. The government seeks to achieve a green economy, which will require collective vision, creativity, action, and support from a broad cross section of society, especially the business community. In the sanitation subsector, the window of opportunity to take advantage of the Clean Development Mechanism (CDM) facility provided to improve solid waste treatment and disposal is being given high priority.

58. Capacity building is needed in the water and sanitation sector, especially in the subnational government level, to support infrastructure expansion programs. Capacity building should focus on building service utility and development of supporting subnational government regulations. Setting up new utilities that are based on commercial management principles will require considerable assistance. Items such as business planning and management, financial management and accounting, and maintenance and quality control planning will all need attention, not only through classroom training but also through the use of "hands-on" approach with specialists working within the management of the new organizations. New regulations ensuring that new facilities are fully utilized will also be a priority. Regulations need also to give attention to customer service agreements and requirements for proper connections to systems, especially sewerage connections.

F. Links to Other Sectors

59. The water–food–energy nexus requires special attention.¹⁸ The dynamics of shifting demands between these three sectors is especially volatile in Indonesia as outlined in the overall sector context.

¹⁸ Messages from the Bonn 2011 Conference: The Water, Energy and Food Security Nexus – Solutions for a Green Economy.

Integrated multistakeholder resource planning is required along with a regulated focus on infrastructure development, market-priced resources, and technical and financial innovations. Water is the new factor in food and energy security debates. Energy costs typically average 50% of the cost of delivering urban water supplies, and the amount of water consumed is significant both in terms of hydropower and cooling requirements for thermal power. Understanding the nexus is needed to develop policies, strategies, and investments to exploit synergies and mitigate trade-offs among these three development goals with active participation of and among government agencies, the private sector, and civil society. The nexus perspective provides an informed and transparent framework for determining and resolving trade-offs to meet increasing demand without compromising sustainability. It is thus important to incorporate the nexus perspective in local and national planning activities focusing on water, food, or energy.

60. Work between the water and sanitation sector and the water resources and irrigation sector needs to be coordinated. Attention to river basins is being seen in the light of a holistic approach to water use under integrated water resources management planning and development and the links with water management in other sectors.

61. How poor solid waste and wastewater management affect flooding and adversely impact the environment is a well-recognized strategic issue. An integrated approach to sustainable urban development requires coordination between the water and sanitation sector and the flood control and drainage sector.

A. Government Sector Strategy, Policy, and Plans

62. The government of Indonesia is three-tiered, consisting of 33 provinces or regions with special status, 92 cities or urban local authorities, and 359 regencies or rural local authorities. The respective governments each have the authority to draft socioeconomic development plans according to BAPPENAS System Law No. 25/2004 and spatial plans according to the Spatial Planning Law No. 26/2007. Development in the country centers on these plans.

63. The socioeconomic development planning system at the national level consists of 20-year national long-term development plan and a 5-year development plan. The 5-year development plan includes a national medium-term development plan and yearly implementation plans. The development plans fall under the authority of BAPPENAS. The duration of the current national long-term development plan is from 2005 to 2025 and the current medium-term plan is from 2010 to 2014.

64. The long-term development plan functions to outline the vision, mission, and direction of development policies for a 20-year period. The medium-term development plan reflects the elected president's vision for the national development strategy, macroeconomic framework, and priority policy goals to be achieved in a 5-year period. The president must also give consideration to compatibility with the long-term development plan.

65. The current National Medium-Term Development Plan (RPJM) for 2010–2014 became effective as Presidential Regulation (No. 5/2010). The plan serves as the second stage of the government's long-term plan. The plan takes account of the country's recovery process from natural disasters, including from the Sumatra earthquake, and the global economic crisis. The plan is directed to expand such policy by setting "independent, progressive, fair, and enriched Indonesia" as a national vision accompanied by development policies in nine specific fields. The plan features a fresh approach because apart from the general and specific development policies, developed policies were included from respective provinces which were gathered through a bottom-up approach.

66. The RPJM 2010–2014 focuses on reducing poverty through more rapid, more sustainable, and more inclusive economic growth; improving the quality of the public sector; fostering democracy; and strengthening the rule of law. It consists of 11 national priorities, including reforms for education, energy (alternative energy and energy efficiency), environment (including climate change), health, infrastructure, investment and business climate, poverty reduction, and public sector. The RPJM targets an average annual growth rate of 6.3%–6.8% per year, rising to at least 7% by 2014, and a reduction in the poverty level from 14.2% in 2009 to 8%–10% by 2014.

67. **Millennium Development Goal policy.** Following a review by BAPPENAS in 2010, the central government formulated the following policy statements with regard to attempts to achieve the MDGs:

- (i) Increasing coverage of improved drinking water by developing and improving water systems, installations, transmissions, and distribution networks, especially in urban areas; and in rural areas, developing drinking water systems that are community-based with cross-sectoral support;

- (ii) Increasing access of communities to basic sanitation by increasing investment in the management of central wastewater systems, and by providing community-based sanitation systems with special attention to poor households;
- (iii) Improving the regulatory frameworks at the central and regional levels to support provision of drinking water and basic sanitation by adding and/or revising laws or deregulating;
- (iv) Ensuring the availability of drinking water by controlling groundwater use by domestic and industrial users, protecting groundwater and surface water sources from domestic pollution through increased coverage of sanitation services, and using technology development and alternative water sources, including water reclamation;
- (v) Increasing public awareness on the importance of healthy practices, through communication, information, and education as well as infrastructure development for water supply and sanitation facilities in schools;
- (vi) Improving the development planning system for drinking water and basic sanitation by preparing master plans for water supply systems and city sanitation strategies, and monitoring and evaluating;
- (vii) Improving the management of drinking water supply and basic sanitation by preparing business plans, corporatization, managing assets, and building capacity of human resources for institutions and communities; increasing cooperation (a) within government agencies (between departments and/or divisions), (b) between government agencies, and (c) between the government and the private and public sectors; improving links between the management systems applied by the communities with government systems; and optimizing the utilization of financial resources;
- (viii) Increasing local investment spending to improve access to improved drinking water and basic sanitation, focusing on services for the urban population, especially the poor; and
- (ix) Improving the investment climate to stimulate the active participation of the private sector and the community by using PPPs, applying corporate social responsibility, and developing and marketing appropriate technology for water supply systems and sanitation.

68. **Government policy and plans.** The government's policy on water and sanitation is based on an overarching emphasis on poverty reduction. The target is to provide piped water supply to 68% of city dwellers and to 20% of rural dwellers by 2015. In the water sector, the government acknowledges that dissimilar conditions exist among various PDAMs. Some locations are doing well with the prospect in many areas of commercial operation being achieved in the future, whereas others have little prospect of achieving such operation.

69. **Ongoing government initiatives.** These include (i) tariff reform as provided in Regulation 23/2006 of the Ministry of Home Affairs (MOHA) which requires full cost recovery; (ii) debt restructuring as provided for in MOF Regulation 120/2008 with partial or full write off of unpaid interest and penalty charges on delayed or nonpayment of principal and interest; (iii) central government loan guarantees and interest subsidies on loans taken out by subnational governments from domestic banks as detailed in Presidential Decree 29/2009; (iv) output-based grants through water *hibah*, as defined in MOF Regulations 168 and 169/2008, which are currently the central government's main mechanism for increasing access of urban households to piped water; (v) special allocation funds, which have the same investment scope as the *hibah* but are not output-based; and (vi) grants for deconcentrated and co-administered tasks that are regulated by Presidential Decree 07/2008 and passed through the MPW.

70. **PDAM restructuring.** Due to the ongoing improvement in regulations, progress is being made in PDAM restructuring, which is enabling investment in piped water supply. Lending to creditworthy

PDAMs is being planned through Presidential Decree 29/2009 from Indonesian state banks. Interest rates are subsidized and guarantees provided by the MOF. The acceleration, after a very slow start, is said to be due to a change in procedures in MOF. The 2012 funding will be exclusively APBN rupiah funding. Only creditworthy and restructured PDAMs, having regular status with their revised loan repayments, will have access to funding in accordance with Presidential Decree 29/2009. Further PDAM restructuring and Presidential Decree 29/2009 submissions are being supported by AusAID, through the IndII project, and USAID, through the Indonesia Urban Water, Sanitation, and Hygiene (IUWASH) project.

71. PDAMs that are not creditworthy will be provided with regionalized production facilities managed by provincial governments, with distribution systems to be financed by subnational governments, taking out loans from the central government against guarantees provided by the general budget allocation intercept mechanisms.

72. *Water Hibah* aims to improve governance by demonstrating to subnational governments the returns of greater investment in their water utilities. This ongoing program aims to involve 200 subnational governments, implementing 1.5 million connections at a cost of \$350 million. The program is extended from 2010 to 2014 with funding sources from APBN and donors. However, if the total number of new connections in urban areas required to service MPW targets by 2015 is 8.5 million, then programs in addition to *water Hibah* will be required. In this regard, the success of the current initiatives in PDAM restructuring and financial strengthening is vital. Provided that the financial impasse, which has hampered onlending since the mid-1990s can be resolved, a significant portion of funding for distribution system developments should also come from the MDBs.

73. **Regional approach.** MPW is embarking on a regional piped water supply (SPAM Regional) approach. The central government is looking at providing assistance on a province-wide basis for water resource development and transmission systems for piped water supply. The MPW has currently completed plans for Jakarta, West Java, Yogyakarta, and Central Java. The Central Java proposal includes nine regional systems that have been identified and preliminary estimates of costs had been made. Each regional system serves two to five districts or cities. The facilities will be constructed by MPW and then managed by provincial water bodies, either as a specially constituted public enterprise or as public service agencies. The regional works in the Central Java proposal, which was presented to the province by MPW in November 2011, will provide facilities with capacity of 9,550 liters per second (l/sec) at a cost of \$511 million. The financing plans for this work are being formulated and are expected to include ODA loan funds. Those systems that have clear water abstraction rights will be developed first.

74. The MPW 2008 National Policy for Management of Wastewater Systems (Regulation 16/2008) provided a national policy and strategy for management of wastewater systems, which included (i) increased coverage of sanitation with priority for the poor, (ii) increased role for the community and the private sector in sanitation, (iii) development of a regulatory framework for urban sanitation, (iv) capacity building for wastewater management, and (v) increased investment, including development of alternative funding sources for wastewater infrastructure.

75. **Sanitation road map.** The national regulation provides the basis for planning with regard to sanitation. It is currently being implemented through the sanitation road map, 2010 to 2014 prepared by BAPPENAS, MPW, and MOHA. This road map seeks to (i) increase urban sanitation coverage to 80% and rural coverage to 60%, (ii) extend the number of cities with sewerage systems from 11 to 16, and increase coverage in all sewered cities to 20% of the urban population, and (iii) engage 330 cities and towns to prepare sanitation strategies which have agreed financing plans.

76. In the longer term, MPW plans to provide sewerage systems in all metropolitan cities. The current objective is to add eight new cities, bringing the total to 19 in the medium term; then 20 to 25 by about 2020 in a second stage. Tourism areas will be given special attention. In parallel with the sewerage program, there will be a proliferation of communal systems. SANIMAS systems will be

implemented at the rate of 1,000 locations per year, funded by special allocation funds of central and subnational governments.

77. **Solid waste management.** The approach of the government is to recognize the economic potential of waste materials through development and enhancement of the 3Rs—reduce, reuse, recycle. MPW Decree 21/2006 provided a strategy for waste reduction at the source, which requires participation of households as well as community organizations. Government of Indonesia Law 18/2008 requires, among other items, the subnational governments to close, by May 2013, any waste management final disposal sites using the open dumping system.

78. The MPW Strategic Plan, 2010–2015 includes the following features: (i) 3Rs pilot projects and stimulation for 250 cities to support waste reduction improvements, (ii) waste collection services to achieve 60% (percentage of waste properly dealt with compared with the amount generated), (iii) improvement in landfill sites in 210 cities, (iv) facilitation of carbon reduction activities for solid waste in 15 cities, and (v) 3Rs campaign program.

79. City waste transport services are developed with funding from the subnational government budget for income and expenditure, with the central government not involved in this phase of solid waste management. The improvements in disposal operations include a focus on developing sanitary landfill operations with waste-to-energy facilities, including management of landfill gas leading to cities qualifying for credits under the CDM program for emission reductions. Work has been done in seven cities under the CDM program including Bekasi, Palembang, and Makassar.

80. **Disposal sites.** The central government will help develop disposal sites if requested by the subnational government. Subnational governments must (i) have acquired the land for the site, (ii) prepared a concept design, (iii) have clear institutional arrangements for subsequent management, (iv) sign a memorandum of understanding for the disposal site development between the Bupati/Walikota and director general DGHS, and (v) complete an environmental impact study for the site. Several subnational governments have received assistance during the past year and more are planned. Funding for the construction works is provided through the APBN.

81. **Regional disposal sites.** Some progress have been made on development of regional solid waste disposal sites. A regional site has been developed through a subnational government initiative in Bali with several adjacent subnational governments in the process of entering into agreements for joint use of the facility. The Japan International Cooperation Agency (JICA) is currently helping the provincial government of West Java develop two regional solid waste treatment and final disposal facilities, one for the Bandung area and a second serving Bogor and Depok. These are proposed for development on a PPP basis. JICA is also assisting with a regional site development for the Mamminasata area around Makassar. Kota Bandung is also in the process of developing a PPP for a waste-to-energy facility with a capacity to process 1,000 tons per day sited within the Kota boundary.

82. MPW reports that continued difficulties are being experienced in operating newly developed landfills on a sanitary basis. They are therefore keen to explore the possibility of setting up intermediate transfer facilities, which will divide the waste stream into separately managed flows and reduce the quantity sent for final disposal. Special consideration is to be given to introducing anaerobic digestion of the organic fraction. The methane gas produced in the process could be converted to electricity and hence become a valuable source of income.

