

Issue Briefs

Water, sanitation & hygiene

Critical issues

Poor sanitation and hygiene practices and unsafe water contribute to 88 per cent of deaths from diarrhoea amongst young children worldwide. In those who survive, frequent diarrhoea episodes contribute to malnutrition, which prevents the child from reaching his or her full potential. This, in turn, has serious implications for the quality of human capital and the future earning capability of a nation.

In Indonesia, diarrhoea is still a major cause of death amongst children under the age of five.

Risikesdas 2007 reports diarrhoea as the cause of 31 per cent of deaths between the ages of 1 month to a year, and 25 per cent of deaths between the ages of one to four years old. Compared to children from households using piped water, diarrhoea rates are higher by 34 per cent amongst young children from households using an open well for drinking water. Moreover, diarrhoea rates are higher by 66 per cent in young children from families practising open defecation in rivers or streams than those in households with a private toilet facility and septic tank.

The important role of hygiene is often neglected.

Diarrhoea-related deaths and illnesses are largely preventable. Even without improvements in water and sanitation systems, proper hand washing with soap can reduce the risk of diarrhoeal diseases by 42 to 47 per cent.

The situation of the urban poor requires urgent attention.

In urban slum areas, inadequate sanitation, poor hygiene practices, overcrowding and contaminated water converge to create unhealthy

conditions. The associated diseases include dysentery, cholera and other diarrheal diseases, typhoid, hepatitis, typhus, leptospirosis, malaria, dengue, scabies, chronic respiratory diseases and intestinal parasitic infections. Moreover, poorer families who are less educated tend to have poor hygiene practices, which contribute to spreading disease and increasing the child mortality risk. A study of “mega-urban” Jakarta (called Jabotabek¹), Bandung and Surabaya in 2000 showed that the poor living in Jakarta’s peri-urban areas are less educated than other Jakartans, having high school completion rates that are only one-fourth of those in the city centre. The same study calculated child mortality rates up to five times higher in Jabotabek’s poor peri-urban subdistricts than in Jakarta city centre.

Patterns and trends

In earlier decades, Indonesia made significant progress in increasing access to safe water supply and sanitation services. The water and sanitation targets of the seventh Millennium Development Goal (MDG) are to halve by 2015 the proportion of households without sustainable access to safe drinking water and basic sanitation. For Indonesia, this means achieving access rates of 68.9 and 62.4 per cent, respectively, for safe water and sanitation.

Indonesia is currently not on track to achieve the 2015 MDG target in safe water. Calculations using

¹ The urban area surrounding Jakarta; includes Bekasi; and Bogor and Depok in West Java Province; Tangerang and South Tangerang in Banten Province.

Indonesia's national MDG criteria for safe water and data from the 2010 census show that Indonesia needs to reach an additional 56.8 million people with safe water supply by 2015. Alternatively, if the criteria of the WHO-UNICEF Joint Monitoring Programme (JMP) for safe water² were to be used, Indonesia would need to reach an additional 36.3 million people by 2015. Currently, even in the better-performing provinces (Central Java and DI Yogyakarta), around one in three households lacks access to safe water supply (Figure 1).

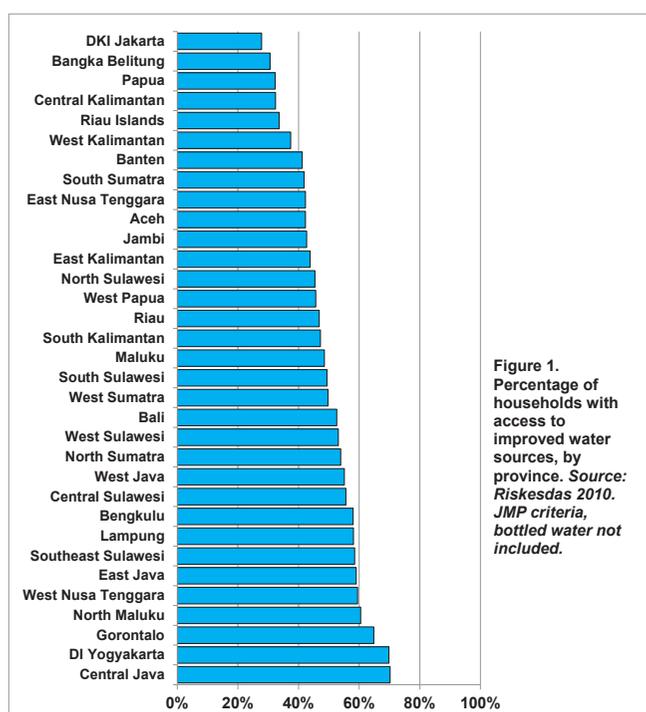


Figure 1. Percentage of households with access to improved water sources, by province. Source: Riskesdas 2010. JMP criteria, bottled water not included.

