

# 3RETA 6219 – Promoting Effective Water Management Policies and Practices

## Developing a Flagship Program on Water in Metros

### Background Paper on Indonesia

#### I. Introduction

1. The objective of the assignment is to develop a flagship program for accelerating water and sanitation coverage in metropolitan areas towards achieving water-related MDGs in selected countries, tentatively India, Indonesia and PR China. At the invitation of the Government of India, two Roundtable Discussions focussing on private sector participation have already been held (Bangalore 15<sup>th</sup> – 16<sup>th</sup> June and Delhi 25<sup>th</sup> August 2005) in support of the National Urban Renewal Mission to introduce sector reform and improve MDG progress.

2. This background paper is designed to provide an overall appreciation and background material to support possible exploratory roundtable discussions in Indonesia.

#### II. The Millennium Development Goals

3. At the Millennium Summit held in September 2000, 189 countries adopted the Millennium Declaration, a document outlining a universal set of development goals, and which contains 8 Millennium Development Goals (MDGs), 18 targets and 48 indicators to track progress. Each MDG seeks to meet one or more targets. Goal No. 7 is specifically focussed on ensuring environmental sustainability through the achievement of three targets, with Target 10 being the focus of this assignment:

- **Target 9:** Integrate the principles of sustainable development into country policies and programs and reverse the loss of environmental resources.
- **Target 10:** Halve by 2015 the proportion of people without sustainable access to safe drinking water and basic sanitation.
- **Target 11:** Have achieved a significant improvement by 2020 in the lives of at least 100 million slum dwellers.

4. The United Nations Committee on Economic, Cultural and Social Rights has affirmed that “Water is fundamental for life and health. The human right to water is indispensable for leading a healthy life in human dignity. It is a prerequisite to the realization of all other human rights”. The importance of achieving Target 10 is emphasised by the fact that access to safe drinking water and basic sanitation is an indispensable component of primary health care and a pre-condition for success in the fight against poverty, hunger, child deaths and in achieving gender equality. However, scientific standards for determining “safe” water are not practical to apply in most

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developing regions, so the measuring indicator for access to water is the proportion of the population (in percentage terms) who use “improved” sources of water.

5. Between 1990 and 2002, 1.1 billion people gained access to safe drinking water, thereby increasing the proportion of the world’s population using improved drinking water sources from an estimated 77% to 83% (see **Table 1** below)<sup>1</sup>. This puts the world on track to achieve Target 10 to halve by 2015 the proportion of people without sustainable access to safe drinking water. The region with the greatest progress was Southern Asia, with most of the increase attributed to India, where coverage increased from 68% to 86% over the decade. Most of the improvement in global coverage has occurred in rural areas. Countries within the region where less than 50% of the population had access to an improved water source in 2002 were: Afghanistan (13%), Cambodia (34%), Papua New Guinea (39%), and Lao People’s Democratic Republic (43%).

|                                    | Percentage of population |       |       |       |       |       |
|------------------------------------|--------------------------|-------|-------|-------|-------|-------|
|                                    | 1990                     |       |       | 2002  |       |       |
|                                    | Total                    | Urban | Rural | Total | Urban | Rural |
| World                              | 77                       | 95    | 63    | 83    | 95    | 72    |
| Commonwealth of Independent States | 92                       | 97    | 83    | 93    | 99    | 82    |
| Northern Africa                    | 88                       | 95    | 82    | 90    | 96    | 84    |
| Sub-Saharan Africa                 | 49                       | 82    | 36    | 58    | 82    | 45    |
| Latin America and the Caribbean    | 83                       | 93    | 58    | 89    | 95    | 69    |
| Eastern Asia                       | 72                       | 99    | 60    | 78    | 93    | 68    |
| Southern Asia                      | 71                       | 90    | 64    | 84    | 94    | 80    |
| South-Eastern Asia                 | 73                       | 91    | 65    | 79    | 91    | 70    |
| Western Asia                       | 83                       | 94    | 65    | 88    | 95    | 74    |
| Oceania                            | 51                       | 92    | 39    | 52    | 91    | 40    |

*Source:* United Nations Statistics Division, based on country data provided by UNICEF and WHO. See *Millennium Indicators Database*, “World and regional trends”, <http://millenniumindicators.un.org>, (accessed June 2005).

6. However, in spite of progress achieved, there are still 1.1 billion people in the world using potentially unsafe water supplies, of whom nearly two thirds live in Asia, and with almost 300 million in China alone. Population growth has had a significant impact on the ability of countries to improve coverage of safe drinking water, and will continue to be a major issue. Due to population growth, 6.4 billion people will need to be covered by 2015, up from the current 5.2 billion. This additional 1.2 billion people to be provided with access to safe drinking water equates to establishing new water supply services for some 300,000 people every day until 2015. However, from a global perspective the world is on track to meet the water target.

7. In the sanitation sector, the indicator used to measure access to adequate sanitation is the proportion of the population (in percentage terms) who use “improved” sanitation facilities that are not publicly shared. In 2002, 58% of the world’s population were using toilets and other forms of improved sanitation (see **Table 2** below), leaving 2.6 billion people without adequate sanitation facilities.

<sup>1</sup> “Progress Towards the Millennium Development Goals, 1990 – 2005: Goal 7”, UN Department of Economic and Social Affairs, Statistics Division: 2005.

Despite progress in most developing regions, sanitation coverage remains low. In Southern Asia, for instance, despite an 85% increase between 1990 and 2002, almost two thirds of the population still lack access to improved sanitation. In some parts of the developing world, the situation has actually deteriorated, with coverage decreasing in both rural and urban areas of Western Asia and in rural areas of Oceania.

**Table 2. Population with Access to Improved Sanitation**

|                                    | Percentage of population |       |       |       |       |       |
|------------------------------------|--------------------------|-------|-------|-------|-------|-------|
|                                    | 1990                     |       |       | 2002  |       |       |
|                                    | Total                    | Urban | Rural | Total | Urban | Rural |
| World                              | 49                       | 79    | 25    | 58    | 81    | 37    |
| Commonwealth of Independent States | 84                       | 93    | 68    | 83    | 92    | 65    |
| Northern Africa                    | 65                       | 84    | 47    | 73    | 89    | 57    |
| Sub-Saharan Africa                 | 32                       | 54    | 24    | 36    | 55    | 26    |
| Latin America and the Caribbean    | 69                       | 82    | 35    | 75    | 84    | 44    |
| Eastern Asia                       | 24                       | 64    | 7     | 45    | 69    | 30    |
| Southern Asia                      | 20                       | 54    | 7     | 37    | 66    | 24    |
| South-Eastern Asia                 | 48                       | 67    | 39    | 61    | 79    | 49    |
| Western Asia                       | 79                       | 96    | 52    | 79    | 95    | 49    |
| Oceania                            | 58                       | 83    | 50    | 55    | 84    | 46    |

Source: United Nations Statistics Division, based on country data provided by UNICEF and WHO. See Millennium Indicators Database, "World and regional trends", <http://millenniumindicators.un.org> (accessed June 2005).

8. Most people without access to sanitation are those hard to reach, such as people living in remote rural areas or in overcrowded slums, and families displaced by conflict and famine. Of the 2.6 billion people using inadequate sanitation facilities, over 2 billion are in rural areas.

9. Between 1990 and 2002, about 1 billion people globally gained access to improved sanitation. Halving the proportion of the world's population without improved sanitation by 2015 (to 25.5 per cent) will require reaching an additional 1 billion urban dwellers and almost 900 million people mainly in remote rural communities. If the 1990-2002 trend holds, the world will miss the sanitation target by more than half a billion people. Countries within the region where less than 30% of the population had access to improved sanitation in 2002 were: Afghanistan (8%), Cambodia (16%), Lao People's Democratic Republic (24%), Nepal (27%) and the Federated States of Micronesia (28%).

10. Progress achieved by 2002 (the latest date for comprehensive data) in reaching Target 10 for water supply and sanitation in both urban and rural areas in all Asia Pacific countries is appended to this background paper<sup>2</sup>. Of the 40 Asia Pacific countries providing progress data on urban water supply, 31 were either early achievers or on track. 34 countries provided data for rural water supply, of which 16 were early achievers or on track. Access to improved sanitation was far better in urban areas (73%) than rural areas (31%).

<sup>2</sup> "A Future Within Reach: Reshaping Institutions in a Region of Disparities to Meet the Millennium Development Goals in Asia and the Pacific", UNESCAP/UNDP/ADB, September 2005.

### III. MDG Progress in Indonesia

11. The Republic of Indonesia was established in 1950, but its first 15 years were marked by political instability and economic decline. However, economic rehabilitation gathered pace when President Soeharto came to power in 1967, with equity, growth and stability achieved through a series of 5-year development plans (Repelitas). Despite external shocks, between 1976 and 1996 consistently high rates of economic growth, averaging some 6% pa, were achieved and dramatically reduced poverty. However, the 1997/98 Asian economic crisis slowed GDP growth to 4.7% in 1997 and a decline of 13.1% in 1998, but growth has since recovered to some extent (5.1% in 2004<sup>3</sup>). Although traditionally an agriculture-based economy, and despite continuous growth, the contribution of agriculture to GDP fell from about 54% in 1960 to 17% in 1995<sup>4</sup>. This has led to a widening disparity between agriculture and non-agriculture sector incomes, contributing to rural poverty as illustrated by the fact that more than 90% of the rural poor and near-poor are in households where agriculture is the principle source of income. Following the resignation of President Soeharto in May 1998, Indonesia entered a period of political, economic and social reform, with its political framework evolving into a multi-party system to produce a more democratic form of government. Per capita GNP now stands at US\$ 2,088<sup>5</sup>.