83. **Private sector participation.** The government is conscious of the need to develop policies and institutional frameworks that encourage increased private sector participation to meet the water and sanitation demand. While at present there are some successful PPPs in water supply, the government considers that the country is ready for many more. To support successful PPP in water and sanitation, the government is striving to make PDAMs more creditworthy to allow development of corporatized

utilities that will focus on making operations both profitable and capable of expanding services within their franchise territories. However, PDAMs are still regulated by Law 05/1962 on subnational government-owned enterprises; draft revising legislation was submitted to the national legislative assembly in 2005 but it has yet to reach the committee stage.

84. The central government is aware that to develop private investment in the water and sanitation sector, government support will be vital. Projects are therefore being formulated with the shortcomings of the sector in mind. These projects, which will make significant contributions to servicing the considerable backlog, will provide an allocation of risks that will be more attractive to the private sector than those that were previously offered. Major projects that include extensive raw water developments and associated treatment facilities will be required. A shift in PPP modalities is expected to accompany these major developments. Provision of services to end-users as in the Jakarta experience is expected to be less favored. In the area of solid waste management, several PPP projects are being formulated.

85. **Capacity needs.** Valuable experience combined with technology developments provide the opportunity to facilitate more cost-effective program and project design, management, and implementation. Past reforms in water and sanitation management have resulted in greater demands being placed on human resources at the local level. If the PDAMs and sanitation service managers are to respond to the challenge, they will need further capacity building support to develop their management and operational expertise.

86. **Opportunities.** The increasing public demand for proper water supply and sanitation services is putting pressure on service providers. In November 2011, the government made it clear that it will proceed with borrowing for revenue-generating infrastructure, including those for water supply and sanitation.

87. The government's road maps for both water and sanitation, as outlined in the previous sections, will require substantial financing with loan funding support from the MDBs. The primary focus for ADB is in the sanitation sector. For sewerage, the stated objective of moving toward construction of centralized systems provides a clear opportunity for further ADB involvement. The water supply road map provides for development of bulk supplies at the regional level with project management and implementation of new facilities through the MPW. Development of IKK systems is also expected to be implemented through MPW. This process for implementation is compatible with ADB's approach to addressing sector needs. Finally, the move toward seeking a solution to the solid waste treatment and disposal problem provides another opportunity for ADB assistance and intervention.

88. Much has been and is being done to facilitate borrowing and to overcome the financial impasse experienced in the water sector, which has prevented onlending to subnational governments over the past 15 years. Several recent initiatives of the central government aimed at improving PDAM financial management are producing creditworthy water supply companies at an accelerating rate. Due to the substantial participation of AusAID and the World Bank in assisting the financial strengthening of the PDAMs, ADB's intervention in this area appears to be limited, focusing instead on regional systems.

89. The medium-term objective of capacity building initiatives needs to be the development of water and sanitation utility companies as autonomous, financially viable, public utilities operating on commercial principles. Service levels must be improved and utilities must become more accountable, not only to the higher levels of government, but more importantly to their customers. All areas of local utility management still need attention, including (i) business planning and management, (ii) financial management and accounting, and (iii) maintenance and quality control planning. Annual business plans need to cover (i) human resources development; (ii) customer relations; (iii) financial management, including tariffs and operating budgets; (iv) asset management, including maintenance and quality control plans; and additional rehabilitation works plans; and (v) risk analysis.

90. Special attention needs to be focused on the authorities who will manage the new water and sewerage systems. Initially, subnational government technical service units were expected to manage these tasks. An interim stage of management will be the public service units. The longer-term objective will be to develop the service companies to subnational government enterprises as profit-oriented units. In addition, assistance has to be provided to develop supporting regulations for the new regional water supply and local sewerage systems. Subnational government regulations have to be framed and implemented such that new systems are fully utilized and managed responsibly by service providers with an appropriate level of cost recovery.

91. Current opportunities for ADB to assist in servicing the considerable backlog in the water and sanitation sector are therefore encouraging.

B. ADB's Sector Support Program and Experience

92. **ADB program.** ADB has been providing assistance for improving urban and rural water supply and sanitation in Indonesia since 1972. In the 1980–1990s financing for water supply and sanitation, improvement was provided through several urban development projects, most notably in the metropolitan areas of Bandung, Medan, and also throughout West Java, Sumatra, and the Eastern Islands. The Bandung Urban Development Project, approved in 1979, was ADB's first attempt at an integrated approach, with water, sewerage, and solid waste management forming the major portion of project investments. This was closely followed by the Medan Urban Development Project in 1984. The programs have introduced piped water services to medium and small towns, financed expansion of water networks in a number of large cities, and contributed to improved water and sanitation in rural areas. In the 10-year period from 1991, water and sanitation investments formed part of the integrated urban development approach that contributed toward greater subnational government participation in the management of urban development and its infrastructure.

93. A list of major ADB-financed projects relevant to the water and sanitation sector in the last 20 years is provided in Table 2. Donor-funded projects were among the main sources of investment financing in the sector. As can be seen, in the period following the economic crisis in 1997 due to a proliferation of nonperforming loans at PDAMs, lending effectively ceased in the sector for 8 years and has ceased altogether in terms of lending directly to PDAMs.

94. ADB is currently active in several initiatives that are relevant to the water and sanitation sector.

95. **Community Water Services and Health Project.** Since 2005, ADB has been assisting with the Community Water Services and Health Project under Loans No. 2164/2163. The project provides rural water supply and sanitation facilities that service about 1,000 communities in 20 districts in the provinces of West Kalimantan, Central Kalimantan, Jambi, and Bengkulu. The project combines capacity building for districts and communities, and sanitation and hygiene behavioral change programs. It provides an estimated 1.2 million people with safe drinking water; about 0.6 million of this population also benefit from improved sanitation facilities. The objective of the project is to enhance the health status of low-income communities in rural areas based on better hygiene behavior and sustain access to safe drinking water and improved sanitation. The project has four components: (i) improving the capacity of subnational governments for facilitating, regulating, and delivering quality services in water and sanitation to the target communities; (ii) strengthening the community capability to design, cofinance, build, operate, and manage community-based water and sanitation facilities; (iii) improving access to water and sanitation services through construction of adequate facilities-based community demand; and (iv) increasing hygiene awareness through information, education, and communication campaigns.

Table 2 ADB Loan Projects Relevant to Water and Sanitation, 1992–2011

Loan	Project Title	Value \$ (million)	Approved
1158	Water Pollution Control	8	4 Feb 1992
1198	Central Java and D.I. Yogyakarta Urban Development Sector	150	26 Nov 1992
1292	Eastern Islands Urban Development Sector	85	21 Dec 1993
1352	Rural Water Supply and Sanitation Sector	85	2 Feb 1995
1383	Sumatera Urban Development Sector	130	26 Sep 1995
1384	West Java Urban Development Sector	70	26 Sep 1995
1511	Metro Botabek Urban Development Sector	80	19 Dec 1996
1527	Capacity Building Water Supply Enterprises Water Loss Reduction Sector	66	17 Jul 1997
1572	Capacity Building in Urban Infrastructure Management	42	4 Nov 1997
1587	Metropolitan Medan Urban Development	116	8 Dec 1997
2164	Community Water Services and Health	65	7 Apr 2005
2264	Infrastructure Reform Sector Development	27	21 Nov 2006
2501	Integrated Citarum Water Resources Management Investment Program	500	22 Dec 2008
2654	Metropolitan Sanitation Management and Health Project	35	19 Jul 2010
2768	Rural Infrastructure Support to the PNPM Mandiri	100	5 Aug 2011

Note: Multitranches financing facility.

Source: Asian Development Bank.

96. **Infrastructure Reform Sector Development Project.** BAPPENAS is currently executing a major ADB loan-funded activity through an infrastructure project development facility (PDF). The project provides funding to assist the government, both national and subnational, in preparing PPP projects effectively to increase PSP, resulting in improved availability and quality of infrastructure services. The project has three components: (i) establishment of a PDF to fund projects, (ii) technical advisory services to the PDF and capacity building for PPP project promotion and execution, and (iii) procurement and administrative services to the PDF. The project aims for accelerated infrastructure development through large-scale private sector participation and mobilization of additional public sector resources. With regard to water and sanitation, the project currently provides assistance to the provincial government in Bali for a major bulk water supply development along with assistance to subnational governments for several smaller water projects. It is also helping Kota Cimahi develop a centralized wastewater system in an industrial-zoned area, and Kota Bandung with a major waste-to-energy project.

97. **Integrated Citarum Water Resources Management Investment Program.** A major ongoing ADB activity in the water resources and irrigation sector in Indonesia is the Integrated Citarum Water Resources Management Investment Program. Apart from several TA projects, this program is being supported by Multitranches Financing Facility (MFF), Concept No. 0027/0027. Funding totals \$500 million including an Asian Development Fund (ADF) contribution of \$30 million and ordinary capital resources (OCR) provision of \$470 million. The project themes include governance, economic growth, and social development. The long-term goals are sustainable management of water resources for economic and social development. The immediate objective is to improve water availability and improve integrated water resources management in this most strategic river basin that services the key areas of Bandung, West Java, and Jakarta. The major components of the project include (i) planning and program management; (ii) support to river basin management organizations (water council, regulator and operators) and capacity building of sector agencies and subnational governments; (iii) promotion of community and civil society participation; (iv) water provision, system services improvements, water sources development, catchments improvements, and environmental improvements; (v) water services

Table 3 Ongoing ADB-Assisted PPP Initiatives in Water and Sanitation

Project Title	GCA	Cost (\$ million)	Project Scope
Southern Bali Water Supply	Bali Province	\$275	The project will add 1,800 l/sec to the urban systems in SE Bali around Kuta and Denpasar. Water will be taken from the Unda River (1,500 l/sec) and Penet River (300 l/sec), treated, and sold to a provincial government body, which will in turn on-sell the water to local PDAMs – Denpasar (750 l/sec), Badung (950 l/sec), Gianyar (50 l/sec), and Klungkung (50 l/sec).
Maros Water Supply	Maros Regency	\$13	The project will add 200 l/sec to the urban water supply system in Maros (population: 300,000) in South Sulawesi. Water will be drawn from a river and fully treated. Service storage and transmission mains will be included. Limited development of the distribution system will be required and this will be partly included in the PPP.
Krabayakan Spring Water Supply, Malang	Malang Regency	\$22	The project will include spring water intakes (700 l/sec); simple treatment plant; 4,000 m ³ reservoir; water transmission (40 km); and pipe bridges. Drinking water to be delivered to Pasuruan and Sidoarjo Regency areas unable to be serviced economically by the Umbulan project.
Cimahi Water Supply	Cimahi City	\$18	The project will set up a private water supply company in Cimahi. The company will initially develop a small water source (+/-120 l/sec) in the north of the city. It will then proceed to develop the distribution system throughout the city and receive bulk water (700 l/sec) from the regional Bandung system.
Palu Water Supply	Palu City	\$13	The project will add 250 l/sec capacity to the water supply system in Palu (population: 300,000) in Central Sulawesi. Water will be drawn from a river and pass through conventional water treatment. Service storage and transmission mains will be included in the project. Considerable extension and development of the existing distribution system will be required.
Lamongan Water Supply	Lamongan Regency	\$13	The project will add 250 l/sec capacity to the urban water supply system in Lamongan, East Java. The total population in the project service area is 167,000. Water will be drawn from a spring and pass through conventional water treatment. Service storage and development of transmission mains of the distribution system will be required.
Pondok Gede Water Supply	Bekasi City	\$22	The project will set up a private water supply in Pondok Gede, which requires a “green-fields” approach. 300 l/sec of water will be abstracted from the West Tarum Canal. The project will include an intake, WTP, transmission main, service reservoir, and distribution system. The service area of this system will provide 30,000 domestic connections.
South Cimahi Water Pollution Control	Cimahi City	\$52	The project will provide a system of sewers to collect wastewater from both industrial and domestic sources in the area of South Cimahi, and deliver it to a centralized WTP. The collection system will include around 11 km of gravity sewers. The flow to the WTP, which will include both biological and chemical treatment, is estimated at around 500 l/sec.
Bandung Waste to Energy	Bandung City	\$68	This facility with a capacity to process 1,000 tons of wastes per day will provide an economic, environmentally friendly, and sustainable solution to the problem of solid waste disposal. It is expected to provide multiple revenue streams from the wastes by converting them into energy and value-added products such as compost, RDF, and recyclable plastics.

GCA = Government Contracting Agency, l/sec = liter per second, M = million, PPP = public-private partnership, RDF = refuse-derived fuel, WTP = wastewater treatment plant.

Note: GCA is Government Contracting Agency in accordance with Presidential Decree 67/2005.

Source: ADB.

(irrigation modernization, hydropower, water supply, and sanitation); (vi) disaster management; and (vii) development of effective PPP. The expected impact of the investment program is reduced poverty and improved health and living standards of communities within the Citarum River Basin. The investment program outputs are (i) institutions and planning for IWRM; (ii) water resource development and management; (iii) water sharing; (iv) environmental protection; (v) disaster management; (vi) community empowerment; (vii) data, information, and decision support; and (viii) program management.

98. **Metropolitan Sanitation Management and Health Project.** A key ongoing ADB initiative in the sanitation sector is the Metropolitan Sanitation Management and Health Project (MSMHP). This ADB-funded project (Loan No. 2654) began in 2010 and is funded from OCR for \$35 million. Project themes include environmental sustainability, economic growth, and social development. The project will provide improved urban wastewater services in two regional governments: Kota Medan (province of North Sumatra) and Kota Yogyakarta (province of Yogyakarta), including neighboring Kabupaten Sleman and Kabupaten Bantul. City sanitation strategies (CSS) were prepared in 2007 by city sanitation working groups in Medan, Yogyakarta, and Makassar. Each illustrates priority areas in sanitation services and public health, and contains an investment plan listing a number of subprojects with possible budget allocations. The CSS also recommended that a more strategic sanitation planning approach is needed in each city, especially in the area of wastewater management, strategy, and program. The situation in the wastewater sector is considered to be of serious concern. The main issues include (i) low coverage and efficiency of the wastewater sector, and (ii) gross pollution of water resources in urban areas caused by poor management of wastewater and human wastes. The project will address these issues by responding to wastewater discharge needs of the urban population (including low-income households) in both participating cities, where inadequate service delivery continues to negatively affect human development outcomes. The project will provide improved public health and reduced environmental pollution in the participating cities. Project outputs include (i) community mobilization for improved health and hygiene, (ii) infrastructure development for sewage, and (iii) project implementation and capacity development support.