Comparison with 2007 shows safe water access in 2010 has declined by about seven per cent. This reversal is largely due to a decline in urban areas (by 23 per cent of 2007 levels, Figure 2). Access to safe water in Jakarta has decreased from 63 per cent in 2010 to 28 per cent in 2007, according to Riskesdas. Surprisingly, the two highest wealth quintiles have also seen a decline in safe water access by 8 and 32 per cent respectively compared to 2007. Those who can afford it buy packaged or bottled drinking water: one-third the urban households in Indonesia did so in 2010.

Since 1993, Indonesia has doubled the percentage of households having access to improved sanitation facilities, but it is still not on track to achieve the 2015 MDG sanitation target. To achieve the national MDG target in sanitation will require reaching an additional 26 million people with improved sanitation

by 2015. Planning for the longer term requires dealing with even larger numbers: Riskesdas 2010 data show that overall, some 116 million people still lack adequate sanitation.

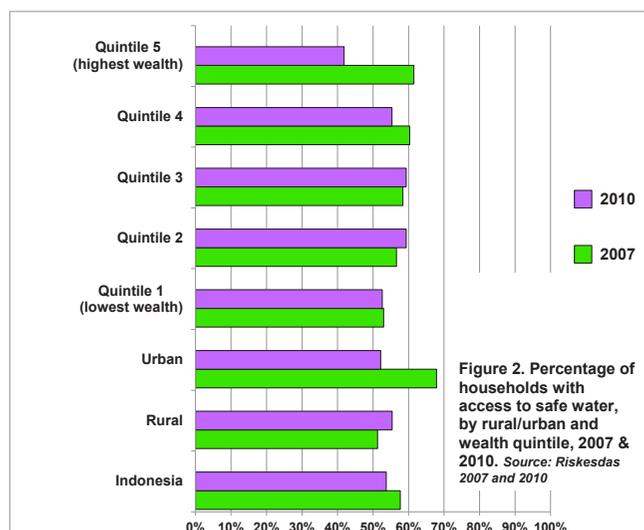


Figure 2. Percentage of households with access to safe water, by rural/urban and wealth quintile, 2007 & 2010. Source: Riskesdas 2007 and 2010

Open defecation is a health and social issue that needs urgent attention. Some 17 per cent of households in 2010 or about 41 million people still defecate in the open. This includes more than one-third of the population in Gorontalo, West Sulawesi, Central Sulawesi, West Nusa Tenggara and West Kalimantan. The practice is even found in provinces with relatively high sanitation coverage, and amongst the urban population and across all wealth quintiles (Figures 3 and 4).

Sanitation coverage amongst different groups shows much stronger disparities than that for water (Figure 4). The proportion of urban households having access to improved sanitation facilities is nearly twice that of rural households. The proportion of households served by improved sanitation facilities in the highest wealth quintile is 2.6 times that in the lowest wealth quintile. Geographic disparities are also marked. The rate of access to improved sanitation in the best performing province (69.8 per cent, DKI Jakarta) is three times higher than that in the worst performing province (22.4 per cent, East Nusa Tenggara).

Faecal contamination of soil and water is common in urban areas, due to overcrowding, insanitary toilets and the release of raw sewage into the open

² JMP criteria do not specify the distance between the water supply and excreta disposal site and are therefore less rigorous