With a population growth rate of nearly 1.5% in the 1990s, the present estimated population of 222 million makes Indonesia the 4<sup>th</sup> most populous country in the world after China, India and USA<sup>6</sup>. More than 30% of the population is under 15 years old, and large scale migration to urban centres has led to some 42% of the population now living in cities. However, population distribution is very uneven between regions, with more than 60% of the population living on Java, Bali and Madura alone, three islands that only make up 7% of Indonesia's land surface area. These western areas of Indonesia (Sumatra, Java and Bali) have enjoyed the fastest rate of growth over the last 30 years, leading to a concentration of wealth in these densely populated islands. The disparity between western areas and the rest of the country widened during the boom years of the 1980s and 1990s. Growth in the peripheral regions concentrated on areas suitable for cultivation of cash crops or the exploitation of mineral resources. The pace of development has been particularly slow in many eastern provinces, which generally have relatively small populations and are very distant from the political and economic centres of power. To address inter-regional disparities, the government has implemented various policies to increase direct budget allocations to the regions, strengthen poverty alleviation efforts, promote economic activities and provide opportunities for natural resources management.

Realisation of the Millennium Development Goals in Indonesia has been affected during the past few years by the country's transition to a more democratic form of government, with reforms being undertaken in most sectors. At the same time the impact of the 1997 economic crisis is still being felt.

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<sup>3</sup> Country Strategy and Program Update – Indonesia 2005, ADB, March 2005.

<sup>4</sup> “National Water Sector Profile for Indonesia” Draft, ADB, March 2005, page 84.

<sup>5</sup> “National Water Sector Profile for Indonesia” Draft, ADB, March 2005.

<sup>6</sup> 2005 World Population Datasheet, Population Reference Bureau, 2005.

The vision of the present Government of President Susilo Bambang Yudhoyono is to create a country that is safe and peaceful, offers justice and democracy to all citizens, and is prosperous. This vision forms the basis of the recently approved Medium Term Development Plan for 2005 – 2009. Earlier Plans focussed on listing publicly funded projects, but the new Plan emphasises policy and institutional reform, and envisages the active involvement of the private sector in infrastructure provision. To support its employment and poverty reduction targets, annual GDP growth of 6% to 7% is required, with the five priority areas identified to achieve this being:

- Adoption of job creation and poverty reduction programmes;
- Maintenance of macro-economic stability through stable prices, fiscal sustainability and financial sector reforms;
- Accelerated growth of investments, exports and tourism through reforms to create a healthy business climate and flexible markets;
- Improving human resources;
- Infrastructure development by improving service efficiency and encouraging greater private sector participation.

To promote urban infrastructure investment by local governments, an innovative project has been proposed to support the Public-Private Partnership for Urban Infrastructure Project. ADB is also making an assessment of the private sector to provide guidance on how it could directly support the sector. In addition, the Government and ADB recently signed the Framework Agreement for Private Sector Guarantees which should have a positive impact on ADBs private sector operations, especially the ability to use the guarantee mechanism.

The proportion of the population living below the National Poverty Line is shown in **Figure 1**. In 1998 the threshold level of poverty was revised to take into account new policies affecting family expenditure, such as the introduction of 9 years of compulsory basic education. The break in Figure 1 reflects this change in the definition of poverty. The proportion of the population living on less than US\$2 / day is currently 52%<sup>7</sup>, with 43 million living on less than US\$1 / day<sup>8</sup>, and the majority living in rural areas. However, the incidence of poverty declined to 16.6% of the population in early 2004<sup>9</sup>. As a direct contribution to poverty reduction, ADB is processing an innovative community water supply and health project which includes a component for tsunami-affected communities in Aceh province.

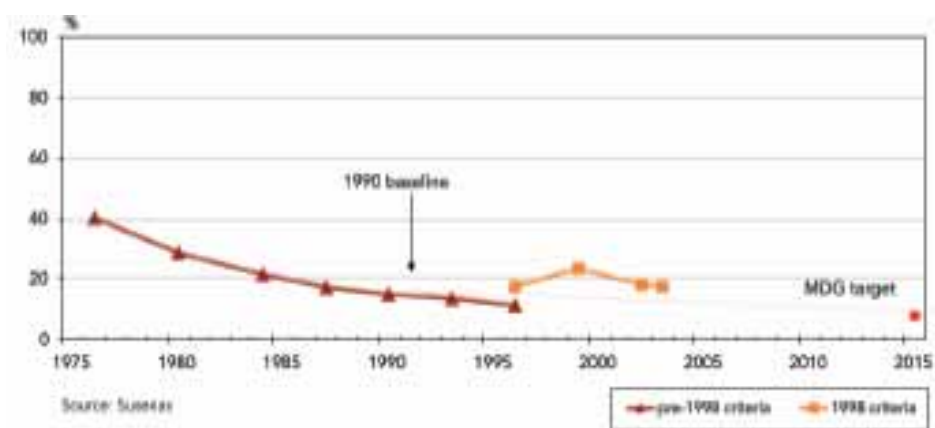
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<sup>7</sup> 2005 World Population Datasheet, Population Reference Bureau, 2005.

<sup>8</sup> “National Water Sector Profile for Indonesia” Draft, ADB, March 2005.

<sup>9</sup> Country Strategy and Program Update – Indonesia 2005, ADB, March 2005.

**Figure 1 Proportion of Population below National Poverty Line**



Indonesia has a significant share of population whose income or expenditure is just above the poverty line, so a small increase in the threshold level leads to a substantial increase in the number of poor people. This is illustrated in **Table 3** below which shows the proportion of poor people under both standards of poverty.

**Table 3 Impact of Raising the Poverty Line**

| Area  | 1996 criteria    |                               |          | Criteria adjusted to 1998 standard |                               |          |
|-------|------------------|-------------------------------|----------|------------------------------------|-------------------------------|----------|
|       | Poverty line     | Population below poverty line | per cent | Poverty line                       | Population below poverty line | per cent |
|       | Rupiah per month | Million                       |          | Rupiah per month                   | Million                       |          |
| Urban | 38,246           | 7.2                           | 9.7      | 42,032                             | 9.6                           | 13.6     |
| Rural | 27,413           | 15.3                          | 12.3     | 31,366                             | 24.9                          | 19.9     |
| Total |                  | 22.5                          | 11.3     |                                    | 34.5                          | 17.6     |

Poverty-related challenges in Indonesia are not simply the large number of poor people, but also the major disparities between regions, provinces, districts and cities. The disparity between provinces can be illustrated by comparing the 2002 figures for Jakarta (3.4% of population are poor) with Papua (41.8% are poor).

17. Indonesia has made significant progress towards achieving some of its MDGs, in particular education, and is projected to meet most of its targets by 2015. However, progress is slow in some sectors such as environment and gender equality. In particular, in the absence of reform and increased investment it is unlikely that water sector targets will be met.

MDG Indicators for Goal 7 are summarised in **Table 4** below<sup>10</sup>.

<sup>10</sup> "Indonesia Progress Report on the Millennium Development Goals", United Nations, February 2004

**Table 4 MDG Indicators for Goal 7**

| MDG INDICATORS                                |  | 1990  | 1991 | 1992  | 1993  | 1994  | 1995  | 1996  | 1997  | 1998  | 1999 | 2000  | 2001 | 2002 |
|---|--|-------|------|-------|-------|-------|-------|-------|-------|-------|------|-------|------|------|
| Goal 7: Ensuring Environmental Sustainability |  |       |      |       |       |       |       |       |       |       |      |       |      |      |
| 25  | Proportion of land area covered by forest %                                    |       |      |       | 67.68 |       |       |       |       |       |      |       | 64.2 |      |
| 26  | Ratio of area protected to maintain biological diversity, to surface area %    |       |      |       |       |       |       |       |       |       |      | 26.4  |      |      |
| 27  | Energy use (barrel of equivalent per million rupiah GDP)                       |       |      |       | 1.5   | 1.44  | 1.4   | 1.37  | 1.36  | 1.56  | 1.61 | 1.61  |      |      |
| 28a   | Carbon dioxide emissions (kilogram per capita)                                 | 2,536 |      |       |       |       |       | 2,652 |       |       |      | 2,251 |      |      |
| 28b   | Consumption of ozone-depleting CFCs (ODP metric ton)                           |       |      | 7,815 | 5,211 | 7,728 | 9,150 | 9,580 | 8,162 | 6,608 |      |       |      |      |
| 29  | Proportion of population using biomass as cooking fuel %                       |       |      | 66.1  |       |       | 59.7  |       |       | 52.1  |      |       | 44.0 |      |
| 30  | Proportion of population with sustainable access to an improved water source % |       |      |       |       | 38.2  | 38.5  | 41.5  |       | 43.1  | 43.4 |       |      | 50.0 |
| 31  | Proportion of population with access to improved sanitation %                  |       |      | 30.9  | 30.2  | 33.9  | 53.4  | 56.4  | 59.3  | 64.9  | 61.1 | 62.7  | 61.5 | 63.5 |
| 32  | Proportion of households with access to secure tenure:                         |       |      |       |       |       |       |       |       |       |      |       |      |      |
|   | Proportion of households who own or rent their homes %                         |       |      | 87.7  |       |       | 85.1  |       |       | 87.3  |      |       | 83.5 |      |
|   | Proportion of households possessing a land ownership certificate %             |       |      |       |       |       |       |       |       |       |      |       | 32.3 |      |