99. In parallel with the MSMHP loan, a TA project has been provided for capacity development (TA No. 7562). This technical assistance is helping ensure long-term sustainability of the investment proposed by the loan. The TA project responds to the need to strengthen institutions and capacity of subnational governments, utilities, and communities in improved environmental and sanitation management, increased community awareness, and better hygiene campaigns. It will help strengthen institutional capacity in Medan, Yogyakarta, and Makassar in city sanitation strategy development, management, operation and maintenance, and financial skills. TA outputs include: (i) improved delivery of community-based sanitation initiatives, (ii) improved operation and management of sewerage infrastructure, and (iii) strengthened institutions in environmental sanitation management.

100. **Rural Infrastructure Support to the PNPM Mandiri Project.** ADB's second Rural Infrastructure Support to the PNPM Mandiri Project has been ongoing since 2009. The project is supported by ADB Loan No. 2575 from OCR of \$84 million. The project themes are social development, governance, and capacity development. The project forms part of the Government of Indonesia's ongoing flagship poverty reduction program—the National Program for Community Empowerment (PNPM Mandiri). ADB previously supported the PNPM Mandiri through the first Rural Infrastructure Support to PNPM Mandiri Project, which included community facilitation and mobilization, and rural infrastructure support in the four provinces of Jambi, Lampung, Riau, and South Sumatra. The project follows a community-driven development approach and will empower communities; strengthen their capacity to prioritize, design, implement, and monitor community-based projects; and provide block grants to finance community-identified needs and priorities. Project impacts are reduced poverty and improved local governance in the project areas. The expected outcome is improved access to service delivery and basic rural infrastructure for the poor, near poor, and women in the project communities. The project operates in four provinces and supports villages located in 36 districts and 215 subdistricts. The project will have the following

outputs: (i) strengthened capacity for community planning and development, (ii) improved village services and infrastructure through community development grants, and (iii) improved capacity for project implementation and monitoring and evaluation.

101. **Water Operators' Partnership.** Work is ongoing for a 24-month TA project (TA No. 7739) entitled Water Operators' Partnership (WOP), which provides technical and financial assistance, through a demand-driven approach, to selected water and wastewater utilities wanting to improve their services. The MPW is the executing agency for this TA project. It supports the country strategy by providing support for initiatives in the water supply and sanitation sector and is consistent with the strategic areas of engagement primarily relating to: (i) improved infrastructure services, with increased public and private sector investment; and (ii) accelerated MDG achievement through increased coverage and better water supply and sanitation services. The TA will provide a positive change in coverage, service quality, and operational capacity of water utilities for the benefit of their customers and the environment. The TA scope consists of (i) eight international twinning partnerships, of which five focus on reducing NRW, and three focus on wastewater management; (ii) two domestic twinning partnerships focusing on NRW management; (iii) energy efficiency audits and energy saving investment proposals for five PDAMs; (iv) capacity building needs assessment of PDAMs and proposal for establishing a training institute for water supply and sanitation professionals tentatively called Indonesia Water Supply and Sanitation Institute (IWSSI); and (v) other capacity building initiatives such as technical training and workshops on priority topics. The executing agency has requested ADB to expand the WOP program to train additional PDAMs in NRW management so that they can become eligible for a NRW grant currently negotiated with AusAID's IndII program. The executing agency has also expressed interest in exploring opportunities for a follow-up loan to support further scaling-up of NRW initiatives by PDAMs graduating from the NRW grant program. The WOP is providing a significant source of new opportunities for ADB to assist in the water sector.

102. **Strengthening Sanitation Planning and Efficiency Improvement.** TA No. 7843: Strengthening Sanitation Planning and Efficiency Improvement will provide assistance in the sanitation sector under the themes of social development and environmental sustainability. The project also forms part of the Government of Indonesia's ongoing flagship poverty reduction program, the National Program for Community Empowerment. PNPM Mandiri was launched in 2006 with the commitment to reduce poverty by adopting a community-driven development approach and providing direct support to poor rural and urban communities to improve essential social services and basic infrastructure. In line with the overall objective of the PNPM Mandiri Program, the expected outcome of the project is improved access to service delivery and healthy livelihoods for the poor, near poor, and women in the project communities. The project will have three outputs: (i) strengthened capacity for community planning and development, (ii) improved rural basic infrastructure through community development grants, and (iii) improved sanitation services through neighborhood development grants. The project will be implemented in a geographic slice of the PNPM Mandiri Program to include about 600 rural communities in four provinces; and 1,350 poor urban neighborhoods in 34 cities. The project outcome is improved access to service delivery and healthy livelihoods for the poor, near poor, and women in the project communities. Outputs include (i) strengthened capacity for community planning and development, (ii) improved rural basic infrastructure through community development grants, and (iii) improved sanitation services through neighborhood development grants. The project is located in the provinces of South Sumatra, Lampung, Riau, Jambi, Central Java, Daerah Istimewa Yogyakarta, East Java, North Sulawesi, and South Sulawesi. The project applies the community-driven development (CDD) planning and implementation mechanism. Community members will deeply participate in planning, implementation, construction, and operation and maintenance of project facilities.

103. **Institutional Strengthening for the Water Resources Sector.** This is currently being provided under TA No. 7768. The assistance will provide more efficient management and development of the water resources sector. The outcome will be a strengthened institutional framework for the water

resources sector. Outputs include: (i) policy and strategic planning documents for key water sector agencies in Indonesia; (ii) guidelines and implementing rules and regulations for water sector agencies in Indonesia; (iii) workshops, conferences, seminars, and other dissemination activities of TA findings and Indonesian and international best practices for the water resources sector; (iv) knowledge management projects for the water resources sector based on TA findings; and (v) targeted capacity development activities for key water sector officials involved in TA activities.

104. **Water Resources and River Basin Management.** A further ongoing TA project is Water Resources and River Basin Management (TA No. 7849). This project will address capacity development, social development, and environmental sustainability and governance. It will build on previous and ongoing ADB and government capacity building initiatives and support for decentralized water resources management in the selected river basins. It will also complement ongoing and proposed ADB loans in the water resources sector to selectively implement activities designed as part of the community development action plans. The impact of the proposed project will be improved governance and water resources management approach in the selected river basins in Aceh and North Sulawesi. The project outcome will be improved implementation of an integrated water resources management approach in selected river basins. The project outputs include (i) a national strategy approved for capacity building on water resources management, (ii) increased capacity of water resources agencies (WRAs) to deliver on their responsibilities as mandated by the water law and regulations, (iii) river basin frameworks and implementation plans prepared for selected provinces, (iv) strengthened river basin councils with nongovernment members, and (v) pilot implementation of six capacity development action plans.

105. **Water Supply and Sanitation Sector Development Project.** ADB is currently implementing the Water Supply and Sanitation Sector Development Project in the form of a TA project (Project No. 43304-02). This project will support BAPPENAS in reviewing and assessing the water supply and sanitation sector, defining key issues and bottlenecks and how to overcome these, developing a sector road map, and contributing to the development of a stronger project pipeline for urban and rural water supply and sanitation projects—all of which will help achieve MDG targets. The sector road map will also discuss potential social and environmental safeguards, along with gender strategy and education, considering the important role of women in ensuring household hygiene and sanitation. The work contributes to improved public health through well-planned and sustainable provision of safe water supply and sanitation in Indonesia. The expected outcome will be for BAPPENAS and PDAMs to improve sector planning in the provision of water supply and sanitation services. Specific outputs include: (i) water supply and sanitation strategy and road map, (ii) project pipeline and portfolio, (iii) stakeholder workshops and/or seminars for knowledge sharing and experience and to promote the adoption of best practices around the region, (iv) two knowledge products pertinent to water supply and sanitation issues in Indonesia (one urban and one rural), and (v) enhanced knowledge dissemination through engagement with the ADB Institute.

C. Other Development Partner Support

106. Many development partners are active in the water and sanitation sector in Indonesia, and there is a reasonable degree of coordination, and attempts by agencies to look for funding gaps. Aside from ADB, the World Bank, AusAID, USAID, JICA, GTZ, UNICEF, PLAN International, CIDA, and CARE all contribute to the improvement in rural water and sanitation. ADB and the World Bank have some urban water and sanitation infrastructure programs. However, recently the majority of support to urban water and sanitation has come from AusAID, the World Bank, USAID, JICA, and the Netherlands. Most bilateral donors channel their support through self-managed bilateral projects. Multilateral funds flow to projects financed through the national government. Since the 1998/99 financial crisis multilateral lenders have had considerable trouble in getting approval from the government and signing new loans for the water and sanitation sector.

107. **Indonesia Infrastructure Initiative (IndII).** This is a project funded by the Government of Australia and administered through AusAID, which is most active in the water and sanitation sector. The initial 3-year phase was completed successfully on 30 June 2011. The second phase of IndII is for the next 4 years. Its goal is to promote economic growth by working with the Government of Indonesia to enhance infrastructure policy, planning, and investment. IndII focuses primarily on the water and sanitation sector and also on the transport sector, as well as a number of cross-sectoral policy issues. All of IndII's activities are designed to build capacity at both national and subnational levels. IndII also promotes partnerships between the government and the private sector.

108. IndII's work in water and sanitation is aimed at providing solid support for the Water and Sanitation Hibah program—the government's main mechanism for increasing access to piped water and sewerage for poor urban households. The program was developed by the World Bank as a water and sanitation program initiative piloted previously in Surabaya and Jakarta. Water Hibah represented AusAID's first entry into the urban water sector, which provides support for decentralization and regional autonomy. The IndII urban water component has three objectives: (i) expand piped water supply coverage, (ii) improve financial sustainability of PDAMs, and (iii) assist the government to pilot a wider water *hibah* program. Participation in the IndII program was voluntary and open to subnational governments who were prepared to invest in their PDAMs, had sufficient production capacity, qualified for loans under Presidential Decree 29/2009, and had a sound distribution expansion program in place.

109. The IndII urban sanitation program was based on providing general support for the MPW 2008 National Policy for Management of Wastewater Systems. The program provides more specific support for the government's Sanitation Road Map, 2010–2014; which was prepared by BAPPENAS, MPW, and MOHA. The program includes: (i) sanitation *hibah* grants to subnational governments of Banjarmasin and Surakarta for new services for up to 10,000 households through a mix of sewerage and communal on-site sanitation, and (ii) support for the preparation of wastewater investment plans for five cities for implementation by the government.

110. The sanitation *hibah* grants followed the same implementation procedure as the Water Hibah. Phase 1 of IndII provided some 78,000 piped water connections in 35 subnational government locations plus some 5,000 new sewerage connections for households mainly in Banjarmasin and Surakarta. Sanitation Infrastructure Enhancement Grants were developed when problems were experienced with the sanitation *hibah* approach. These are performance based and not output based. Grants were paid into the subnational government budget for implementation, and were based on the subnational government sanitation program for 2010. They were adjusted for fiscal capacity, relative budget weight, and acceptable completion. Grants were applied in 2011 for sanitation infrastructure only and subnational governments were required to have a matching budget: 30%, 40%, or 50% depending on fiscal capacity: low, medium, or high.

111. The World Bank has also been particularly active in the water and sanitation sector with a focus on community-based approaches to sector problems. Some key initiatives include the Water Supply and Sanitation Policy Formulation and Action Planning Project (WASPOLA) and Water and Sanitation for Low-Income Communities (WSLIC). Beginning in 1998, the government has organized a program of policy reforms in water supply and environmental sanitation through the WASPOLA in an effort to build a sustainable water supply and sanitation development paradigm. The program was facilitated by the Water and Sanitation Program for East Asia and the Pacific (WSP-EAP) on behalf of the World Bank, with funding support from the Government of Australia. The project aims to improve access, especially of the poor, to drinking water and better sanitation, and contribute to economic improvement. The target is to strengthen the capacity of the Government of Indonesia in directing the construction of water supply and sanitation sector through the facilitation of flexible services in the form of policy and program development, policy implementation, and management of water supply and sanitation development. The project is ongoing.

112. The objectives of the current phase of the WSLIC project are to improve the health status, productivity, and quality of life in underserved rural villages in Indonesia. The components will assist communities to organize and obtain technical capacity to plan, manage, and sustain water programs, sanitation, and community health through service contracts with local firms, nongovernment organizations, and academic institutions. Participatory methods at the community level will be linked with hygiene and sanitation promotion, in addition to developing and producing information and education materials, as well as public information activities; improve hygiene, health behavior, and community management of health services related to waterborne diseases through service contracts, as well as to provide safe options for waste disposal as needed by the communities. Subcomponents include a school health and hygiene program, and a community health program; and provide clean water to the communities through TA service contracts to identify technology options and adequate levels of service. Service contracts will also select and plan the construction of health infrastructure according to the communities' needs. Funding and TA projects will support infrastructure construction and operation and maintenance.

113. The World Bank is currently developing loans for water supply which involve three PDAMs at Kota Bogor, Kabupaten Muara Enim, and Kabupaten Kapuas. Approval of the subnational government parliament, which included agreeing to an intercept mechanism, has proved to be quite dependent upon interrelationships between PDAM and the subnational government parliament. Grant funding for connections to support these on-loans is expected. The loan can be increased to accommodate further PDAMs. The World Bank considers that 100–110 PDAMs are now creditworthy, which include the restructured ones.

114. The World Bank is also looking at developing loan funding assistance for regional disposal sites for solid waste. The approach will be comprehensive and include regional transfer stations and transportation systems. The subnational government will deliver waste to the major transfer facility, while the regional transportation and disposal phases will be operated by a separate provincial level unit.