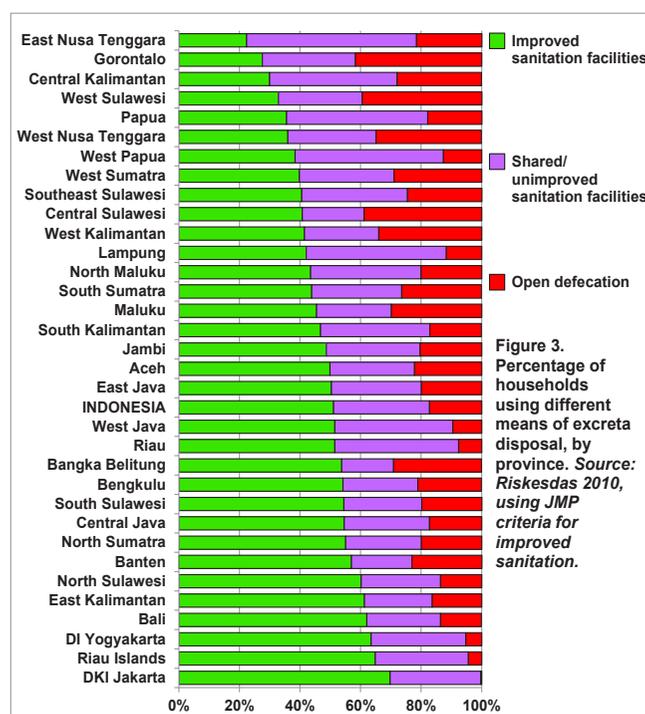


Figure 3. Percentage of households using different means of excreta disposal, by province. Source: *Risikesdas 2010, using JMP criteria for improved sanitation.*

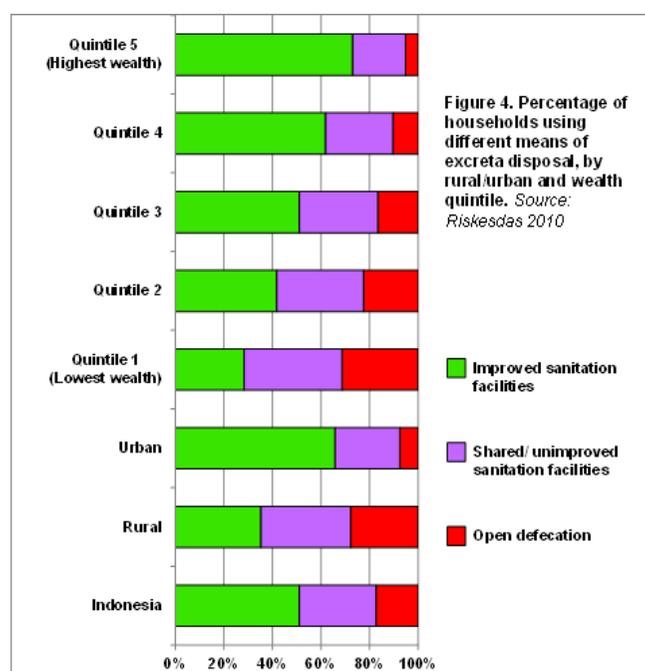


Figure 4. Percentage of households using different means of excreta disposal, by rural/urban and wealth quintile. Source: *Risikesdas 2010*

without treatment. A significant proportion of all urban households using a pump, well or spring for their water supply have these sources within 10 metres of a septic tank or toilet discharge. In Jakarta, the Jakarta Environmental Agency (BPLHD) reports that 41 per cent of dug wells used by households are less than 10 metres from the septic tank. Septic tanks are seldom pumped out and leak sewage into the surrounding soil and groundwater. A 2007 World Bank report mentions that only 1.3 per cent of the population is connected to a sewerage system. Piped systems are prone to contamination due to leaks and negative pressure created by intermittent supply. This

is a particular problem where consumers use suction pumps to obtain water from the city system.

Compared to the rich, the urban poor pay a larger proportion of their income for water that is of poorer quality. For example, Jakarta’s municipal piped system covers only a small proportion of its population, as service expansion cannot keep pace with the burgeoning population in urban areas. The rest of the population rely on a variety of sources, including shallow wells, water vendors and private networks connected to deep wells. Many of these alternative sources cost more per unit volume than piped water supply and are often used by the poor.

Barriers

More investment is needed in the water and sanitation sector. The government investment in the sector is less than one per cent of GDP. The government is making efforts to address the issue. Following the initiation of PPSP (the National Sanitation Acceleration Programme) in 2010, the sanitation budget allocation by local governments increased in 2011 by 4 to 7 per cent.

Different ministries and agencies involved in the water and sanitation sectors need stronger coordination. For example, contractors who build rural water systems are answerable to government agencies, rather than to the users of services. Responsibilities for maintenance are unclear and community management structures are weak. In recent years, the coordination has improved with the establishment of working groups called Pokja AMPL at national, provincial and district levels on drinking water and environmental sanitation.

Following decentralization, many district governments are constrained by a lack of sector expertise and institutional capacity. Remote districts find it difficult to recruit skilled personnel, who generally prefer to live and work in urban areas.

Communities need to improve their hygiene awareness and practices. The hygiene situation is often poor in health centres and other public places, such as local markets and among street food vendors. A survey of six provinces, conducted by the University of Indonesia in 2005 for USAID, found that less than 15 per cent of mothers reported washing their hands with soap after defecation,

before preparing food, before feeding their child, before eating, or before cleaning the child's bottom.