**(i) Target 10 Progress - Sustainable Access to Safe Drinking Water**

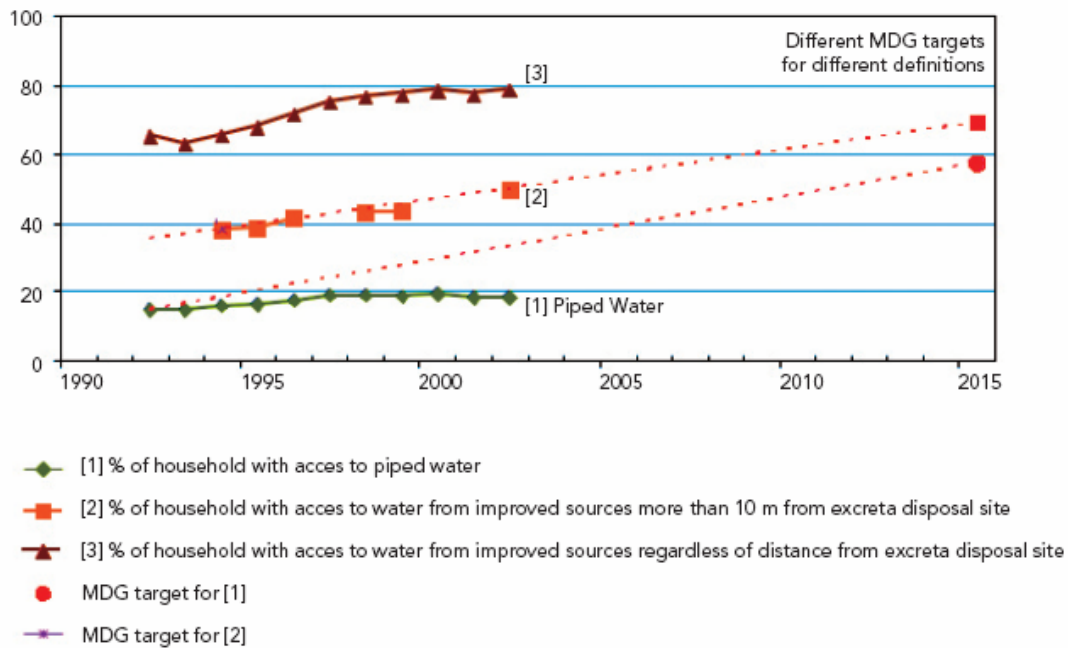
Criteria defining access to safe drinking water can be defined in several ways:

1. % of households using piped water (regarded as the most reliable and closest to health standards).
2. % of population using water from “improved sources” more than 10 metres from an excreta disposal site - such improved sources include piped water, pumped water, packaged water, water from a protected well, protected spring or rainwater.
3. % of households using water from “improved sources” regardless of distance from excreta disposal sites (this definition is likely to include contaminated water).

Access to piped water (definition 1) is still very low in Indonesia, with progress negligible over the past decade. Using definition 2, some 50% of the population had access to water from improved sources by 2002 (see **Table 4**). Access to water under each of the above definitions is summarised in **Figure 2** below, with further details by province for 1992 to 2002 in the tables for total and urban populations included in **Appendices 1 and 2**. 69% of the rural population and 89% of the urban population were estimated to have access to improved water sources in 2002<sup>11</sup>, slightly less than the figure of 91.4% indicated for urban coverage in Appendix 2.

<sup>11</sup> 2005 World Population Datasheet, Population Reference Bureau, 2005.

**Figure 2 Access to Water According to Different Definitions**



Since 1962, Regional Water Enterprises (Perusahaan Daerah Air Minum, or PDAMs), of which there were more than 300 in 2003, have been established and are responsible for supplying treated water to urban areas, although they may also supply limited adjacent rural areas. PDAMs are wholly owned by the Kabupaten or Kotamadya they serve, are semi-autonomous, and are not an arm or division of government at any level. However, local governments are responsible for setting tariffs and, in practice, often interfere in PDAM management. It is proposed to introduce new legislation soon to divide PDAMs into two new company models: a regional company and a limited liability company, with the latter permitted to obtain loans from domestic and off-shore lenders for business, investment and development.

Since the early 1990s, water resources and demand have been managed through Integrated Water Resource Management (IWRM) approaches throughout the whole river basin by the establishment of formal River Basin organisations. However, the need now is to apply a holistic and consensual approach to integrated river basin development. Groundwater is generally used for water supply with surface water used for irrigation. In major urban centres, industries and businesses not connected to piped water systems because of poor service levels have tended to develop their own deep tubewells (often abstracting water illegally), thereby depleting the shallow aquifers used by poorer city inhabitants and permitting saline intrusion. In some cities groundwater drawdown has led to ground subsidence, for example 1.5m in 10 years has been estimated in some areas of north Jakarta. The long term solution is for city dwellers to be supplied by piped water systems.

The quality of water supplied by most PDAMs does not comply with Ministry of Health drinking water standards<sup>12</sup>, and is best described as clean water (defined as

<sup>12</sup> Ministry of Health Decree No. 907 defines drinking water as treated or untreated water that meets health requirements and can be drunk directly.

water used for daily needs and meeting health requirements but needing to be boiled to drink it). Although PDAMs treat water for direct drinking from the tap the poor condition of distribution networks and intermittent supply lead to contamination, making the water unsafe for direct consumption. About half the urban population in Indonesia relies on using water from deep or shallow wells, or from water vendors. Competition between different water providers has increased, particularly near rapidly expanding cities where traditional rice cultivators are reluctant to relinquish historic water rights.

Although it was agreed at the 2002 World Summit on Sustainable Development that water is a human right, in Indonesia the provision of drinking water is not a development priority, particularly among regional governments. Although management of the water supply function has been decentralised, financing mechanisms for drinking water facilities and infrastructure are still centralised and central government is still regarded as fully responsible for drinking water supply. In view of the increasing demand for potable water and limited central government budgets, it is likely that the MDG target for safe water will not be reached unless the present trends in funding are changed. A major constraint is the lack of reliable routine data, although the quality of data in urban areas is generally superior to that in rural areas due to better management. Organisations supplying water to rural areas generally have no clear mechanisms for data collection and compilation.

Between 1989 and 1994, access to piped water in urban areas increased by 6.5% annually against a growth rate of 4.3% annually of the population without piped water. By 2000, water supplied by PDAMs covered 51.7% of the urban population and 5.4% of the rural population, representing 56.6 million people in total (further details are provided in the table in **Appendix 3**). Technical inadequacies and managerial shortcomings within PDAMs, together with the limited budget to improve water supply systems, are major weaknesses slowing down efforts to improve coverage. Service planning is still supply orientated and does not accommodate community needs and expectations, making consumers reluctant to pay for water. The lack of independence to determine and manage investment programmes has led many PDAMs into financial difficulties, with 82% of PDAMs having negative profitability and 44% with revenue below O&M costs. In fact, only 10% of all PDAMs are in a healthy financial position, with currently 201 out of the 293 PDAMs in debt totalling Rupiah 4.2 trillion (US\$ 0.45 billion<sup>13</sup> approximately). Clearing current debt is a major obstacle to coverage expansion, therefore, particularly as lending to defaulting regions and their indebted companies is prohibited until existing loans are restructured, and without restructuring external loan assistance to most defaulting PDAMs will be unavailable. The financial plight of many PDAMs is primarily due to the low margin between the average water charge of Rp 1,258/m<sup>3</sup> (US\$ 0.14/m<sup>3</sup>) and average costs of Rp 1,161/m<sup>3</sup> (US\$ 0.13/m<sup>3</sup>)<sup>14</sup>. On average, 14.1% of revenue comes from industrial charges. Tariffs therefore must be increased, no matter how much efficiency is increased, to rectify the low debt service capacity and hence improve the creditworthiness of PDAMs.

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<sup>13</sup> Based on exchange rate of Rupiah 9,360 = US\$ 1 at March 2005 from Country Strategy and Program Update – Indonesia 2005, ADB, March 2005.

<sup>14</sup> “National Water Sector Profile for Indonesia” Draft, ADB, March 2005, page 100.