115. The USAID-financed IUWASH project will support the government's efforts to achieve Indonesia's MDG targets for safe water and sanitation. The project will address the challenges that water utilities face to ensure water quality and availability in the context of climate change and increasing demand for water. Expected results include: (i) a 20% reduction of per unit water cost paid by the poor in targeted communities; (ii) increased access to safe water for 2 million people and an improved sanitation for 200,000 people; and (iii) mainstreamed models for providing water and sanitation to poor populations in urban areas. To achieve these results, activities under the following components will be implemented: (i) demand for safe drinking water access and improved sanitation increased among urban communities and households with currently unimproved access, (ii) the capacity to sustainably supply this mobilized demand with improved water and sanitation services built among the public and private sector institutions best placed to provide these services in urban areas, and (iii) a governance and financial enabling environment created that supports equitable access to safe drinking water and improved sanitation in urban areas.

116. JICA provides assistance to the water and sanitation sector through its Urban Environment Improvement Program and Climate Change Support Program. Relevant ongoing projects include (i) capacity development of 3Rs and the domestic waste management system; (ii) regional solid waste management for Mamminasata, South Sulawesi; (iii) project for capacity development for the wastewater sector through reviewing the wastewater management master plan in DKI Jakarta; (iv) Denpasar sewerage development project; (v) training for the urban environment improvement program; (vi) the PDAM asset management support project; and (vii) preparatory survey for IKK water supply system development sector loan project. The IKK project did not proceed to the loan stage due to a change in JICA strategy for assisting Indonesia in the water sector.

117. JICA is constructing extensions to the sewerage system in Denpasar. The original phase of the project (which served Denpasar, Sanur, Legian, and Seminyak) extended from 1992 to 2007 with long delays due to social problems. The second Denpasar sewerage project, which focuses on Kuta, began in 2009 and will extend beyond 2016 with a total project cost estimated at \$144 million.

118. JICA focuses on developing PPP projects that include government fiscal support provided through loan funding. TA projects are being provided in many areas, including formulation of new sewerage and drainage laws.

119. **ADB experience and self evaluation.** Due to the limited number of water and sanitation projects implemented by ADB in Indonesia over the past 10 to 15 years, it is difficult to draw on recent experience. However, of particular relevance in drawing lessons learned is the Rural Water Supply and Sanitation Sector project (ADB Loan No. 1352). The evaluation of this project highlighted several lessons, e.g., the sector modality should be used with caution for projects where a new approach to project implementation is being adopted.¹⁹ The provision of water supply and sanitation services to remote rural communities presents unique technical, implementation, and operational challenges for which appropriate actions need to be made in advance of construction. ADB should not attempt to implement over-complex technical solutions in small communities that are beyond the capability of the organizational structure in place. In future water supply and sanitation projects, ADB should not combine target groups that require different operational modalities. Projects should be either community-based or water authority-based to avoid the tendency to focus on the easier-to-implement, more profitable larger schemes. Standard designs are acceptable in certain circumstances but should not be overused if schemes are to remain both appropriate and financially efficient.

120. Proper assessment of the implementation capacity of the government at all levels—national, provincial, and district—is required before embarking on projects of a large magnitude. Major changes in the project context, such as those stemming from decentralization, would normally need to lead to adjustments in implementation arrangements. Particular care is needed for projects requiring inputs from different agencies. Appropriate task sequencing is required, together with project management arrangements that allow full and proper involvement of all stakeholders. Full regard must be given to these if ADB proceeds with planned renewed intervention in IKK water supplies, in particular.

121. Lessons from urban communal sanitation projects in Indonesia show that (i) communal systems can effectively reduce sanitary pollution in densely populated areas if communities are involved from the beginning through community mobilization, training, and related activities; (ii) once community members understand the importance and benefits for themselves, they often make land available, either above or below ground or in combination with other facilities; (iii) involving women in planning ensures the suitability and sustainability of facilities; (iv) water and electricity must be supplied; and (v) users' charges must be collected to cover operation and maintenance costs. ADB's interventions in the water supply and sanitation sector will support women's participation and leadership in local decision-making processes related to community-based water and sanitation investment and management; meeting women's practical needs related to location and technology; and relieving women's work burden as a result of inadequate access to water and sanitation facilities. Targets for women's recruitment in community implementation teams to formulate local sanitation infrastructure development and investment plans, and developing women's skills in project implementation, will ensure women's empowerment in the community-driven urban sanitation and rural infrastructure projects. Flexible payment facilities and priority access to potential funds for payment of connection fees; quotas for women in water user groups; training on maintenance and management of public faucets as well as health and hygiene awareness will increase women's access to safe water supply and improved sanitation.

¹⁹ ADB. 2004. *Project Performance Audit Report on the Rural Water Supply and Sanitation Sector Project (Loan 1352-INO) in Indonesia*.

122. The recent evaluation of the Neighborhood Upgrading and Shelter Sector Project (NUSSP) produced some important insights for neighborhood upgrading interventions to be considered for future project designs.²⁰ Involving beneficiaries at all stages of planning and implementation of upgrading activities, and promoting inclusive community empowerment are key to ensuring pro-poor investments and sustainability, including (i) community control of decision making over resources and investment choices; (ii) simple and transparent fund flow arrangements with direct transfers to community accounts; (iii) efficient facilitation support, including social facilitators to ensure full community participation, and engineering facilitators to oversee technical quality of civil works; (iv) strong accountability procedures, such as public disclosure of budgets and contracts; (v) community management of funds and procurement matters; and (vi) training for communities in establishing effective mechanisms to operate and maintain new infrastructure. Qualified and experienced community facilitators and sufficient time for community empowerment activities are important to ensure that community members are sufficiently involved in prioritizing their needs, developing investment proposals, and taking decisions.

123. Under the decentralization law, the national government no longer exercises administrative control over regional governments. Likewise, the provincial government does not have administrative control over district governments. Subsequently, local coordinating offices are under the administrative supervision of local governments, thus establishing appropriate city management and monitoring arrangements is essential to exercise administrative and technical supervision and provide support to community neighborhoods.

124. Covering a vast number of cities spread entirely over the country may not be an effective way of maximizing the use of resources. A focused geographic approach may be expected to provide flexibility for designing better social and economic benefits for the beneficiaries. Investments will be more effective in generating development impacts, and projects will be more efficient in their implementation.

D. ADB's Sector Forward Strategy

125. **Strategy 2020.** Under its long-term strategy, ADB is transforming itself to meet the challenges, while remaining dedicated to reducing poverty—its overarching goal since 1999.²¹ ADB's corporate vision under Strategy 2020 continues to be “An Asia and Pacific Free of Poverty,” and its mission is to help its developing member countries (DMCs) reduce poverty and improve living conditions and quality of life. ADB is pursuing its vision and mission by focusing on three complementary strategic agendas: inclusive growth, environmentally sustainable growth, and regional integration. To better mobilize resources—including the region's savings and inbound capital flows—and to maximize returns on its unique regional experience and comparative strengths within the evolving aid architecture, ADB is focusing on five drivers of change: (i) private sector development and private sector operations, (ii) good governance and capacity development, (iii) gender equity, (iv) knowledge solutions, and (v) partnerships.

126. ADB has also refocused its operations into five core specializations that best support its agenda, reflect DMCs' needs and ADB's comparative strengths, and complement efforts by development partners: (i) infrastructure; (ii) environment, including climate change; (iii) regional cooperation and integration; (iv) financial sector development; and (v) education. In other areas, ADB will continue operations only selectively in close partnership with other agencies.

²⁰ ADB. 2011. *Indonesia: Neighborhood Upgrading and Shelter Sector Project Completion Report*. Manila.

²¹ ADB. 2008. *Strategy 2020: The Long-Term Strategic Framework of the Asian Development Bank's 2008–2010*. Manila.

127. Operational and institutional goals under Strategy 2020, include ADB's plan to: (i) have 80% of its operations in its new core operational areas by 2012; (ii) scale up private sector development and private sector operations in all operational areas, reaching 50% of annual operations by 2020; (iii) scale up support for environmentally sustainable development, including projects to reduce carbon dioxide emissions and to address climate change; and (iv) increase its public and private sector operations progressively at the regional and subregional levels to at least 30% of total activities by 2020.

128. **Indonesia country strategy program.** The Country Partnership Strategy 2012–2014 (CSP) identified five areas of engagement to help achieve the government's pro-poor growth and social development objectives: (i) improved infrastructure, (ii) a more robust financial sector, (iii) more effective decentralized government, (iv) quicker achievement of the MDGs, and (v) better management of the environment and natural resources.²² Consultations with the government during the 2010 country programming mission confirmed that ADB's strategic focus is supportive of the objectives of the National Medium-Term Development Plan (RPJM), 2010–2014.²³

129. ADB has allocated indicative ordinary OCR for Indonesia's public sector lending operations of \$2.64 billion for 2011–2013, or \$880 million per year. This allocation continues to be below the government's indicative demand. The TA program for 2011–2013 amounts to \$18.6 million. Every effort will be made to mobilize cofinancing on concessionary terms, especially in clean energy, power transmission and distribution, transport, water supply and sanitation, and education. ADB's private sector operations will selectively support the development and financing of important infrastructure projects, mainly in energy but also in transport, urban water supply, and sanitation.

130. For project interventions, the core areas of ADB's support includes, among other items, water resource management, infrastructure, including water supply and sanitation, and community-driven development for targeted poverty reduction. The scope for lending products includes the National Program for Community Empowerment (PNPM) Mandiri project and the MSMHP. The PNPM project in 2012 was expanded to include an urban sanitation component in addition to the rural infrastructure support component currently aided by ADB. A new project loan for metropolitan sanitation management investment has been programmed for 2013 in order to scale up ADB's support in this area. Nonlending products and services will include a PPTA for support to the Metropolitan Sewerage Program.

131. The move toward a balance between projects and policy-based loans in ADB's Indonesia portfolio will continue. The indicative level of program loans will be kept at about \$400 million per year, based on an indicative overall resource envelope of \$880 million per year, to support the government's reform agenda and its budget financing requirements.

132. Given the limited resource envelope and the effort to strike a balance between program loans and projects, ADB will be selective in its policy-based operations, focusing on government priorities, areas where ADB has a comparative advantage, and areas where there is synergy with ADB's project investments in Indonesia. The final delineation of ADB interventions will be based firmly on a rigorous review of demand-side options.

133. **Priorities and expected impacts of operations.** In 2011, ADB's portfolio in water and sanitation included the following interventions, which proceeded into the initial years of the sector assessment and road map: (i) Community Water Services and Health Project, (ii) Infrastructure Reform Sector Development Project, (iii) Integrated Citarum Water Resources Management Investment Program (ICWRMIP), (iv) Metropolitan Sanitation Management and Health Project, (v) rural

²² ADB. 2012. *Indonesia Country Partnership Strategy 2012–2014*. Manila.

²³ ADB's Indonesia Country Partnership Strategy, 2015–2019 will be aligned with Indonesia's Medium-Term Development Plan, 2015–2019 currently under preparation.

infrastructure support to the PNPM Mandiri Project, (vi) supporting Water Operators' Partnerships, (vii) strengthening sanitation planning and efficiency improvement, (viii) institutional strengthening for the water resources sector, (ix) water resources and river basin management, and (x) Water Supply and Sanitation Sector Development Project.²⁴

134. Based on an analysis of the data and information provided above, it is proposed that the priority area for ADB intervention in the short term should be in the sanitation subsector and, in particular, in providing funding for the government's sewerage program. In the medium to long term, ADB should assist with the regional water supply program. Both these interventions should provide major support for improvements in the water and sanitation sector.

135. From a cross-sector coordination viewpoint, the ICWRMIP is a major ongoing ADB activity in this sector. Apart from several TA projects, this program is being supported by Multitranches Financing Facility No. 0027, with total funding of \$500 million. The long-term goals of the program are sustainable management of water resources for economic and social development in the Citarum River Basin. The immediate objective is to improve water availability and improve integrated water resources management in this most strategic river basin, which services the key areas of Bandung, West Java, and Jakarta. Any projected investment in water supply, sewerage, and solid waste disposal in these areas should be coordinated with the ICWRM. Similarly, ICWRM project investments in bulk water developments need to be coordinated with ongoing IRSDP activities. It may be expected that the ICWRM can provide lessons that could be applied in other basins and across sectors. These, in turn, might focus on improved institutional coordination and applied across the water and sanitation sector.

136. ADB is currently considering several projects that are relevant to the water and sanitation sector to be designed in full unison and providing sustainable support to the government's road maps in both water supply and sanitation. These interventions are expected to have a high impact on the water and sanitation sector. Experience from the previous period of expansion before the 1998/99 Asian financial crisis will be invaluable. The primary lesson learned is that interventions that interface with local communities must involve these communities from the outset. Since the focus of ADB interventions is new sewerage systems, these must be designed to service existing households with early consultation with householders included in the design phase of the work. In addition, many systems will require new utility management units most likely to be set up as Public Service Agencies, and knowledge products in support of infrastructure lending will be important.

137. ADB interventions in the water supply and sanitation sector will support women's participation and leadership in local decision-making process related to community-based water and sanitation investment and management; meeting women's practical needs related to location and technology; and relieving women's work burden as a result of inadequate access to water and sanitation facilities. Targets for women's recruitment in community implementation teams to formulate local sanitation infrastructure development and investment plans, and developing women's skills in project implementation will ensure women's empowerment in the community-driven urban sanitation and rural infrastructure projects. Flexible payment facilities and priority access to potential funds for payment of connection fees; quotas for women in water user groups; training on maintenance and management of public faucets as well as health and hygiene awareness will increase women's access to safe water supply and improved sanitation.

138. ADB's Metropolitan Sanitation Management and Health Project (MSMHP), which began in 2010, will provide improved urban wastewater services in two cities: Medan and Yogyakarta. MSMHP relates to the expansion of the existing waterborne sewerage systems with 28,000 new connections. A need has been identified to provide support for this project through a \$2.0 million capacity development technical assistance, which will provide guidance and capacity building to assist the institutional setup

²⁴ Details are given in section IIB.

for utilities to manage the new sewerage systems. It will also help develop the appropriate tariff systems and community support initiatives.