Field visits indicate the need to improve school hygiene, water and sanitation, but robust data are lacking in this respect. Data from the Ministry of Education and Culture indicate that 77 per cent of junior secondary schools are equipped with safe water supply from pipes or tube wells, meaning that over 10,000 junior secondary schools are without such facilities. Extrapolating the proportion to all of Indonesia's 234,711 primary and secondary schools (2009) indicates the scale of action required. More than 50,000 schools are likely to need safe water supply.

Urban water utilities are poorly governed and generally small in coverage. Of the 402 local government-owned water utilities (PDAM), which serve mostly urban areas, only 31 had more than 50,000 connections in 2009. The smaller than optimal size leads to high operating costs. In 2010, the levels of unaccounted-for-water were between 38-40 per cent and only 30 PDAMs were able to recover full operating and maintenance costs. PDAMs divert a significant proportion of revenue – as much as an estimated 40 per cent – to the district government with little accountability, and have little or no funds left for operations and maintenance. Not surprisingly, urban water supply systems are generally in a state of neglect and deterioration. Some PDAMs have entered into Public-Public Partnerships, but the complexities of negotiations between the central, provincial and district governments have caused cancellations and delays.

Urban sewerage and wastewater systems are generally under-developed and poorly managed. A World Bank study estimates that each year, households without proper sanitation facilities in Jakarta and across Indonesia release respectively 260,731 tons and 64 million tons of human faeces into water bodies without treatment.

Arrangements for urban solid waste management are piecemeal and unregulated. The agency officially in charge of the sector contracts with small private entrepreneurs who collect and bring the waste from households to temporary storage facilities for onward transport by the agency. Neighbourhoods pay for these services through the local collectors. Landfills

are being developed but progress is slow. Facilities, equipment and transport for solid waste management remain limited.

Opportunities for action

The National Policy for Community-Based Water Supply and Environmental Sanitation provides an enabling framework. The policy makes good use of lessons learned in the water and sanitation sector in Indonesia and other countries. It follows sound principles of demand-responsive, community-based approaches, emphasizing the need for women's involvement, and it focuses on the principles of sustainable operation, maintenance and cost-recovery.

The National Programme of Community-Based Total Sanitation (STBM) and its five pillars form a useful framework. The five pillars are the elimination of open defecation, hand washing with soap, household water treatment, solid waste management and liquid waste management. The leadership of the Ministry of Health is crucial in scaling up STBM. Districts and provinces will need to accelerate efforts, keeping to national standards and guidelines. The poorest groups will need to have access to financing in order to initiate STBM.

STBM needs social marketing approaches that mobilize large numbers of people and scale up the supply of and demand for improved sanitation facilities. Revitalizing school water and sanitation around health and social themes offers several opportunities. Students could become change agents in their communities for STBM and good health and hygiene practices, which should include point-of-use water treatment, appropriate water storage, diarrhoea reduction, and the prevention of dengue and malaria. Advocacy that makes the links with nutrition, early childhood development and education performance would be more powerful than messages on preventive health alone. Studies elsewhere suggest the persuasiveness of social reasons, such as the desire to feel and smell clean and follow social norms, and the use of soap as a desirable consumer product.

Data systems need to be strengthened. The Government has expressed an interest in developing a National Schools STBM programme.

This will require better data collection and monitoring systems than currently exist for school water and sanitation. In addition, systems for water quality testing and reporting need to be strengthened and the data made public.

The involvement of both local government and private sector is essential for improving urban and peri-urban systems.

• ***For urban areas, innovative technologies in sanitation and water provision need to be explored.***

Urban sanitation and sewerage systems present the greater challenge, since standard sanitation technologies may not work due to overcrowding, lack of space, and the proximity of water sources. In water supply, decentralized technologies and approaches, such as point-of-use water treatment, would be much more effective than centralized systems, due to the range of disparate sources and multiple providers.

• ***Strengthening PDAMs' governance and capacity will require the review of various roles, institutional processes and accountabilities, especially of PDAM heads.*** The central level should establish minimum standards of performance for PDAMs, with monitoring, enforcement and incentive mechanisms.

• ***District agencies need convergent planning and targeting to make rural systems more sustainable.*** In their planning processes, the different district level agencies (public works, rural empowerment, district health office and the district planning office) should target the same communities, so that community mobilization and training takes place in the same communities where the infrastructure is built. This would optimize community participation in planning, construction and management of water supply and sanitation services.