Small Scale Private Water Providers (SSPWP) provide water to most of the remainder of the population in urban areas as well as 80% in rural areas<sup>15</sup>, and so can be regarded as the major providers of water and sanitation services nationally, if self-provisioning by beneficiaries is excluded. SSWSP charges for even non-piped water are substantially higher than PDAM charges (up to 10 times higher), impacting heavily on the poor who frequently have no alternative supplier. Where there are low connection rates or where service is less than 6 hours/day, the presence of SSPWPs is likely to be significant, exemplified by the situation in Jakarta where 44% of the population, some 4 million people<sup>16</sup>, are estimated to rely on SSPWPs.

Unaccounted for water averaged 36% in 2000 (see **Appendix 3**). Installed system capacity in 2000 was 95,000 l/s but to meet the MDG target it will need to be increased to 168,000 l/s by 2015. This will require an investment of Rupiah 42.8 trillion, equivalent to Rupiah 3.3 trillion annually<sup>17</sup>. Institutional capacity building up to 2015 will require a further US\$ 40/capita.

Involvement of the private sector has so far been limited, with only 6 private water supply companies operating<sup>18</sup>. This is partly due to uncertainty over laws regulating privatisation and public private partnerships (PPP). Legal clarity and guaranteed law enforcement are critical as water supply systems require substantial long term investments. Achievement of water sector MDGs without massive private sector finance has been recognised by Central Government. The New Water Law 7/2004<sup>19</sup>, governing utilisation of water resources and water supply, supports PSP. Responsibility for water supply remains with the government and infrastructure management will still be under the PDAMs but they can choose to obtain assistance through the PSP route. However, until there is greater financial transparency, and tariffs that include commercially attractive profit margins, it is unlikely that PSP opportunities will be sufficiently attractive to the private sector.

Environmental degradation greatly affects the quality and quantity of primary water sources, a critical point having already been reached in Java and Bali. Decentralisation has exacerbated the situation as the authority of PDAMs only extends to its regional boundaries of, making it difficult for regions that do not have a primary water source to access one. Water quality in urban areas is particularly affected by rapid industrialisation, population density, and municipal and industrial pollution, etc.

The low level of access to safe water in rural areas is linked to low community awareness. Further promotional activities and campaigns are therefore necessary, as well as the provision of technical guidance to communities. Experience has shown that even poor communities are willing to pay for clean water facilities, as they often pay the informal sector more for their water than more affluent consumers. Community needs, capacities and demands should therefore be incorporated into the

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<sup>15</sup> “National Water Sector Profile for Indonesia” Draft, ADB, March 2005, page 103.

<sup>16</sup> “National Water Sector Profile for Indonesia” Draft, ADB, March 2005, page 50

<sup>17</sup> Assumes an annual population growth rate of 1.63% up to 2015, and an exchange rate of Rupiah 8,500 = US\$ 1.

<sup>18</sup> Including Thames Water (East Jakarta), Suez-Lyonnais (West Jakarta), Biwater (Batam), Cascal BV (Pekanbaru) and DWB (Manado).

<sup>19</sup> Executed on 18<sup>th</sup> February 2004.

planning process, as sustainability can only be achieved if it involves users, in particular women, from an early stage.

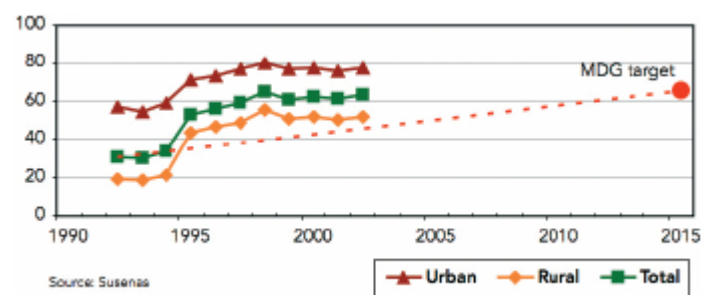
Programmes developed and implemented by the government of Indonesia include:

- Drafting and socialising the National Policy on Development of Drinking Water Infrastructure and Facilities and Environmental Sanitation to help local governments achieve MDG targets.
- Assist PDAMs to improve their performance and professionalism (currently some 16 PSP concessions are being offered by the Government<sup>20</sup>).
- Increase the active role of communities through an investment-sharing approach in rural drinking water projects where technical assistance and training are given to communities to operate, maintain and manage water facilities and infrastructure. Central and local governments are expected to replicate these activities, including in urban areas.
- Develop databases for water service coverage in urban and rural areas.
- The Indonesian government is in the process of preparing a 15-year Water Sector Road Map

## (ii) Target 10 Progress - Sustainable Access to Basic Sanitation

Some 64% of the population has access to basic sanitation facilities (78% urban, 52% rural), although the available data does not indicate their real condition or whether they meet health and technical standards. True coverage levels are therefore likely to be lower than those reported and shown in **Figure 3** below. Further details by province for 1992 to 2002 are summarised in the tables for total, rural and urban populations included in **Appendices 4, 5 and 6** respectively. Other reports claim an overall figure of 58.8% for sustainable access to basic sanitation facilities in 2003<sup>21</sup>.

**Figure 3 % of Households with Access to Improved Sanitation**



Indonesia has one of the lowest urban sewerage coverage ratios in Asia, with only 7 cities having any kind of partial system<sup>22</sup>, and serving only some 1.3% of the urban population. The majority of the population rely on on-site sanitation such as septic

<sup>20</sup> “National Water Sector Profile for Indonesia” Draft, ADB, March 2005, page 136.

<sup>21</sup> Country Strategy and Program Update – Indonesia 2005, ADB, March 2005.

<sup>22</sup> 5 of the cities - Bandung (20% coverage), Cirebon (30%), Medan (2.5%), Surakarta (9.3%) and Tangerang - are operated by special sections of the PDAMs. In Jakarta, the equivalent of a wastewater treatment PDAM controls the system which covers about 5% of the city. (From “National Water Sector Profile for Indonesia” Draft, ADB, March 2005, page 106).

tanks, but septage collection and disposal is inadequate with most sewage finding its way into rivers and canals. The result is widespread contamination of surface water resources and groundwater which has led to repeated epidemics and a high incidence of waterborne diseases and environmental pollution. The sanitation sector is therefore dominated by unregulated informal service operators, including private providers, communities, NGOs and households, and accounts for over 95% of the market, with keen competition between the non-regulated operators. Construction of household septic tanks, de-sludging and the removal of septage are also normally undertaken by the informal private sector. In rural areas community-managed services are estimated to be meeting the needs of at least 33% of the national population.

Communities, especially in rural areas, lack an understanding of the importance of sanitation for health, resulting in poor maintenance and inappropriate use of latrines, sometimes for purposes other than those intended.

As with water supply, sanitation is not a priority for central or regional governments, a fact that is reflected in the limited sanitation budget. Proper management of liquid municipal and industrial wastes is essential to avoid pollution which not only has an impact on health but also increases water treatment costs, especially in urban areas. A survey of shallow wells in Jakarta indicated that groundwater pollution by human excreta is widespread, with 84% of samples showing contamination. More septic tanks and sewerage systems that comply with health standards are therefore needed.

One of the challenges is to improve the quality of sanitation facilities to meet technical and health standards whilst ensuring that communities can maintain them easily. A further challenge is to raise awareness among communities on health and hygiene issues and the importance of using proper latrines. Central and regional governments as well as the private sector need to be mobilised to provide greater support to sanitation.

Sanitation policies include:

- Raising awareness of sanitation as a basic need among government decision-makers and legislators, the private sector and communities through sustained public campaigns, media and education programmes, and through the implementation of pilot projects to demonstrate success and achievability.
- Encouraging the use of latrines by promoting basic sanitation infrastructure models that are affordable, efficient and easy to maintain.
- Develop strategies to achieve the MDG targets, including an action plan.

#### **IV. Addressing Water Supply and Sanitation MDGs to 2015**

29. Challenges facing the water sector can be summarised as follows:

- Agreement is needed on the quality of water supplied to communities and on compliance with safe drinking water standards, as huge costs are potentially involved. The priority should be to ensure access to water of a quality that can be treated by communities themselves at reasonable cost by boiling or filtering to make it suitable for drinking.

- PDAMs need to increase the independence of management to encourage efficient operation and improve accountability.
- Key challenges include ensuring that planning is linked to demand; funds are mobilised through investment, government budget allocations or through setting rates according to production costs and consumer capacity; improving service quality to communities; and promoting health and hygiene among communities to create a demand for and increase ownership of safe water facilities.
- To increase drinking water supply capacity, Rupiah 3.3 trillion is needed annually, posing a major challenge to the government to use available funds strategically, encourage private sector participation as well as businesses and communities to invest in water supply, and mobilise funds from communities.
- More community involvement is needed in planning, developing and operating water supply services.
- A valid and accurate database is needed in both urban and rural areas to measure progress towards achievement of MDG targets.