139. To support the government's road map for sanitation, the MSMHP is proposed to be succeeded by further sewerage system developments. ADB is providing consultants to prepare a project that will develop several new sewerage systems. A sewerage loan project, the Metropolitan Sanitation Management Improvement Project (MSMIP with a funding of \$120 million) will begin in 2013 to service new cities in the government's sewerage program. The objectives of the project preparatory technical assistance are to (i) appraise wastewater master plans for the MSMIP to a suitable level for consideration by ADB for funding; (ii) review existing city sanitation strategies and feasibility studies for up to 11 large cities; (iii) prepare implementation support and institutional development programs addressing sector reform, governance, and public awareness; and (iv) design a project preparation facility to prepare subsequent loan funding support. The proposed project will support government objectives as set down in the 2010–2014 road map, not only for providing systems in new large cities but also in expanding existing systems to achieve the targeted 20% coverage. The locations being considered for the initial phase are Bandar Lampung, Cimahi, Bogor, Balikpapan, Pekanbaru, Palembang, Bandung, Makassar, Tangerang, Medan, and Yogyakarta. The total cost of developing five new large city sewerage systems with 20% population coverage in each location is estimated to be over \$400 million.

140. **Water Utilities Reform (\$1.0 million).** To support the government's major expansion program in piped water supply over the next 5 years, ADB proposes a TA project to help with the reform process for water utilities. The primary objective of the project will be strengthening governance in water utility management. Subnational governments need to start investing in their service utilities and help financial management by raising tariffs in line with government policies. The project will support improvements in the management of piped supply systems through (i) fostering increased local investment spending to improve access to improved drinking water that is focused on services for the urban population, especially the poor; (ii) preparing business plans, corporatization, asset management, and capacity building of human resources; and (iii) optimizing the utilization of financial resources.

141. **Neighborhood Upgrading and Shelter Sector Project II (\$116 million).** The first Neighborhood Upgrading and Shelter Sector Project, which was completed in May 2011, was formulated to support the government's urban poverty reduction strategy by creating sustainable mechanisms to (i) provide resources to local government, in partnership with communities, for site development and upgrading of basic infrastructure in poor urban neighborhoods; (ii) expand access of poor urban informal settlers to microcredit for shelter finance; and (iii) facilitate participatory community-driven planning by strengthening the role and capacity of communities and governments to meet their responsibilities. The second phase has now entered the final stages of the project design. The government requires that the second stage proposals should be further reviewed for the handling of slums, as well as the synchronization and integration of programs. Sustainability is also under review. The application of a regional-based approach while promoting community empowerment and improvement of the quality of housing is also under discussion. The project is expected to include a component to expand regional-scale infrastructure. Infrastructure will be built based on the needs of the area according to the scale of the recommendations of the local Settlement Area Development Priority Plan. Requirements will be identified based on a participatory planning approach.

142. **IKK Water Supply Project (\$50 million).** To support the government program to add 8.5 million new connections to the piped water supply systems in the period to 2015, MPW has requested further assistance with the development of IKK water supply systems. Current IKK facilities generally are evenly spread among deep well-based, spring-based, and river water-based supply systems. The spring-based systems have proved more sustainable due to lower operation and maintenance costs, allowing higher levels of cost recovery. The demand for the service exceeds the system capacity in most areas. Many

systems are falling into disrepair due to (i) lack of proper detailed engineering design relevant to each site, and (ii) inappropriate materials used in construction. The systems generally have small capacity at about 10 l/sec in many locations. For IKK projects, MPW executes the upstream part of the system including the intake, treatment plant, and storage reservoir. There is no allocation for the distribution system that must be funded by the subnational government, although some assistance can be provided through the Water *Hibah* program. The new policy for acceleration of infrastructure development calls for MPW to take action on the connections to increase coverage. MPW has built 1,700 of these systems. It is proposed that ADB will support the government's policy by providing a project preparatory TA in 2012 at an estimated cost of \$1.0 million. The TA is also proposed to address PDAM policy reform including consideration to management of IKK systems. A subsequent project loan of about \$50 million is envisaged for 2013.

143. **Solid Waste Management Improvement Project (\$80 million).** A TA project (\$1.0 million) is scheduled for the solid waste subsector for 2013. The work will focus on the continuing problems with solid waste treatment and disposal. MPW is keen to introduce new technology, particularly anaerobic digestion of the organic fraction of the waste stream. Indonesia's wastes have a much higher organic fraction than western solid wastes, and MPW wishes to make use of this local characteristic to advantage. The process produces methane gas, which will be used to generate power for the electricity grid. Additionally, project activities that will support cessation of open dumping operations are envisaged by MPW. The project is expected to provide a project design for a subsequent loan facility of about \$80 million.

144. **Central Java Regional Bulk Water Supply Project (\$260 million).** A project preparatory TA is proposed in support of the central government's planned intervention in the provision of bulk water supply systems on a regional basis (SPAM Regional). ADB proposes a TA project (\$1.5 million), which will provide a feasibility study to develop the MPW's outline plan for Central Java province. The MPW proposal includes nine regional systems that have been identified and preliminary estimates of cost made. Each regional system serves from two to five *kabupaten* (Regency) or *kota* (city). The facilities will be constructed by MPW and then managed by provincial water bodies, either specially constituted public enterprises or public service agencies (BLU-D). The regional works in the Central Java proposal, which was presented to the province by MPW in November 2011, will provide 9,550 l/sec at a cost of \$515 million. The financing plans for this work are in the process of being formulated and are expected to include ODA loan funds. Those systems which have clear water abstraction rights will be developed first. The TA is expected to provide a project design for a subsequent loan facility which is in the order of \$260 million.

145. **Risks and Assumptions.** Indonesia's water supply and sanitation policies and supporting road maps are clear but ambitious. Transforming the water sector from its current state to one where services are provided by autonomous utilities operating on business principles will be a major task that is likely to take much longer than currently planned. Over the past decade much has been achieved in governance in the water sector; however, problems still remain. The crippling high levels of NRW must be reduced if PDAMs are to advance from their current status. Subnational governments need to start investing in their service utilities and help financial management by raising tariffs in line with government policies. Once income streams increase, these funds must be preserved for the implementation of proper asset management systems.

146. There is also a risk that climate change will impose an unexpected burden on the water and sanitation sector. The periodic distribution of rainfall that is already unfavorable may worsen, causing a greater strain on water resources.

147. In the past 20 years, government plans have been framed around substantial inputs into the water sector from the private sector. Private sector participation has been minimal. Although much has been done to improve the climate for PPPs, the government needs to take a realistic approach in formulating future financing plans for servicing the water and sanitation infrastructure backlog.

IV

Sector Road Map and Results Framework

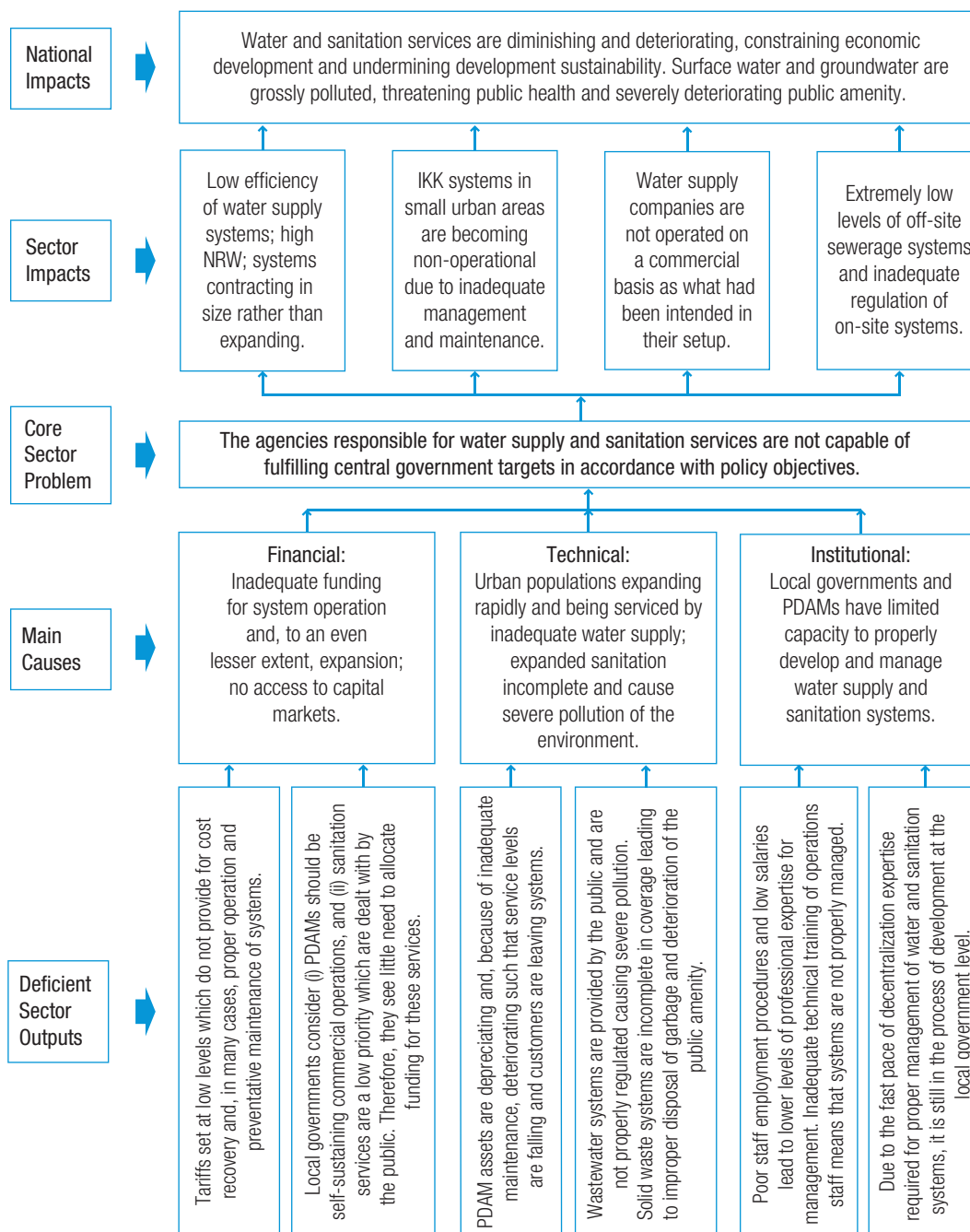
Country Sector Outcomes		Country Sector Outputs		ADB Sector Inputs	
Sector Outcomes with ADB Contribution	Outcome Indicators and Targets with Baselines	Sector Outputs with ADB Contributions	Output Indicators with Incremental Targets	Planned and Ongoing ADB Interventions	Main Outputs Expected from ADB Interventions
Access to water supply and sanitation provided, improved, and maintained	<p>Proportion of population with sustainable access to an improved water source increased from 48% in 2009 to 69% by 2015</p> <p>Elimination of open defecation by 2015</p> <p>Proportion of population with sustainable access to basic sanitation increased from 51% in 2009 to 62% by 2015</p> <p>Elimination of open dumping in solid waste landfills by 2014</p>	<p>Improved provision and maintenance of urban and rural water supply and sanitation</p> <p>Improved urban solid waste treatment and disposal</p>	<p>Increase the number of cities with sewerage systems from 11 in 2010 to 16 in 2014, and expand coverage in all sewerage cities to 20% of the urban populations</p> <p>Increase the number of cities with communal sanitation facilities from 100 cities in 2010 to 330 cities by 2014</p> <p>Increase in urban and rural populations with piped water supply by increasing the number of connections from 8 million in 2011 to 16.5 million in 2015</p> <p>Increase the number of cities with carbon reduction activities for solid waste treatment and disposal from 7 cities in 2011 to 15 cities in 2015</p>	<p>(i) Planned Key Activity Water supply and sanitation systems</p> <p>(ii) Pipeline Projects CDTA for MSMHP institutional setup, tariffs, and community support (\$2.0 million) PPTA (\$1.0 million) leading to MSMHP II (\$120 million) CDTA for Water Utilities Sector Reform Program (\$1.5 million) PPTA for IKK Water Supply (\$1.2 million) leading to IKK Water Supply Project (\$50 million) CDTA for strengthening PDAMs' performance (\$1.5 million) Loan RIS–PNPM (\$100 million) Loan NUSSP II (\$116 million)</p> <p>(iii) Ongoing Projects CDTA supporting SWOPs (\$1.25 million) CDTA for WATSAN sector (\$0.5 million) Loan MSMHP I (\$35 million)</p>	<p>(i) Planned Key Activity Urban sanitation improved in up to 12 cities Governance in water utilities strengthened</p> <p>(ii) Pipeline Projects About 500,000 households gain access to improved sanitation Water supply systems constructed in 100 IKKs Reforms for water utilities lead to improved performance and lending capacity</p> <p>(iii) Ongoing Projects Up to 10 PDAMs supported in implementing reform, improving governance, and expanding customer base Provision of improved sanitation for up to 250,000 people in urban and rural areas Increase in the number of women participating in urban sanitation committees 30% of staff trained in development, implementation, and O&M of wastewater works are women</p>

ADB = Asian Development Bank, CDTA = capacity development technical assistance, MSMHP = Metropolitan Sanitation Management and Health Project, NUSSP = Neighborhood Upgrading and Shelter Sector Project, O&M = operation and maintenance, PDAM = subnational government water supply enterprise, PPTA = project preparatory technical assistance, RIS–PNPM = Rural Infrastructure Support–PNPM Mandiri, SWOPs = Supporting Water Operators' Partnerships, WATSAN = water and sanitation.

Source: ADB.