• ***Increasingly, the sustainability and continuity of water supply demand attention.*** One in ten households already suffers from irregular water supply, especially in the dry season. Optimizing water quality, quantity and sustainability will require water resource management involving a broad array of stakeholders. The government has initiated policy discussions on Water Safety Plans, which are aimed at ensuring the quality, quantity, continuity and affordability of water services.

Resources

Adair, T. (2004): 'Child Mortality in Indonesia's Mega-Urban Regions: Measurement, Analysis of Differentials, and Policy Implications.' 12th Biennial Conference of the Australian Population Association, 15-17 September 2004, Canberra.

Bakker, K. and Kooy, M. (2010): 'Citizens without a City: The Techno-Politics of Urban Water Governance', Chapter 5 in *Beyond Privatization: Governance failure and the world's urban water crisis*, K. Bakker. Ithaca: Cornell University Press.

Bappenas (2010): *Peta Jalan Percepatan Pencapaian Tujuan Pembangunan Milenium di Indonesia* (Roadmap for Acceleration of MDG Achievement in Indonesia) Jakarta: Bappenas (National Development Planning Agency) Available from: <http://www.bappenas.go.id/node/118/2814/peta-jalan-percepatan-pencapaian-tujuan-pembangunan-milenium-di-indonesia/>

Black, R.E., Morris, S.S. and Bryce, J. (2003): 'Where and why are 10 million children dying every year?' *Lancet* 361: 222634.

BPPSPAM (2010): *Performance Evaluation of PDAMs in Indonesia*. Jakarta: Ministry of Public Works, Badan Pendukung Pengembangan Sistem Penyedia Air Minum (Support Agency for the Development of Drinking Water Supply Systems)

BPS-Statistics Indonesia and Macro International (2008): *Indonesia Demographic and Health Survey (IDHS 2007)*. Calverton, Maryland, USA: Macro International and Jakarta: BPS.

Crompton, D.W.T. and Savioli, L. (1993). 'Intestinal parasitic infections and urbanization' *Bulletin of the World Health Organization*, 71 (1): 1-7

Curtis, V. and Cairncross, S. (2003): 'Effect of washing hands with soap on diarrhoea risk in the community: A systematic review.' *Lancet Infect Dis* 2003; 3: 275-281

Fewtrell, L., Kaufmann, R.B., Kay, D., Enanoria, W., Haller, L. and Colford Jr, J.M. (2005): 'Water, sanitation, and hygiene interventions to reduce diarrhoea in less developed countries: A systematic review and meta-analysis' *Lancet Infect Dis* 2005; 5: 42-52

Jakarta Environmental Agency (BPLHD) (2012): *Neraca Lingkungan Hidup Provinsi DKI Jakarta 2011*. Jakarta: Badan Pengendalian Lingkungan Hidup Daerah (BPLHD)

Ministry of Health (2008): *Laporan Nasional: Riset Kesehatan Dasar (Riskesdas) 2007*, Jakarta: Ministry of Health, National Institute of Health Research and Development.

Ministry of Health (2011): *Laporan Nasional: Riset Kesehatan Dasar (Riskesdas) 2010*, Jakarta: Ministry of Health, National Institute of Health Research and Development.

PERPAMSI (2010): *Pemetaan Masalah PDAM di Indonesia* (Mapping of PDAM Problem in Indonesia). Jakarta: Persatuan Perusahaan Air Minum Seluruh Indonesia (Indonesian Water Supply Association)

Unger, A. and Riley, L.W. (2007) Slum health: From understanding to action. *PLoS Med* 4(10): e295. doi:10.1371/journal.pmed.0040295.

University of Indonesia Center for Health Research (2006): *Survei rumah tangga pelayanan kesehatan dasar di 30 kabupaten di 6 provinsi di Indonesia 2005*. Final report. Jakarta: USAID - Indonesia Health Services Program

Victora, C.G., Adair, L., Fall, C., Hallal, P.C., Martorell, R., Richter, L. and Sachdev, H.S. (2008): 'Maternal and child undernutrition: consequences for adult health and human capital.' *Maternal and Child Undernutrition* 2, *Lancet* 371: 340357

World Bank (2008): *Economic Impacts of Sanitation in Indonesia: A five-country study conducted in Cambodia, Indonesia, Lao PDR, the Philippines, and Vietnam under the Economics of Sanitation Initiative (ESI)*. Research Report August 2008. Jakarta: World Bank, Water and Sanitation Program.