Water policies and programmes necessary to address safe drinking water issues therefore include:

- Develop an action plan and strategies to achieve MDG targets.
- Develop alternative financial resources for drinking water facilities and infrastructure through local governments. This will require a more conducive business environment to provide clear and transparent laws and regulations, law enforcement, and adjustment of financing systems to reflect the capacities of communities. It could also mean issuing municipal bonds supported by local government and/or through securitisation; selling PDAM shares to the private sector or communities; improving tariff mechanisms for independent self-supporting operations of water suppliers, etc.
- Protect primary water resources across sectors and regions through water board authorities that comprise all stakeholders, and develop conservation programmes for the environment and water resources.
- Improve PDAM technical and managerial skills, clearly separating operation and regulatory functions.
- Empower rural communities through public education campaigns; strengthen the role and ownership of rural communities in providing and managing water resources through an investment-sharing approach; provide technical assistance and training to rural communities in operating and maintaining water infrastructure and facilities, as well as in water management.
- Improve, monitor and evaluate systems using participatory approaches and apply them in policies to improve data systems.

32. The ADB country strategy for Indonesia is based on five development objectives: (i) improve governance and strengthen the capacity for long-term sustainable development; (ii) meet local needs through decentralisation and the identification of good local development partners; (iii) promote human development by improving provision of social services and access to them by the poor; (iv) mainstream environmental management and encourage sustainable use of natural resources, and (v) increase the potential for poverty-reducing growth through

infrastructure investments, strengthened corporate governance and expanded private sector development.

## **V. Conclusion**

38. Unless there are dramatic improvements there is likely to be a short-fall in the achievement of MDG targets for access to safe drinking water and sanitation both in urban and rural areas. The fact that water supply and sanitation is not a priority for central or regional governments, reflected in the low service coverage and limited budget allocations, is a cause for real concern. In addition, the poor performance of many of the PDAMs is largely attributable to inadequate tariffs and the consequent high sector debt, with many PDAMs in severe financial difficulties and with low creditworthiness.

The focus needs to be on improving management of the PDAMs, introducing tariff reform and expanding service coverage, and seriously considering attracting PSP and developing novel funding schemes (municipal bonds, shares, etc.) for critical cities in need of investment. Innovative ways need to be developed to deliver services to the poor at affordable cost, possibly requiring research into new low-cost service providers, or novel methods of empowering communities to develop and operate their own systems cost-effectively. Greater community involvement and participation is therefore needed in the planning, development and operation of water supply services in poor urban as well as in rural areas, together with the promotion of community driven and owned schemes. Sectoral regulation also needs to be strengthened and improved.

## **VI. Options for Future Actions**

39. Summarised below is a list of possible future options to promote improved progress towards achievement of Target 10 by 2015. These are designed to promote discussion and can be amended and added to as part of the dialogue process.

- Increase the role of the private sector and PSP in Indonesia (management, lease, concession contracts, etc.)
- Hold Roundtable Discussions on PSP and Regulation in the Water Sector (Jakarta only or regionally?)
- Provide legal/technical assistance to develop model PSP agreements
- Seminar on creating the enabling environment – governance, sustainable tariffs, innovative financing packages, etc.
- Identification of feasible PSP options and selection of the optimal one.
- Advice/support on tariff setting in relation top O&M costs, and the necessary linkage to service improvements.
- Options and new incentives for serving the poor better (research on new low-revenue providers?)

**Appendix 1 % of Total Households/Population by Type of Water Source, 1992 – 2002**

| National/province        | 1992                      |  |
|--------------------------|---------------------------|--|
|                          | Piped water <sup>1)</sup> | Water from improved sources regardless of distance from excreta disposal <sup>3)</sup> |
| Nanggroe Aceh Darussalam | 8.3                       | 56.2   |
| North Sumatra            | 21.8                      | 64.8   |
| West Sumatra             | 21.5                      | 60.1   |
| Riau                     | 7.9                       | 60.5   |
| Jambi                    | 12.8                      | 61.4   |
| South Sumatra            | 17.2                      | 46.6   |
| Bengkulu                 | 12.5                      | 41.2   |
| Lampung                  | 4.4                       | 36.1   |
| Bangka Belitung          | --                        | ---  |
| Jakarta                  | 43.9                      | 98.4   |
| West Java                | 7.6                       | 68.6   |
| Central Java             | 11.2                      | 66.9   |
| Yogyakarta               | 8.3                       | 84.1   |
| East Java                | 14.9                      | 69.7   |
| Banten                   | --                        | ---  |
| Bali                     | 30.9                      | 77.8   |
| West Nusa Tenggara       | 13.7                      | 71.9   |
| East Nusa Tenggara       | 19.7                      | 68.5   |
| West Kalimantan          | 9.5                       | 42.2   |
| Central Kalimantan       | 13.2                      | 31.3   |
| South Kalimantan         | 25.2                      | 47.8   |
| East Kalimantan          | 35.6                      | 53.9   |
| North Sulawesi           | 21.6                      | 71.4   |
| Central Sulawesi         | 20.6                      | 48.9   |
| South Sulawesi           | 14.7                      | 57.1   |
| Southeast Sulawesi       | 24.8                      | 50.0   |
| Gorontalo                | --                        | ---  |
| Maluku                   | 16.4                      | 56.2   |
| North Maluku             | --                        | ---  |
| Papua                    | 9.6                       | 41.8   |
| <b>Indonesia</b>         | <b>14.7</b>               | <b>65.1</b>  |

**Appendix 1 % of Total Households/Population by Type of Water Source, 1992 – 2002 (cont.)**

| National/province        | 2002                      |   |  |
|--------------------------|---------------------------|---|--|
|                          | Piped water <sup>1)</sup> | Water from improved sources controlled for excreta disposal <sup>2)</sup> | Water from improved sources regardless of distance from excreta disposal <sup>3)</sup> |
| Nanggroe Aceh Darussalam | ---                       | ---   | ---  |
| North Sumatra            | 24.1                      | 50.2  | 75.5   |
| West Sumatra             | 21.0                      | 47.0  | 70.0   |
| Riau                     | 11.0                      | 51.6  | 70.2   |
| Jambi                    |                           | 50.3  | 63.1   |
| South Sumatra            | 15.8                      | 41.3  | 61.4   |
| Bengkulu                 | 11.3                      | 36.3  | 54.5   |
| Lampung                  | 5.3                       | 39.6  | 62.9   |
| Bangka Belitung          | 8.4                       | 41.9  | 64.5   |
| Jakarta                  | 49.8                      | 70.4  | 99.3   |
| West Java                | 13.6                      | 41.2  | 81.4   |
| Central Java             | 15.0                      | 53.2  | 82.0   |
| Yogyakarta               | 9.4                       | 61.3  | 87.4   |
| East Java                | 19.1                      | 57.8  | 85.0   |
| Banten                   | 9.9                       | 40.3  | 84.5   |
| Bali                     | 42.2                      | 73.2  | 92.8   |
| West Nusa Tenggara       | 12.5                      | 43.5  | 78.6   |
| East Nusa Tenggara       | 14.9                      | 42.5  | 66.3   |
| West Kalimantan          | 10.6                      | 51.8  | 57.2   |
| Central Kalimantan       | 13.5                      | 34.1  | 46.7   |
| South Kalimantan         | 33.5                      | 47.7  | 57.2   |
| East Kalimantan          | 46.1                      | 64.6  | 70.4   |
| North Sulawesi           | 32.4                      | 57.8  | 83.4   |
| Central Sulawesi         | 15.4                      | 38.0  | 71.1   |
| South Sulawesi           | 20.8                      | 45.8  | 72.1   |
| Southeast Sulawesi       | 22.5                      | 51.3  | 73.0   |
| Gorontalo                | 11.2                      | 30.5  | 68.3   |
| Maluku                   | ---                       | ---   | ---  |
| North Maluku             | ---                       | ---   | ---  |
| Papua                    | ---                       | ---   | ---  |
| <b>Indonesia</b>         | <b>18.3</b>               | <b>50.0</b>   | <b>78.7</b>  |

Definitions:

<sup>1)</sup> Percentage of households surveyed using piped water

<sup>2)</sup> Percentage of population using water from improved sources more than 10 m away from excreta disposal site. The improved sources include: piped water, pumped water, packaged water, water from a protected well or protected spring, rain water. Susenas includes packaged water as a source only from 1998 on

<sup>3)</sup> Percentage of households surveyed using water from improved sources, including those less than 10 m away from excreta disposal

Source: Susenas data as published in Welfare Statistics by BPS—Statistics Indonesia. Includes East Timor up to 1998. 2002 data for Aceh, Maluku, Maluku Utara and Papua represent the capital city only.