Appendix 1

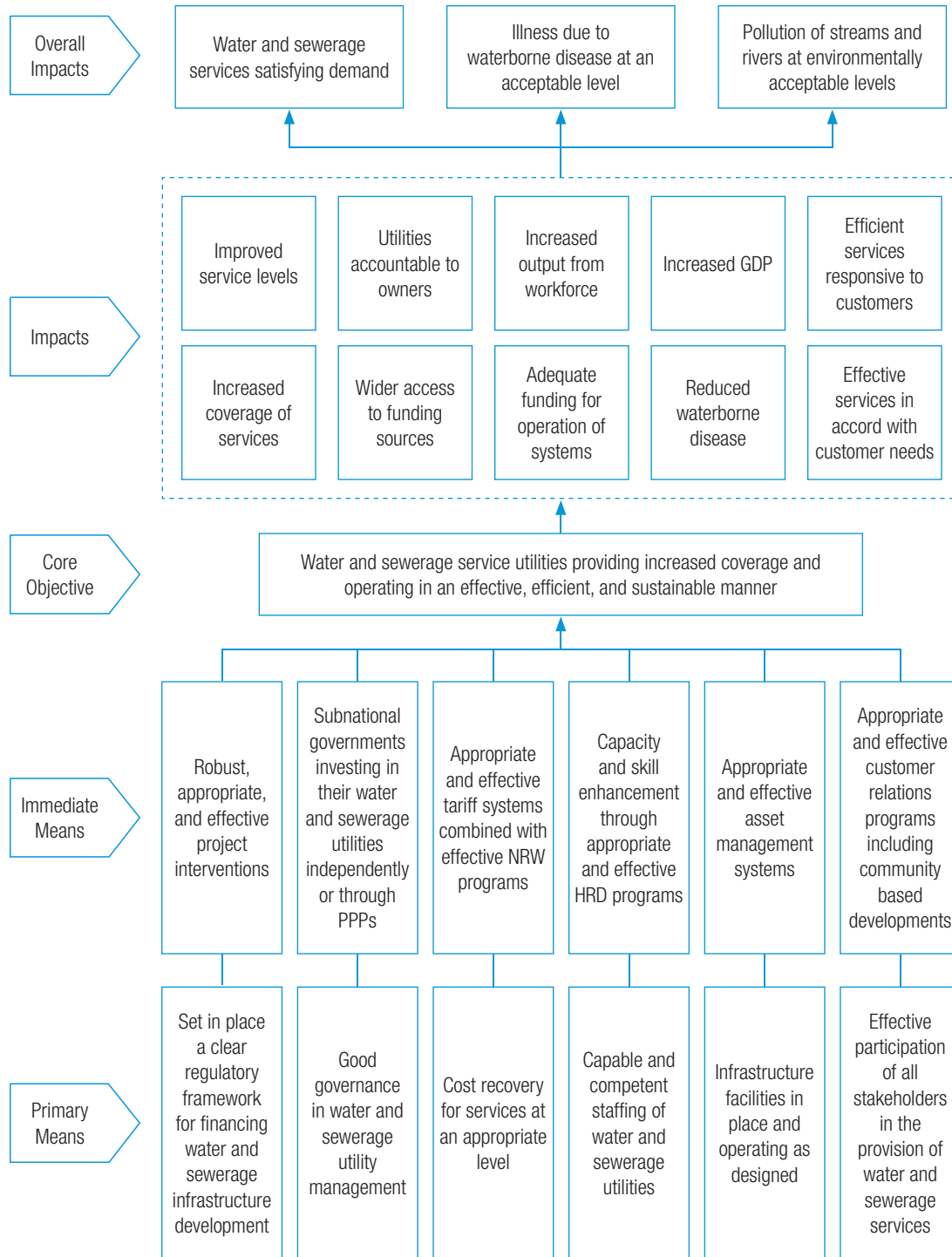
Sector Problem Analysis



NRW = nonrevenue water, PDAMs = Subnational Government Water Supply Enterprises.

Source: ADB.

Sector Objective Tree



GDP = gross domestic product, HRD = human resource development, NRW = nonrevenue water, PPPs = public-private partnerships.
 Source: ADB.

Table A1.1 Links between Sector Issues, Government Plans, Gaps, and Asian Development Bank Summary Assessment of Plan Feasibility

Core Sector/ Subsector Issues (Constraints and Problems)	Government Plans	Policy, Institutional Investment Action, and Resource Gap Needs	Remarks (on Plan Relevance and Feasibility Implications)
<ul style="list-style-type: none"> • The transfer of responsibility for development of water supply systems to the subnational governments has been ineffective and has constrained investment in PDAMs. • PDAMs have become financially weaker due to poor management, low tariffs, high NRW, and a related loss of creditworthiness. • Piped water supply services have contracted due to aging assets and poor asset management systems. • IKK systems receive limited attention from PDAMs and do not function well, with many becoming defunct. • Sanitation systems grossly inadequate with reliance on householders to provide systems, and reluctance of subnational governments to invest in centralized systems. • Regulatory control of on-site systems and of systems in new housing estates is poor. • Failure of “on-site” approach must be fully acknowledged and firm action taken to extend centralized systems. • Only 11 cities with piped sewerage systems, covering on the average 5% of population. • Poor connection rates in seweraged areas denigrate the value of previous projects. 	<ul style="list-style-type: none"> • Informed by overarching emphasis on poverty reduction. • Achievement of MDGs is a key objective. • Tariff reform with full cost recovery. • Debt restructuring with partial or full write-off of interest and late payment arrears. • Central government loan guarantees and interest subsidies on loans taken out by subnational governments. • Output-based grants through Water <i>Hibah</i> is the central government’s main mechanism for increasing access to piped water of urban households. • Regional approach for development of intake and transmission systems. MPW to construct and pass to province to manage. • Increasing access to sanitation of urban and rural communities with priority for low-income households. • Increasing the role of the community and the private sector in providing sanitation services. • Development of a regulatory framework for management of sanitation systems. • Building the capacity of institutions and personnel involved in wastewater management. 	<ul style="list-style-type: none"> • Of 341 PDAMs, 141 (41%) are “healthy,” 129 (38%) are “less healthy,” and 71 (21%) are “sick” with focus on “healthy” and “less healthy” PDAMs. • Attention required in dealing with IKKs, possibly releasing PDAMs to pursue a businesslike approach. • Skills shortage in PDAMs and subnational governments to deal with HRM, asset management, financial planning and management, and customer relations tasks. • Government targets and policy guidelines in place, but financial and human resource implications of government targets not identified. • Subnational governments and their agencies not prepared for planning, implementation, and management responsibilities. • Skills shortage in PDAMs and subnational governments to deal with HRM, asset management, financial planning and management, and customer relations tasks. • Industrial clusters require centralized systems to function effectively and provide sustainable economic development. 	<ul style="list-style-type: none"> • Implementation of government intentions and achieving targets require full commitment of subnational governments and strengthening of water supply companies to operate along business principles. • Action required improving skills in HRM, asset management, financial planning and management and customer relations; special attention needed to proper setup and capacity building for new authorities to manage regional developments. • Strong reliance on soft ODA to finance sanitation sector. • Expansion of sewerage systems must be accompanied by significant improvements in technical capacity; action required improving skills in HRM, asset management, financial planning and management, and customer relations; special attention needed to proper setup and capacity building for authorities to manage new sewerage systems.

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Table A1.1 *Continued*

Core Sector/ Subsector Issues (Constraints and Problems)	Government Plans	Policy, Institutional Investment Action, and Resource Gap Needs	Remarks (on Plan Relevance and Feasibility Implications)
<ul style="list-style-type: none"> • Subnational governments have no sense of “ownership” in previous sanitation initiatives. • Industrial clusters contribute about 40% of pollution in major rivers such as Upper Citarum and Brantas. • Insufficient equipment and facilities for collection and transportation of solid waste by conventional systems. • A shortage of suitable waste disposal capacity and low environmental performance of existing disposal operations. • Improper and illegal dumping of waste due to incomplete coverage of systems, lack of reliability of systems, and a relatively lack of public participation in the systems. • Insufficient numbers of capable managers and lower-level operations staff due partly to low salaries and wages. • Low levels of cost recovery for city-managed services. 	<ul style="list-style-type: none"> • Increasing investment and developing funding sources for wastewater infrastructure. • Aim is 80% urban coverage and 60% rural coverage. • Increase the number of sewered cities from 11 to 16 with 20% urban coverage in each. • A total of 330 cities to prepare sanitation strategies with financing plans. • Government seeks to recognize the economic potential of solid waste upon development and enhancement of the 3Rs approach – reduce, reuse, and recycle. • 3Rs approach piloted in 250 cities to support waste reduction. • Waste collection services improved to 60% efficiency. • Improved landfill sites in 210 cities, including encouragement of regional facilities for treatment and disposal. • Facilitation of carbon reduction activities in 15 cities. • 3Rs campaign program. • MPW to provide facilities at waste disposal sites as requested by subnational governments. 	<ul style="list-style-type: none"> • Government targets and policy guidelines in place, but financial and human resource implications of Government targets not identified. • Skills shortage in subnational governments to deal with HRM, asset management, financial planning and management and customer relations tasks. • Solid waste should be a “user pays” service so more attention might be given to tariff collection systems. 	<ul style="list-style-type: none"> • Since industrial areas contribute about 40% to pollution in several strategic rivers, special attention must be given to these areas; centralized waste treatment systems have a high level of feasibility and PPP development of these must be facilitated; institutional problems should be addressed as a first step. • Indications show that provided CDM credits continue the feasibility for private sector involvement in solid waste treatment and disposal is relatively good. • A clear and proactive approach to facilitating PPPs for solid waste treatment and disposal is required. • Action required in improving skills in HRM, asset management, financial planning and management, and customer relations; special attention needed to proper setup and capacity building for new authorities to manage regional solid waste transfer, transportation, and treatment and disposal developments.

CDM = Clean Development Mechanism, HRM = human resources management, MDG = millennium development goal, MPW = Ministry of Public Works, NRW = nonrevenue water, ODA = official development assistance, PDAM = Subnational Government Water Supply Enterprise, PPP = public–private partnership.

Source: ADB.

Table A1.2 Summary of Sector Issues, Government Action, Development Partner and the Asian Development Bank Support, and Key Lessons

Core Issues and Government Action	Other Development Partner Support	ADB Support
<ul style="list-style-type: none"> • Piped water supply systems have low coverage. • PDAMs need to be run as commercial operations and require a commitment from their owners and the subnational governments to achieve this objective. • Central government intends to (i) use grants as an incentive for subnational governments to borrow to expand their systems, (ii) improve creditworthiness of PDAMs, and (iii) engender better governance leading to increased service coverage. 	<ul style="list-style-type: none"> • AusAID's Indll project is pursuing a Water and Sanitation Initiative focused on <i>Water Hibah</i>, which is the government's main mechanism for increasing access to piped water of poor urban households. • The World Bank's UWSSP involves three PDAMs at present and now developing loans for water infrastructure works. It is also helping 14 PDAMs prepare corporate plans such that they may qualify for debt restructuring and proceed to take out commercial loans. Water and Sanitation Policy and Action Planning, and Water and Sanitation for Low-Income Communities are other ongoing initiatives. The former aims to build a sustainable water supply and sanitation paradigm; the latter aims to improve the health status, productivity, and quality of life in underserved rural villages, including provision of technical assistance for water and sanitation infrastructure construction, operation, and maintenance in these areas. • USAID's IUWASH is also supporting the government to achieve the MDGs in water and sanitation. This project is focusing on the PDAMs to develop. The Environmental Sanitation Program is helping 18 PDAMs with technical and financial improvements. • JICA is implementing a PDAM asset management support project, and has recently completed a preparatory survey for IKK water supply system development. 	<ul style="list-style-type: none"> • The Integrated Citarum Water Resources Management Investment Program, among other initiatives, is now moving into a phase where it will provide assistance with the development of bulk water supply facilities in the Bandung region. • The Community Water Services and Health Project is assisting with rural water supply and sanitation facilities and services to about 1,000 communities in 20 districts in provinces of West Kalimantan, Central Kalimantan, Jambi and Bengkulu; combined with capacity building for districts and communities, and sanitation and hygiene behavioral change programs. • The Rural Infrastructure Support to the PNPM Mandiri project provides support to basic rural infrastructure through community development grants, among other initiatives. • IRSDP provides support for PPP development in water supply. Outline Business Cases prepared for Southern Bali (\$216 million) and Maros (\$13 million). Work proceeding on project preparation for projects in Cimahi, Malang, Palu, Lamongan, and Padang. • WOPs (Water Operators' Partnerships) program provides \$1.3 million, promoting "twinning" to help build capacity.

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Table A1.2 *Continued*

Core Issues and Government Action	Other Development Partner Support	ADB Support
<ul style="list-style-type: none"> Facilities for management of urban wastewater are grossly inadequate. On-site systems need to be properly regulated. Communal systems need interceptor sewers to connect them into regional systems. Existing off-site systems need to be expanded and fully utilized. More off-site systems need to be constructed. 	<ul style="list-style-type: none"> AusAID's Indll project is also active in sanitation. It supports the Sanitation Road Map for 2010–2014 by implementing a sanitation <i>hibah</i> program, which has increased connections on existing sewerage systems. It has also provided support for preparation of wastewater investment plans in five cities as part of the government's road map. Indll has provided sanitation infrastructure enhancement grants in locations where the <i>hibah</i> approach cannot be implemented. JICA is providing a project for capacity development for the wastewater sector through reviewing the wastewater management master plan in DKI Jakarta. It is also constructing the Denpasar sewerage which commenced in 2009 and will extend beyond 2014 with a total project cost estimated at \$144 million. 	<ul style="list-style-type: none"> MSMHP 2010 (\$35 million) providing sewerage system expansion in Medan and Yogyakarta; institutional development assistance also includes Makassar. The Community Water Services and Health Project is assisting with rural water supply and sanitation facilities, servicing about 1,000 communities in 20 districts in the provinces of West Kalimantan, Central Kalimantan, Jambi, and Bengkulu; combined with capacity building for districts and communities, and sanitation and hygiene behavioral change programs. The Rural Infrastructure Support to the PNPM Mandiri project provides support to basic rural infrastructure through community development grants, among other initiatives. The Sanitation Strengthening Planning and Efficiency Improvement Technical Assistance is providing improved access to service delivery and healthy livelihoods for poor, near poor, and women in project communities on Sumatra and Java. IRSDP provides support for PPP development of a centralized waste water system in industrialized locations and in low-income communities in South Cimahi.
<ul style="list-style-type: none"> Core issue is solid waste disposal facilities which are inadequate and constraining collection and transportation services. 	<ul style="list-style-type: none"> JICA is assisting the government of West Java develop regional solid waste treatment and disposal facilities. It is also assisting with capacity development of 3Rs and the domestic waste management system and regional solid waste management for Mamminasata, South Sulawesi. The World Bank is developing proposals for regional solid waste transfer, transportation, treatment, and disposal systems. 	<ul style="list-style-type: none"> IRSDP prepared an outline business case and provides support for PPP development of a waste-to-energy plant in Kota Bandung with a capacity to process 1,000 tons of wastes per day.