**Appendix 2 % of Urban Households/Population by Type of Water Source, 1992 – 2002**

| National/province        | 1992                      |  |
|--------------------------|---------------------------|--|
|                          | Piped water <sup>1)</sup> | Water from improved sources regardless of distance from excreta disposal <sup>2)</sup> |
| Nanggroe Aceh Darussalam | 40.6                      | 86.7   |
| North Sumatra            | 43.9                      | 85.6   |
| West Sumatra             | 48.8                      | 93.2   |
| Riau                     | 19.8                      | 70.2   |
| Jambi                    | 27.5                      | 86.5   |
| South Sumatra            | 52.1                      | 75.8   |
| Bengkulu                 | 25.0                      | 72.9   |
| Lampung                  | 18.4                      | 56.6   |
| Bangka Belitung          | ---                       | ---  |
| Jakarta                  | 43.9                      | 98.4   |
| West Java                | 17.0                      | 84.1   |
| Central Java             | 33.5                      | 85.2   |
| Yogyakarta               | 14.8                      | 89.6   |
| East Java                | 39.9                      | 84.5   |
| Banten                   | ---                       | ---  |
| Bali                     | 46.2                      | 90.2   |
| West Nusa Tenggara       | 30.6                      | 80.6   |
| East Nusa Tenggara       | 58.4                      | 84.8   |
| West Kalimantan          | 42.3                      | 94.5   |
| Central Kalimantan       | 34.8                      | 80.9   |
| South Kalimantan         | 76.3                      | 84.0   |
| East Kalimantan          | 67.4                      | 89.6   |
| North Sulawesi           | 52.0                      | 88.5   |
| Central Sulawesi         | 43.4                      | 89.4   |
| South Sulawesi           | 50.1                      | 81.4   |
| Southeast Sulawesi       | 49.8                      | 79.1   |
| Gorontalo                | ---                       | ---  |
| Maluku                   | 61.5                      | 85.9   |
| North Maluku             | ---                       | ---  |
| Papua                    | 61.3                      | 85.2   |
| <b>Indonesia</b>         | <b>35.3</b>               | <b>86.1</b>  |

**Appendix 2 % of Urban Households/Population by Type of Water Source, 1992 – 2002 (cont.)**

| National/province        | 2002                      |   |  |
|--------------------------|---------------------------|---|--|
|                          | Piped water <sup>1)</sup> | Water from improved sources controlled for excreta disposal <sup>2)</sup> | Water from improved sources regardless of distance from excreta disposal <sup>3)</sup> |
| Nanggroe Aceh Darussalam | --                        | ---   | ---  |
| North Sumatra            | 45.9                      | 67.8  | 93.0   |
| West Sumatra             | 44.6                      | 66.9  | 89.9   |
| Riau                     | 22.7                      | 57.4  | 82.6   |
| Jambi                    | 38.8                      | 75.0  | 91.6   |
| South Sumatra            | 40.0                      | 60.5  | 83.4   |
| Bengkulu                 | 29.1                      | 51.2  | 76.6   |
| Lampung                  | 20.7                      | 49.3  | 75.0   |
| Bangka Belitung          | 18.6                      | 48.8  | 74.7   |
| Jakarta                  | 49.8                      | 70.4  | 99.3   |
| West Java                | 22.1                      | 49.3  | 90.8   |
| Central Java             | 28.2                      | 59.6  | 89.6   |
| Yogyakarta               | 11.0                      | 54.4  | 90.4   |
| East Java                | 35.7                      | 68.4  | 94.3   |
| Banten                   | 17.3                      | 47.5  | 95.7   |
| Bali                     | 46.6                      | 72.8  | 96.0   |
| West Nusa Tenggara       | 23.2                      | 49.3  | 81.1   |
| East Nusa Tenggara       | 55.4                      | 72.1  | 86.8   |
| West Kalimantan          | 26.5                      | 89.8  | 92.7   |
| Central Kalimantan       | 37.6                      | 57.7  | 77.4   |
| South Kalimantan         | 71.0                      | 78.5  | 86.3   |
| East Kalimantan          | 70.0                      | 86.4  | 89.4   |
| North Sulawesi           | 54.8                      | 70.3  | 88.7   |
| Central Sulawesi         | 36.7                      | 49.4  | 87.4   |
| South Sulawesi           | 58.6                      | 75.9  | 90.8   |
| Southeast Sulawesi       | 58.7                      | 76.6  | 89.2   |
| Gorontalo                | 29.9                      | 51.8  | 91.7   |
| Maluku                   | --                        | ---   | ---  |
| North Maluku             | --                        | ---   | ---  |
| Papua                    | --                        | ---   | ---  |
| <b>Indonesia</b>         | <b>33.3</b>               | <b>61.4</b>   | <b>91.4</b>  |

Definitions:

<sup>1)</sup> Percentage of households surveyed using piped water

<sup>2)</sup> Percentage of population using water from improved sources more than 10 m away from excreta disposal site. The improved sources include: piped water, pumped water, packaged water, water from a protected well or protected spring, rain water. Susenas includes packaged water as a source only from 1998 on

<sup>3)</sup> Percentage of households surveyed using water from improved sources, including those less than 10 m away from excreta disposal

Source: Susenas data as published in Welfare Statistics by BPS—Statistics Indonesia. Includes East Timor up to 1998. 2002 data for Aceh, Maluku, Maluku Utara and Papua represent the capital city only.

### Appendix 3 2000 Coverage by Regional Drinking Water Companies (PDAMs)

| No | National/ province       | Urban population   | Number of cities | Production     |             | Service coverage  |                |
|----|--------------------------|--------------------|------------------|----------------|-------------|-------------------|----------------|
|    |                          |                    |                  | lt/second      | Leakage (%) | Population        | Proportion (%) |
| A  | Sumatra                  | 17,884,336         | 129              | 26,907         | 33          | 9,686,679         | 54.2           |
| 1  | Nanggroe Aceh Darussalam | 1,636,288          | 18               | 592            | 43          | 1,099,033         | 67.2           |
| 2  | North Sumatra            | 6,940,581          | 33               | 8,038          | 29          | 3,259,964         | 47.0           |
| 3  | West Sumatra             | 1,810,884          | 13               | 2,426          | 32          | 1,014,966         | 56.0           |
| 4  | Riau                     | 1,432,729          | 16               | 2,733          | 40          | 890,685           | 62.2           |
| 5  | Jambi                    | 1,214,291          | 11               | 1,835          | 29          | 90,858            | 74.8           |
| 6  | South Sumatra            | 2,380,358          | 14               | 3,429          | 31          | 1,130,269         | 47.5           |
| 7  | Bengkulu                 | 394,367            | 6                | 1,179          | 22          | 29,162            | 73.9           |
| 8  | Lampung                  | 2,074,838          | 18               | 1,347          | 30          | 1,091,562         | 52.6           |
| B  | Java-Bali                | 75,049,732         | 141              | 68,003         | 40          | 37,722,303        | 50.3           |
| 1  | Jakarta                  | 12,506,352         | 1                | 22,492         | 55          | 8,113,113         | 64.9           |
| 2  | West Java                | 32,902,780         | 47               | 17,602         | 29          | 8,984,381         | 27.3           |
| 3  | Central Java             | 12,221,214         | 33               | 7,548          | 33          | 7,452,623         | 61.0           |
| 4  | Yogyakarta               | 856,319            | 6                | 954            | 38          | 699,033           | 81.6           |
| 5  | East Java                | 14,597,730         | 45               | 15,961         | 38          | 10,810,145        | 74.1           |
| 6  | Bali                     | 1,965,337          | 9                | 3,446          | 23          | 1,663,008         | 84.6           |
| C  | Kalimantan               | 5,259,688          | 37               | 8,435          | 29          | 3,228,400         | 61.4           |
| 1  | West Kalimantan          | 1,016,552          | 12               | 2,428          | 31          | 645,841           | 63.5           |
| 2  | Central Kalimantan       | 1,012,156          | 8                | 1,182          | 35          | 372,362           | 36.8           |
| 3  | East Kalimantan          | 1,883,453          | 6                | 2,746          | 27          | 1,219,077         | 64.7           |
| 4  | South Kalimantan         | 1,347,527          | 11               | 2,079          | 27          | 99,112            | 73.6           |
| D  | Sulawesi                 | 6,103,336          | 63               | 12,925         | 27          | 3,802,374         | 62.3           |
| 1  | North Sulawesi           | 1,548,496          | 10               | 3,064          | 28          | 988,114           | 63.8           |
| 2  | Central Sulawesi         | 635,055            | 15               | 492            | 39          | 292,614           | 46.1           |
| 3  | South Sulawesi           | 3,544,560          | 30               | 8,656          | 25          | 2,264,031         | 63.9           |
| 4  | Southeast Sulawesi       | 375,225            | 8                | 713            | 39          | 257,615           | 68.7           |
| E  | Others                   | 5,115,469          | 29               | 3,059          | 32          | 2,138,371         | 41.8           |
| 1  | West Nusa Tenggara       | 2,721,435          | 6                | 949            | 28          | 662,529           | 24.3           |
| 2  | East Nusa Tenggara       | 1,074,866          | 6                | 832            | 29          | 748,545           | 69.6           |
| 3  | Maluku                   | 506,772            | 7                | 401            | 28          | 267,382           | 52.8           |
| 4  | North Maluku             | 176,298            | 3                | 67             | 26          | 113,943           | 64.6           |
| 5  | Papua                    | 636,098            | 7                | 810            | 43          | 345,972           | 54.4           |
| I  | Western Indonesia        | 92,934,068         | 270              | 9,491          | 38          | 47,408,982        | 51.0           |
| II | Eastern Indonesia        | 16,478,493         | 129              | 24,419         | 28          | 9,169,145         | 55.6           |
|    | <b>Indonesia</b>         | <b>109,412,561</b> | <b>399</b>       | <b>119,329</b> | <b>36</b>   | <b>56,578,127</b> | <b>51.7</b>    |