AusAID = Australian Agency for International Development, CDM = clean development mechanism, GOI = Government of Indonesia, HRM = human resource management, IKK = subdistrict main town, IRSDP = Infrastructure Reform Sector Development Program, JICA = Japan International Cooperation Agency, MDG = Millennium Development Goal, MPW = Ministry of Public Works, NRW = nonrevenue water, PDAMs = subnational government water supply enterprises, ODA = official development assistance, PPP = public-private partnership, TA = technical assistance, USAID = United States Agency for International Development, UWSSP = Urban Water Supply and Sanitation Project.

Source: ADB.

Appendix 2

SWOT Analysis

Strengths	Weaknesses
<ul style="list-style-type: none"> • National development planning process aims for independent, progressive, fair, and enriched Indonesia. • Indonesia is experiencing solid economic growth with minimal impacts from the global economic crisis due to strong internal market growth. • Road maps for water supply and sanitation are already in place. • Lessons learned from previous WATSAN programs can be used to design new programs and projects. • The private sector is now actively pursuing water projects with interest from both foreign and local investors. • Success of recent “output-based” funding initiatives in both water and sanitation form a basis to move forward. 	<ul style="list-style-type: none"> • Subnational governments need to assume greater responsibility and realize the benefits of increased investment in water and sanitation. • A history of poor governance and management within water companies. • Water supply tariffs not set at levels required to support proper operation and management of systems. • Endemic problems with NRW. • Decentralization is constrained by inadequate skills base in the regions. • Problems with reliability of data reported to monitoring and benchmarking authorities.
Opportunities	Threats
<ul style="list-style-type: none"> • Increasing public demand for appropriate water supply and sanitation services puts pressure on service providers. • The government’s move to borrowing only for infrastructure, which is revenue generating and includes water supply and sanitation. • Changes in the financial impasse experienced in the urban sector improving the potential of on-lending. • Recent initiatives are producing creditworthy water supply companies. • The new land acquisition reform bill is expected to facilitate implementation of government infrastructure projects. • More robust private sector is ready to take a significant role in water and sanitation service upgrading. • Experience combined with technology developments facilitate more cost-effective program and project design, management, and implementation. 	<ul style="list-style-type: none"> • Urban population has more than doubled in the past 20 years from 60 to 125 million and continues to grow. • Growing poverty and income inequality. • Climate change may produce more frequent and intense dry periods. • Freshwater sources in Java exceed the naturally available supply and the task of balancing competing demands may cause serious delays. • Ongoing environmental deterioration of water quality in resources cannot be reversed. • Water supply systems continue to operate with chronic NRW “non-technical” problems.

NRW = nonrevenue water, WATSAN = water supply and sanitation.

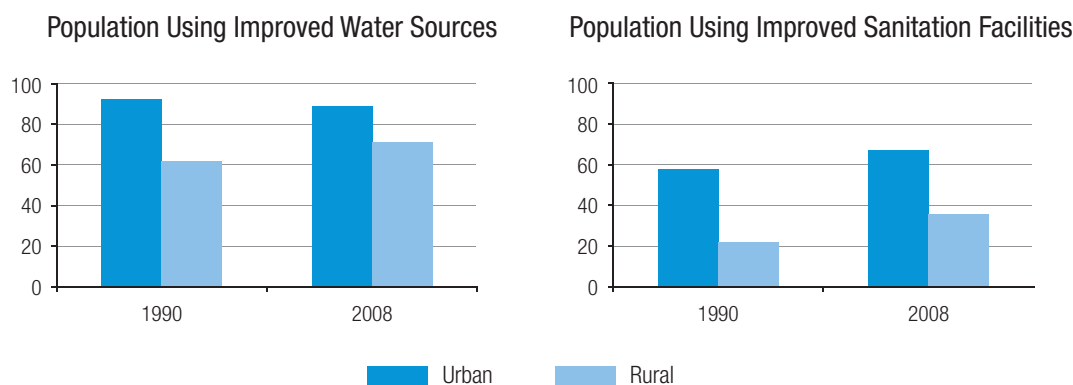
Source: ADB.

Appendix 3 Indicators

1. Concerning achievement of the Millennium Development Goals (MDGs), figures for water and sanitation coverage vary between sources, yet statistics consistently show that rural areas are lagging behind urban areas in both water and sanitation coverage. They also show that much work is needed in both rural and urban areas.

2. The key indicator for water supply and sanitation is MDG Goal 7: Ensure Environmental Sustainability.¹ Economies other than Indonesia are having more success with providing improved drinking water than with improved sanitation. In Indonesia, however, the population using improved water sources in urban areas has decreased, although overall the total population using improved water sources has increased from 71% in 1990 to 80% in 2008 due to advances in rural water supplies and declining rural population as indicated in Figure 1 (p. 2).

Indonesia Performance with MDG Goal 7c



Source: ADB. 2011. *Key Indicators for Asia and the Pacific*. Manila.

3. Significant advances have been made in improved sanitation facilities in both urban and rural areas. The total population using improved sanitation facilities has increased from 33% in 1990 to 52% in 2008, with advances in both urban and rural areas. In the water supply and sanitation sector, the outcome to which the ADB is contributing is therefore access to urban and rural water supply and sanitation provided, improved, and maintained. The government's assessment of progress with the MDGs was detailed in a report prepared by BAPPENAS in 2010.²

¹ The target is: Halving by 2015 the proportion of people without sustainable access to safe drinking water, and significantly improving by 2020 the lives of at least 100 million slum dwellers through improved sanitation and other measures. ADB. 2011. *Key Indicators for the Asia Pacific*. Manila.

² BAPPENAS. 2010. *Report on Achievement of Millennium Development Goals*. Jakarta.

4. The BAPPENAS report was based on SUSENAS data, which showed a continued rise in access to improved drinking water although it was acknowledged that development of drinking water infrastructure in urban areas has not kept pace with urban population growth. The lack of proper maintenance of existing facilities was also cited. Provinces with higher percentage access included DI Yogyakarta, Bali, and Sulawesi Tengah; whereas, those with the lowest proportion of access were Banten, Aceh, and Bengkulu. Figures clearly indicate the enormity of the task of achieving the goal of access to improved water source, especially in urban areas.

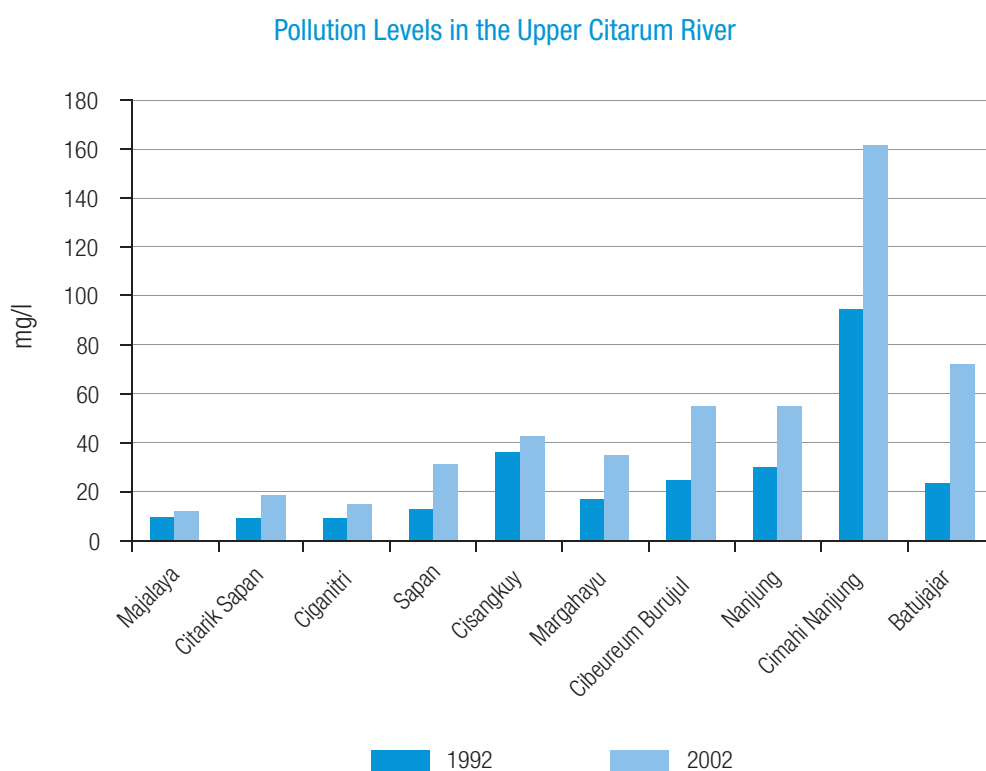
Millennium Development Goals – Water and Sanitation

Indicators		Baseline, 1993 (%)	Current, 2009 (%)	MDG Target, 2015 (%)
Goal 7: Ensure Environmental Sustainability				
Target 7C: Halve, by 2015, the proportion of households without sustainable access to safe drinking water and basic sanitation				
7.8	Proportion of households with sustainable access to an improved water source, urban and rural	37.73	47.71	68.87
7.8a	Urban	50.58	49.82	75.29
7.8b	Rural	31.61	45.72	65.81
7.9	Proportion of households with sustainable access to basic sanitation, urban and rural	24.81	51.19	62.41
7.9a	Urban	53.64	69.51	76.82
7.9b	Rural	11.10	33.96	55.55

Source: BAPPENAS (2010).

5. The SUSENAS data showed a reasonable increase in access to improved sanitation facilities in both urban and rural areas. The government concedes that to achieve the sanitation goal will require special attention, including improving the quality of sanitation infrastructure. Jakarta has the highest level of access to basic sanitation at over 80%, while Nusa Tenggara Timur has the lowest at 15%. This situation highlights the disparity across the country. Clearly, bearing in mind the current level of pollution of streams and groundwater in the Jakarta area, relying on the above MDG indicators will be insufficient.

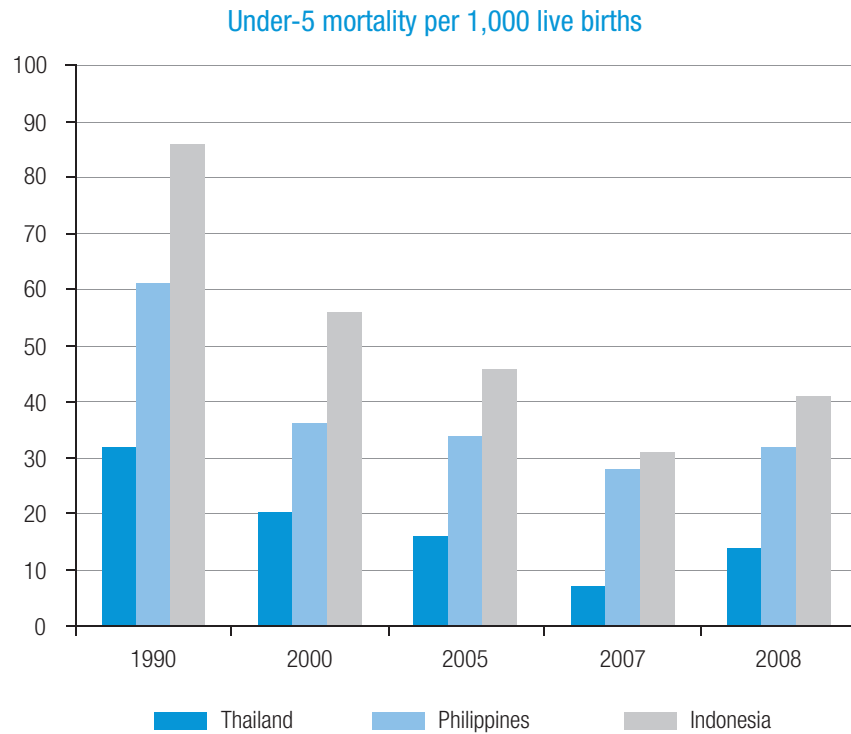
6. Pollution levels in streams are being monitored from the viewpoint of the sector assessment and road map; it is not realistic to include these data. Specific projects, such as those relating to a particular river catchment, will be able to monitor such indicators. The following figure provides historic data on monitoring pollution levels in the Upper Citarum River.



Note: Threshold level for pollution is 5 mg/l.

Source: ADB.

7. Public health and, in particular, the mortality rate for children under 5 years old is an indicator that will provide a useful monitor for improvements in the delivery of water supply and sanitation services. This is a globally accepted indicator which is monitored by the United Nations Development Programme (UNDP). For Indonesia, the most recently reported data for 2008 give a figure of 41 child deaths per thousand; a figure which compares unfavorably with the Philippines (32) and Thailand (14). Data for the past several years are illustrated in the following:



Source: UNDP, 2010. *Human Development Report*. New York.

8. Previous studies indicated that in Cirebon, where the Kota had over 90% water coverage and around 15% sewerage coverage, the levels of water-related illness were considerably lower than in the adjacent Kabupaten Cirebon, where PDAM water coverage was 11% and sanitation systems relied on septic tanks.³

Comparison of Reported Diseases and Illness (Kota and Kabupaten Cirebon)

Ranking	Kabupaten Cirebon	%	Kota Cirebon	%
1	Diarrhea	75	Respiratory infection	42
2	Lung tuberculosis	15	Dermatitis	10
3	Pneumonia	2	Digestion disease	9
4	Typhoid	3	Rheumatism	8
5	Tuberculosis	2	High blood pressure	4
6	Dengue fever	1	Diarrhea	4
7	Hepatitis	1	Anemia	2

Source: BPS Kabupaten and Kota Cirebon.

9. Waterborne diseases are quite prevalent in the Kabupaten; whereas in the Kota, respiratory infections are prominent. Health data are being gathered on reported diseases and illness by the local statistics bureau in locations throughout Indonesia, and it is suggested that these data should be used in monitoring the effectiveness of both water supply and sanitation interventions in each project location in the future.

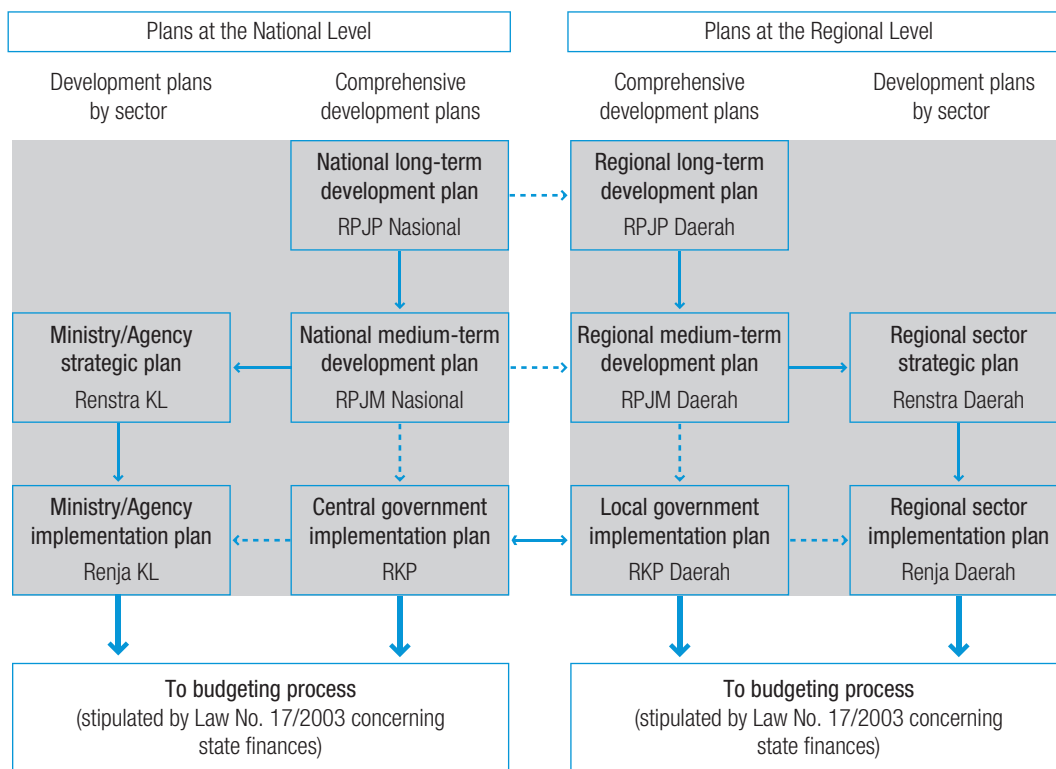
³ West Java Urban Development Sector Project ADB Loan 1384-INO Kabupaten Cirebon Water Supply: Addendum to Pre-Feasibility Study for PSP, March 5, 2002, Egis CMPS Asia Pacific et al.

Appendix 4

Sector Institutions

1. Key central government institutions include the National Development Planning Agency (BAPPENAS), Ministry of Public Works, Ministry of Finance, Ministry of Home Affairs, and the National Development Audit Agency.
2. BAPPENAS plays an important role in formulating policy and planning for water and sanitation infrastructure development. Development plans fall under the authority of BAPPENAS. The government of Indonesia is three-tiered, consisting of 33 provinces or regions with special status, 92 cities or urban local authorities, and 359 regencies or rural local authorities. The respective governments each have the authority to draft socioeconomic development plans according to the National Development Planning System (Law No. 25/2004) and spatial plans according to the Spatial Planning Law (No. 26/2007). Development in the country centers on these plans.

Figure A4.1 Development Planning System



Source: This is prepared based on the National Development Planning System Law and presented on the website of the Ministry of Land, Infrastructure, Transport and Tourism, Japan. http://www.mlit.go.jp/kokudokeikaku/international/spw/general/indonesia/index_e.html

3. The socioeconomic development planning system at the national level consists of 20-year national long-term development plan and a five-year development plan. The five-year development plan includes a national medium-term development plan and yearly implementation plans. Both these plans are the responsibility of BAPPENAS to coordinate and prepare. The duration of the current national long-term development plan is from 2005 to 2025 and the current medium-term plan is from 2010 to 2014. The long-term development plan functions to outline the vision, mission, and direction of development policies for a 20-year period. The medium-term development plan reflects the elected president's vision for the national development strategy and macroeconomic framework to be achieved in a 5-year period. BAPPENAS therefore plays a leading role in formulating sector road maps and defining areas that may be considered suitable for the MDBs to intervene.

4. The Ministry of Public Works, especially the Directorate General of Human Settlements (DGHS), has been and will continue to be a key stakeholder in any future project interventions by ADB. DGHS has the responsibility at national level for facilitating provision of water and sanitation throughout the country. The water and sanitation sector is administered mainly by the ministry under the Water Resources Law (UU 7/2004) and Government Regulation PP16/2005, coming mainly out of Article 40 of that law. The ministry is not directly responsible for provision of services in urban areas in most circumstances, but oversees development of technical standards, contributes to policy development, and helps prepare and implement projects involving bilateral and multilateral development agencies. In the past decade, it has become more involved with developing regulatory arrangements, although the Ministry of Home Affairs (MOHA) is ultimately responsible for promoting institutional improvements in subnational governments. Coordination of technical activities and institutional reforms are important for improving performance, and this is perhaps one of the challenges for the ministry. The interest of DGHS lies in ensuring that proposed technical solutions adopted by PDAMs and subnational government sanitation agencies are cost-effective, that project implementation arrangements support this objective, and that institutional development and capacity-building activities are synergetic with the technical program. Their power derives from being the acknowledged administrator of Law 7/2004 and the "gate-keeper" of the majority of central government funds for the sector.

5. The Ministry of Finance (MOF) ultimately must approve ADB lending and on-granting or on-lending to subnational governments. The MOF interest is to ensure that credit is allocated effectively, and being frontline managers of the nation's finances, to minimize borrowing. It does not wish to set an unhealthy precedent by forgiving debt arrears to an individual subnational government. Law 17/2003 providing the framework for management of state finances has a performance orientation. Recent legislation has reinforced this approach. MOF has recently informed MDBs that in support of efforts to limit borrowing, future foreign loans will be limited to infrastructure, which is revenue generating, and these include water and sanitation.

6. The MOHA "owns" subnational government in the sense of being in the line of command down from the President, as opposed to other ministries being "staff" or "support" agencies. Responsibility for water and sanitation matters is dispersed within the ministry. For water and sanitation projects it may be that the financial and reform aspects of subnational government-owned enterprises may make the Directorate General for Regional Finances (key stakeholder). The Directorate General has an interest in ensuring that local financial management is improved and are responsible for implementing the laws on regional government-owned enterprises, under which the PDAMs are constituted. The law centers on establishing the legal framework in which good corporate governance can develop within the PDAMs. The ministry will have a high interest in the institutional development and capacity building aspects of any future projects, although these cannot be mainstreamed at all times because the main investment is in physical components. Its ability to influence subnational government affairs nevertheless is strong, indicating care is needed to ensure its full participation in any project in which institutional reform is targeted.

7. The National Development Audit Agency (BPKP) is also a stakeholder. This audit agency has a similar agenda with the MOHA. It now audits most PDAMs annually, and their reports now often include a section on good governance. Hence promoting both strategic management and performance management within the PDAMs.
8. The revised decentralization laws (32 and 33 of 2004) have given the provincial subnational governments a greater role in supervising subnational government activities. Consider this with their assigned function of managing services that have an inter-jurisdictional nature, and the capability to contribute financing, the provinces will have more power in project preparation and implementation processes. The key person is generally the head of Development Planning Board (BAPPEDA), acting in the governor's interest.
9. Local subnational government, as represented by the head of the region, *bupati* or *walikota* (mayor), is likely to have the biggest stake in a successful outcome to most water and sanitation projects. These elected officials will be seeking to improve the conditions in their constituency to maintain the support which put them in office. Conversely, they will have to achieve that improvement while keeping a diverse range of other stakeholders satisfied, and keeping subnational government debt to a minimum. Approval for borrowing, and agreement to any related intercept mechanism, is needed from the elected representatives of the community, so it can be argued that the real power to influence project outcome rests with the chairman of the DPRD. In reality, the power of approval rests with a coalition that includes the head of the region. Subnational governments are not entirely monolithic—they also contain a number of other stakeholders. The subnational government secretary (*Sekda*) is important because of his or her control over the budget and the head of BAPPEDA, both technical knowledge and advisory position in relation to head of the region. Others include the head of the Local Finances Board (Badan Keuangan dan Kekayan Daerah) and the head of the Local Public Service Board (Badan Kepegawain Daerah).
10. With respect to the PDAM, the president director is the key stakeholder. The president director's reputation (and often, job) are at stake if there is a problem in the water enterprise that impacts on the head of the region. While good governance considerations should make the board of supervisors (*badan pengawas*) an important player, most members have not been significantly effective. However, they should be a key stakeholder, if for no other reason than to provide a break on the relationship between the president director and head of the region. Certainly, the president director should have a high interest in improving the performance of the PDAM, but the manner of appointment and his or her relationship to the head of the region is likely to determine whether he or she has power to influence strategic decisions, e.g., whether to participate in a project.
11. Sanitation activities are currently spread between a number of agencies in a subnational government—for example management of the IPLT is with the Solid Waste Management Agency (Dinas Kebersihan), while responsibility for on-site sanitation such as septic tank construction is with the Building Control Agency (Dinas Tata Kota) or even with the BAPPEDA. Probably the only certainty is that responsibilities are widespread and locating one agency that truly has a stake in improving sanitation is difficult. This is the fundamental problem with sanitation—there is no single, major institutional stakeholder whose interest and power can be influenced to promote the sanitation agenda.
12. Health and environmental professionals are one group who should be given importance. The Health Service (Dinas Kesehatan) will have an interest in sanitation matters in the household, while the Environmental Agency (Dinas Lingkungan Hidup) will be a useful organization to promote sanitation programs, and bridging with the households and management of treatment facilities and the “engineering agencies” such as the public works.

13. The leaders of the Council (DPRD) are now key players in local projects. Few heads of regions would directly promote a project without having cleared it some way with the DPRD. Key members of the DPRD are generally both interested and have the power to determine allocation of funds to water and sanitation, loan rescheduling, and have the final say over tariff increases. In some subnational governments, the chairperson of the DPRD may allow the chairperson of Commissions (typically “C” for finance or “D” for infrastructure) to deal with the specifics of proposals. The common problem of investments being biased to locations is not obvious because the system of representation is not yet geographically based. However, an undue interest of councilors in detailed project implementation matters needs checking.

14. Association of Indonesian Water Companies (PERPAMSI) is composed of 341 PDAMs. The services that it provides to its members include (i) advocacy on matters impinging on PDAM interests (for example, debt rescheduling), (ii) operation of the PDAM employee pension scheme, (iii) debt collection from central agencies owing money to PDAMs, (iv) provision of a range of capacity building programs to its members through its training foundation, (v) operation of the PERPAMSI Benchmarking System, (vi) serving as a networking hub, and (vii) disseminator of information through various means, including publication of a monthly magazine concerning matters primarily of interest to PDAMs. The interest of PERPAMSI in projects is likely to be focused on the institutional and capacity building aspects, because it is actively advocating the corporatization of PDAMs; that is, shifting the legal status from an organization setup under the administrative law to a legal entity constituted under Indonesia commercial law (Law 1/1995). They see this reform, especially in larger PDAMs, as being essential to improving the autonomy of PDAMs, and thus their performance. It will also have a stake in any accreditation and open recruitment objectives of water initiatives. PERPAMSI advocates for PDAM at the national government level. It has a training program and a decentralized organizational structure. It acts as a good source of information sharing and distribution for PDAM, but due to institutional weaknesses and funding constraints, it has yet to reach its full potential.

Indonesia: Water Supply and Sanitation Sector Assessment, Strategy, and Road Map

Access to improved water supply and sanitation results in economic development and poverty reduction, ensures food safety and better livelihoods, preserves the environment, reduces health burden, and empowers communities and provides opportunities for women.

The Asian Development Bank (ADB) has prepared a sector assessment, strategy, and road map for the water supply and sanitation sector in Indonesia. Aside from a current assessment, the document outlines key ADB initiatives to reduce water supply shortages and improve sanitation. The main urban thrusts of ADB's investments program are expansion of in sewer system in the main Indonesian cities and a return to the water supply sector. These investment programs are supported by a comprehensive technical assistance program, namely: (i) assisting BAPPENAS with preparing the water supply and sanitation sector provisions of the new National Medium-Term Development Plan (RPJM 2015–2019); (ii) establishing water operator partnerships focused on improving the performance of water companies; and (iii) directly assisting selected water companies to improve their financial situation. In rural areas, investment in the water supply and sanitation sector is incorporated in projects that are focused on improving general infrastructure.

About the Asian Development Bank

ADB's vision is an Asia and Pacific region free of poverty. Its mission is to help its developing member countries reduce poverty and improve the quality of life of their people. Despite the region's many successes, it remains home to two-thirds of the world's poor: 1.7 billion people who live on less than \$2 a day, with 828 million struggling on less than \$1.25 a day. ADB is committed to reducing poverty through inclusive economic growth, environmentally sustainable growth, and regional integration.

Based in Manila, ADB is owned by 67 members, including 48 from the region. Its main instruments for helping its developing member countries are policy dialogue, loans, equity investments, guarantees, grants, and technical assistance.

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