#### Appendix 4 % of Total Households/Population with Access to Improved Sanitation, 1992 – 2002

| National/ province       | Total       |             |             |             |             |             |             |             |             |             |             |
|--------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
|                          | 1992        | 1993        | 1994        | 1995        | 1996        | 1997        | 1998        | 1999        | 2000        | 2001        | 2002*       |
| Nanggroe Aceh Darussalam | 25.1        | 27.7        | 28.6        | 51.6        | 51.1        | 57.5        | 57.4        | 59.8        | ---         | ---         | 95.6        |
| North Sumatra            | 41.1        | 35.4        | 36.5        | 62.0        | 64.9        | 68.3        | 71.7        | 70.8        | 72.7        | 70.2        | 72.7        |
| West Sumatra             | 19.8        | 20.4        | 21.2        | 32.2        | 31.8        | 36.1        | 41.8        | 39.4        | 41.3        | 42.5        | 45.2        |
| Riau                     | 32.0        | 32.0        | 32.8        | 64.4        | 67.2        | 71.3        | 77.8        | 76.7        | 76.3        | 75.7        | 79.9        |
| Jambi                    | 25.0        | 20.9        | 31.4        | 47.0        | 48.9        | 55.0        | 68.0        | 55.2        | 55.1        | 60.7        | 61.1        |
| South Sumatra            | 29.3        | 33.9        | 35.6        | 50.6        | 56.4        | 57.2        | 65.2        | 59.8        | 62.1        | 62.0        | 62.6        |
| Bengkulu                 | 32.3        | 29.8        | 32.1        | 54.2        | 53.5        | 59.5        | 66.4        | 66.0        | 60.5        | 63.2        | 64.0        |
| Lampung                  | 34.4        | 35.0        | 36.6        | 74.9        | 79.5        | 81.0        | 86.0        | 81.3        | 84.9        | 80.5        | 81.8        |
| Bangka Belitung          | ---         | ---         | ---         | ---         | ---         | ---         | ---         | ---         | ---         | 59.2        | 58.0        |
| Jakarta                  | 82.5        | 78.8        | 85.1        | 84.7        | 90.6        | 93.1        | 94.7        | 93.2        | 92.7        | 91.7        | 93.2        |
| West Java                | 26.4        | 26.0        | 31.4        | 39.1        | 43.2        | 48.8        | 57.8        | 50.3        | 54.0        | 50.5        | 53.5        |
| Central Java             | 26.2        | 29.2        | 31.6        | 54.5        | 56.5        | 59.0        | 63.0        | 59.1        | 59.9        | 60.2        | 61.3        |
| Yogyakarta               | 40.9        | 43.0        | 60.9        | 76.4        | 77.2        | 75.7        | 83.2        | 78.3        | 81.4        | 82.2        | 84.7        |
| East Java                | 27.6        | 26.7        | 31.8        | 57.3        | 59.2        | 60.1        | 64.5        | 64.2        | 64.0        | 61.6        | 64.5        |
| Banten                   | ---         | ---         | ---         | ---         | ---         | ---         | ---         | ---         | ---         | 63.3        | 61.2        |
| Bali                     | 39.9        | 41.4        | 36.9        | 63.6        | 66.2        | 69.8        | 72.0        | 74.2        | 77.0        | 72.3        | 76.4        |
| West Nusa Tenggara       | 17.0        | 15.4        | 20.8        | 29.3        | 34.6        | 42.0        | 40.2        | 41.5        | 44.2        | 40.4        | 41.2        |
| East Nusa Tenggara       | 21.9        | 14.7        | 24.6        | 66.7        | 74.3        | 70.1        | 75.1        | 65.3        | 63.2        | 65.2        | 65.0        |
| West Kalimantan          | 21.3        | 23.7        | 13.3        | 41.8        | 44.6        | 47.1        | 58.5        | 51.9        | 59.1        | 54.8        | 55.8        |
| Central Kalimantan       | 16.7        | 15.9        | 14.8        | 33.1        | 37.6        | 40.9        | 60.5        | 47.2        | 40.8        | 52.1        | 49.7        |
| South Kalimantan         | 28.0        | 11.3        | 15.9        | 47.6        | 50.9        | 52.9        | 60.7        | 56.9        | 53.8        | 54.5        | 57.7        |
| East Kalimantan          | 43.3        | 42.4        | 41.3        | 65.9        | 72.8        | 71.6        | 82.4        | 74.3        | 68.4        | 74.2        | 75.6        |
| North Sulawesi           | 33.5        | 35.1        | 36.9        | 68.6        | 68.3        | 74.2        | 74.1        | 71.3        | 73.2        | 78.6        | 79.1        |
| Central Sulawesi         | 21.1        | 23.5        | 21.5        | 41.3        | 44.7        | 51.6        | 48.9        | 49.2        | 49.6        | 47.8        | 49.6        |
| South Sulawesi           | 36.8        | 26.6        | 30.4        | 54.2        | 58.2        | 60.0        | 63.5        | 61.8        | 63.6        | 61.1        | 61.8        |
| Southeast Sulawesi       | 37.1        | 31.8        | 43.8        | 56.4        | 61.8        | 56.7        | 69.6        | 60.2        | 64.2        | 63.0        | 59.8        |
| Gorontalo                | ---         | ---         | ---         | ---         | ---         | ---         | ---         | ---         | ---         | 49.1        | 44.6        |
| Maluku                   | 24.0        | 25.3        | 29.3        | 37.3        | 42.8        | 44.2        | 49.3        | 44.0        | ---         | 45.0        | 84.8        |
| North Maluku             | ---         | ---         | ---         | ---         | ---         | ---         | ---         | ---         | ---         | 69.2        | 84.9        |
| Papua                    | 27.6        | 33.5        | 25.9        | 46.7        | 41.8        | 50.1        | 53.5        | 50.9        | 48.7        | 48.1        | 95.8        |
| <b>Indonesia</b>         | <b>30.9</b> | <b>30.2</b> | <b>33.9</b> | <b>53.4</b> | <b>56.4</b> | <b>59.3</b> | <b>64.9</b> | <b>61.1</b> | <b>62.7</b> | <b>61.5</b> | <b>63.5</b> |

**Appendix 5 % of Rural Households/Population with Access to Improved Sanitation, 1992 – 2002 (cont.)**

| National/ province       | Rural       |             |             |             |             |             |             |             |             |             |             |
|--------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
|                          | 1992        | 1993        | 1994        | 1995        | 1996        | 1997        | 1998        | 1999        | 2000        | 2001        | 2002*       |
| Nanggroe Aceh Darussalam | 17.7        | 20.6        | 21.2        | 44.4        | 43.7        | 51.0        | 50.9        | 54.5        | ---         | ---         | ---         |
| North Sumatra            | 25.4        | 18.7        | 17.9        | 46.0        | 50.8        | 52.2        | 57.5        | 57.3        | 60.8        | 55.3        | 58.1        |
| West Sumatra             | 10.0        | 10.2        | 10.9        | 19.8        | 20.5        | 22.4        | 29.6        | 26.4        | 29.4        | 31.4        | 33.2        |
| Riau                     | 16.2        | 20.0        | 20.3        | 54.5        | 59.6        | 60.4        | 70.0        | 69.8        | 65.5        | 67.7        | 71.0        |
| Jambi                    | 15.2        | 17.0        | 22.4        | 36.0        | 38.0        | 46.2        | 58.7        | 43.0        | 43.1        | 52.1        | 52.7        |
| South Sumatra            | 17.7        | 24.6        | 24.7        | 42.4        | 46.4        | 46.4        | 56.9        | 47.5        | 54.6        | 53.0        | 51.5        |
| Bengkulu                 | 22.5        | 18.4        | 17.7        | 44.2        | 43.3        | 49.0        | 53.4        | 55.3        | 50.1        | 52.2        | 53.2        |
| Lampung                  | 30.7        | 31.5        | 31.5        | 74.2        | 79.1        | 79.4        | 85.7        | 80.6        | 84.6        | 78.9        | 80.2        |
| Bangka Belitung          | ---         | ---         | ---         | ---         | ---         | ---         | ---         | ---         | ---         | 45.8        | 44.2        |
| Jakarta                  | ---         | ---         | ---         | ---         | ---         | ---         | ---         | ---         | ---         | ---         | ---         |
| West Java                | 16.4        | 15.1        | 18.2        | 27.8        | 31.3        | 35.0        | 47.6        | 36.9        | 40.6        | 38.0        | 41.5        |
| Central Java             | 18.0        | 21.6        | 22.8        | 49.5        | 51.7        | 53.4        | 58.3        | 53.2        | 52.6        | 53.7        | 54.4        |
| Yogyakarta               | 27.3        | 21.3        | 56.7        | 80.4        | 81.9        | 86.1        | 89.8        | 85.0        | 88.0        | 84.9        | 89.0        |
| East Java                | 18.6        | 17.1        | 21.0        | 50.6        | 52.9        | 52.6        | 57.2        | 56.4        | 55.2        | 53.2        | 56.3        |
| Banten                   | ---         | ---         | ---         | ---         | ---         | ---         | ---         | ---         | ---         | 33.5        | 29.2        |
| Bali                     | 26.6        | 30.0        | 25.0        | 51.1        | 53.5        | 57.4        | 59.6        | 61.9        | 63.7        | 56.3        | 60.5        |
| West Nusa Tenggara       | 11.2        | 9.1         | 15.4        | 23.6        | 29.2        | 38.8        | 35.7        | 36.6        | 37.4        | 31.5        | 31.5        |
| East Nusa Tenggara       | 17.8        | 12.6        | 23.0        | 64.0        | 71.1        | 66.3        | 72.3        | 60.9        | 57.7        | 61.4        | 59.5        |
| West Kalimantan          | 9.8         | 13.8        | 11.4        | 30.6        | 35.0        | 36.8        | 49.0        | 40.2        | 47.7        | 43.0        | 44.3        |
| Central Kalimantan       | 7.2         | 7.3         | 8.4         | 23.7        | 26.1        | 29.7        | 50.2        | 34.9        | 27.5        | 37.9        | 38.4        |
| South Kalimantan         | 21.0        | 7.9         | 15.1        | 40.8        | 40.2        | 46.1        | 52.9        | 47.1        | 46.0        | 45.8        | 48.8        |
| East Kalimantan          | 19.9        | 24.9        | 27.1        | 53.9        | 61.0        | 62.1        | 71.9        | 67.8        | 50.8        | 63.3        | 65.1        |
| North Sulawesi           | 26.8        | 26.7        | 30.2        | 62.0        | 60.7        | 69.0        | 67.3        | 63.5        | 63.8        | 70.9        | 69.1        |
| Central Sulawesi         | 15.3        | 17.4        | 14.1        | 33.1        | 38.0        | 42.5        | 38.4        | 42.0        | 42.5        | 40.6        | 43.9        |
| South Sulawesi           | 30.2        | 21.1        | 23.4        | 44.5        | 48.2        | 49.6        | 52.9        | 51.8        | 53.4        | 49.4        | 50.2        |
| Southeast Sulawesi       | 34.5        | 29.0        | 40.8        | 52.8        | 57.3        | 51.0        | 67.8        | 54.8        | 58.6        | 56.6        | 52.6        |
| Gorontalo                | ---         | ---         | ---         | ---         | ---         | ---         | ---         | ---         | ---         | 36.9        | 33.3        |
| Maluku                   | 14.5        | 15.1        | 19.2        | 27.4        | 30.7        | 32.3        | 37.2        | 29.9        | ---         | 29.1        | ---         |
| North Maluku             | ---         | ---         | ---         | ---         | ---         | ---         | ---         | ---         | ---         | 62.6        | ---         |
| Papua                    | 21.3        | 22.7        | 14.2        | 37.5        | 30.0        | 39.6        | 41.6        | 40.2        | 37.5        | 34.9        | ---         |
| <b>Indonesia</b>         | <b>19.1</b> | <b>18.5</b> | <b>21.2</b> | <b>44.0</b> | <b>46.8</b> | <b>49.0</b> | <b>55.6</b> | <b>50.8</b> | <b>52.3</b> | <b>50.3</b> | <b>52.2</b> |

**Appendix 6 % of Urban Households/Population with Access to Improved Sanitation, 1992 – 2002 (cont.)**

| National/ province       | Urban       |             |             |             |             |             |             |             |             |             |             |
|--------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
|                          | 1992        | 1993        | 1994        | 1995        | 1996        | 1997        | 1998        | 1999        | 2000        | 2001        | 2002*       |
| Nanggroe Aceh Darussalam | 63.5        | 62.0        | 62.0        | 82.1        | 80.3        | 81.3        | 83.1        | 79.1        | ---         | ---         | 95.6        |
| North Sumatra            | 69.6        | 63.7        | 66.2        | 85.8        | 85.0        | 89.5        | 91.2        | 88.5        | 88.7        | 89.5        | 91.7        |
| West Sumatra             | 56.5        | 55.3        | 54.6        | 67.7        | 63.5        | 71.7        | 75.8        | 71.8        | 72.7        | 70.9        | 73.3        |
| Riau                     | 66.8        | 56.5        | 57.5        | 83.1        | 81.0        | 90.2        | 90.9        | 88.5        | 90.6        | 86.2        | 90.0        |
| Jambi                    | 61.9        | 34.4        | 59.3        | 79.8        | 78.8        | 77.3        | 90.5        | 81.6        | 87.7        | 83.5        | 82.7        |
| South Sumatra            | 57.8        | 56.2        | 61.2        | 69.5        | 79.2        | 81.0        | 83.4        | 86.8        | 77.1        | 80.9        | 84.2        |
| Bengkulu                 | 65.6        | 65.1        | 71.8        | 79.3        | 76.9        | 80.8        | 91.9        | 87.5        | 87.4        | 90.5        | 90.2        |
| Lampung                  | 62.5        | 60.9        | 66.3        | 78.8        | 81.5        | 88.8        | 87.1        | 84.8        | 86.2        | 86.2        | 87.5        |
| Bangka Belitung          | ---         | ---         | ---         | ---         | ---         | ---         | ---         | ---         | ---         | 76.4        | 75.9        |
| Jakarta                  | 82.5        | 78.8        | 85.1        | 84.7        | 90.6        | 93.1        | 94.7        | 93.2        | 92.7        | 91.7        | 93.2        |
| West Java                | 45.7        | 45.5        | 52.6        | 55.9        | 59.8        | 66.2        | 70.2        | 65.0        | 68.0        | 63.1        | 64.9        |
| Central Java             | 48.5        | 48.6        | 52.9        | 66.1        | 66.9        | 70.5        | 72.7        | 69.7        | 71.5        | 70.0        | 70.8        |
| Yogyakarta               | 54.5        | 60.9        | 63.7        | 73.9        | 74.2        | 69.9        | 79.4        | 74.9        | 77.1        | 80.5        | 82.2        |
| East Java                | 52.2        | 51.8        | 58.3        | 73.2        | 73.2        | 76.1        | 79.8        | 78.3        | 77.4        | 73.6        | 75.8        |
| Banten                   | ---         | ---         | ---         | ---         | ---         | ---         | ---         | ---         | ---         | 86.7        | 85.3        |
| Bali                     | 74.1        | 67.8        | 61.9        | 87.7        | 88.6        | 89.4        | 91.5        | 90.3        | 91.7        | 88.2        | 89.7        |
| West Nusa Tenggara       | 46.0        | 45.7        | 45.9        | 55.7        | 58.9        | 56.4        | 60.5        | 62.6        | 57.3        | 56.2        | 57.8        |
| East Nusa Tenggara       | 55.3        | 31.0        | 35.9        | 84.4        | 94.3        | 92.8        | 94.7        | 87.6        | 95.3        | 86.4        | 93.8        |
| West Kalimantan          | 70.5        | 65.4        | 21.1        | 87.1        | 83.3        | 87.5        | 95.4        | 91.5        | 91.7        | 87.1        | 89.4        |
| Central Kalimantan       | 57.6        | 49.8        | 38.4        | 65.2        | 74.2        | 74.0        | 91.3        | 82.2        | 74.8        | 86.5        | 76.9        |
| South Kalimantan         | 47.4        | 20.3        | 17.8        | 64.5        | 76.8        | 68.5        | 79.4        | 79.8        | 68.3        | 70.0        | 72.4        |
| East Kalimantan          | 68.2        | 60.0        | 55.0        | 77.0        | 83.3        | 79.9        | 90.4        | 80.3        | 82.2        | 82.7        | 83.5        |
| North Sulawesi           | 55.3        | 61.4        | 57.2        | 87.7        | 89.2        | 87.9        | 91.8        | 89.6        | 91.7        | 90.7        | 94.2        |
| Central Sulawesi         | 50.7        | 51.7        | 53.0        | 73.4        | 68.7        | 82.0        | 84.8        | 69.6        | 79.5        | 78.7        | 73.9        |
| South Sulawesi           | 57.4        | 43.0        | 50.7        | 80.3        | 84.0        | 85.2        | 89.2        | 86.0        | 88.5        | 88.8        | 88.7        |
| Southeast Sulawesi       | 49.0        | 43.7        | 55.9        | 69.8        | 77.0        | 74.1        | 75.2        | 75.5        | 85.5        | 86.7        | 86.5        |
| Gorontalo                | ---         | ---         | ---         | ---         | ---         | ---         | ---         | ---         | ---         | 84.8        | 75.4        |
| Maluku                   | 61.1        | 62.0        | 62.8        | 67.8        | 77.2        | 75.6        | 81.9        | 80.2        | ---         | 84.1        | 84.8        |
| North Maluku             | ---         | ---         | ---         | ---         | ---         | ---         | ---         | ---         | ---         | 92.9        | 84.9        |
| Papua                    | 72.1        | 67.5        | 61.7        | 78.0        | 76.1        | 79.8        | 90.1        | 81.4        | 79.0        | 83.1        | 95.8        |
| <b>Indonesia</b>         | <b>57.5</b> | <b>54.9</b> | <b>59.2</b> | <b>71.1</b> | <b>73.5</b> | <b>76.9</b> | <b>80.4</b> | <b>77.0</b> | <b>77.4</b> | <b>76.2</b> | <b>77.5</b> |