

17. Water supply and sanitation in India: Meeting targets and beyond

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Target 7C of the Millennium Development Goals (MDG) calls for halving the proportion of the population (baseline 1990) without sustainable access to safe drinking water and basic sanitation by 2015 (United Nations (UN) 2000). A large developing country like India is critical to meeting this target. Even though the MDGs set out to measure and reduce the population without sustainable access to safe water and sanitation, difficulties have been encountered in measuring 'safe' and 'sustainable', which have led to a revision of the target to achieving access to *improved* sources of water and sanitation (Zetland 2008). It has been argued that the revised goals grossly overestimate the access to safe water and sanitation (Bain et al. 2012; Satterthwaite 2009).

Table 1: Population (per cent) of India with access to improved sources of water

Year	Urban	Rural	Total
1990	88	63	69
1995	90	70	75
2000	93	77	81
2005	95	83	86
2010	97	90	92

Source: World Health Organization (WHO) and United Nations Children's Fund (UNICEF) 2012a.

Table 1 shows the distribution of India's population with access to an improved drinking water source. By 2010, 92 per cent of the population had access to an improved source of water, which brought down the proportion of the population without such access from 31 per cent in 1990 to eight per cent in 2010 (WHO/UNICEF 2012a). If Target 7C of the MDG (improved water access) were to be applied on a country-level basis, India has already surpassed the target well before 2015.

Table 2: Population (in percent) of India with access to improved sources of sanitation, and no sanitation

Year	Improved			No sanitation		
	Urban	Rural	Total	Urban	Rural	Total
1990	51	7	18	28	91	75
1995	53	10	21	25	86	70
2000	55	14	25	22	79	63
2005	56	19	30	18	73	57
2010	58	23	34	14	67	51

Source: WHO/UNICEF 2012b. The proportions of the population with access to improved sources and no sanitation do not add up to 100 percent. The remaining population has access to unimproved sources.

It is a somewhat different story, however, on the sanitation front. Table 2 shows the proportion of the population with access to an improved source of sanitation, and those that lack any source of sanitation and have to use open defecation. Though the proportion of the population with access to improved sanitation nearly doubled in the last 20 years, a majority of the population still does not have access to any sanitation and has to resort to open defecation (WHO/UNICEF 2012b). The five states of Chhattisgarh, Madhya Pradesh, Bihar, Jharkhand and Odisha — largely rural and located in the central and eastern parts of the country — have less than 30 per cent access to a sanitation source (International Institute for Population Sciences and Macro International (IIPS) 2007). It appears that India is likely to miss Target 7C of the MDG (improved sanitation access), and any hope of achieving the target by 2015 rests on the progress made in these five large states.

Access to water and sanitation also involves issues of gender and caste. In 2005, only half the population had access to water on the household premises, and 12 per cent spend 30 minutes or longer daily to get water for the household (IIPS 2007). Of the households that don't get water on premises, adult females are responsible for fetching water in 81 per cent of the families. Even among children below 15 years of age, girls are four times more likely than boys to be responsible for collecting water (IIPS 2007). Beyond gender, Indian society also has an uncomfortable history with caste discrimination that is relevant to sanitation access: lower castes have been traditionally entrusted with occupations such as collecting human/livestock waste.

These underlying traditions show up in the data as well. The states with the highest rates of access to sanitation (except the capital region of Delhi) are the eight north-eastern states and the southern state of Kerala, all of which are known for an egalitarian society (Milner 2009; Subramanyam and Subramaniam 2011). Additional analysis of the sanitation data by income quintiles reveals

that the poorest 40 per cent in India have hardly benefited from improvements in sanitation. The poorest quintile is 47 times more likely than their richest counterpart to practice open defecation, a disparity three times greater than that observed in Africa (Brocklehorst 2010).

Table 3: Status of water supply and wastewater treatment in the six largest cities of India

City	Water supply				Wastewater	
	Capacity (MLD)	Hours per day	Consumption (LPCD)	Unaccounted (%)	Generated (MLD)	Treatment capacity (MLD)
Bangalore	965	4		34-44	772	
Chennai	198	4		20	158	264
Delhi	4346	4	78	26	3800	2330
Hyderabad	578	0.5-4	96	33	462	593
Kolkata	1625	9	116	30-40	706	172
Mumbai	3000	5	90	18	2400	2130

Source: McKenzie and Ray 2009; Shaban and Sharma 2007; Central Pollution Control Board 2009.

Although urban areas of the country fare better than their rural counterparts on water and sanitation access, a larger and denser population, coupled with dwindling natural sources of freshwater pose unique challenges to large cities, such as Bangalore, Mumbai and New Delhi. Table 3 shows the status of water and wastewater infrastructure in the six largest cities in India. Though the major cities reported an increase in the service coverage between 1991 and 1997 (Ruet et al. 2002), the availability of water supply ranges from four hours or less per day in Delhi, Bangalore and Hyderabad to nine hours in Kolkata; and 18 per cent (Mumbai) to 50 per cent (Kolkata) of the urban water is unaccounted for (McKenzie and Ray 2009). A household study conducted in seven cities in India found the average per capita consumption of water to be 92 litres per capita per day (LPCD), below the World Health Organization (WHO) guideline of 100 LPCD for optimal access (Shaban and Sharma 2007). Further analysis of the data by socio-economic quintiles shows that water consumption increases with a rise in socio-economic status, although the inter-quintile differences are not significant. The near-uniform water consumption across different income groups is largely a result of supply constraints and is not impacted by varying economic abilities (Shaban and Sharma 2007).

These numbers raise doubts about whether access to improved water sources translates to regular availability of safe water. Residents in several Indian cities augment their piped supplies with private wells and other informal methods, such as private tankers (Srinivasan et al. 2010). The use of groundwater for

residential as well agricultural consumption is driving down water tables in many parts of the country, especially the agricultural bread-baskets of Punjab and Haryana (Rodell et al. 2009). Continued groundwater depletion can result in an inability to meet residential needs, reduced agricultural productivity and increased conflict over water rights.

Additionally, the lack of wastewater treatment capacity in cities like Delhi and Kolkata (Central Pollution Control Board 2009) threatens public health and the safety of already-scarce freshwater resources. A discussion on water security is incomplete without planning for adequate infrastructure for wastewater treatment. Not only does it allow for better management of available water resources, treated wastewater can be an additional source of freshwater in water-deficient regions (Vedachalam 2012).

Even though India has reported tremendous progress towards achieving the MDGs for access to water, the revised targets do not necessarily mean continuous and safe access to water, not to mention economically affordable water. Even large cities that boast higher rates of access are able to guarantee little water for a few hours a day, imposing health, economic and social costs on the residents. The Indian economy loses 73 million working days a year due to waterborne diseases, caused by a combination of lack of clean water and inadequate sanitation (DFID 2010). Access to sanitation, even more so than water, is a robust indicator of human development due to the complex role played by social, institutional and cultural factors (Vedachalam 2011). Low rates of access to sanitation underscore lack of action on several fronts, only some of which are due to lack of financial resources. Targeted investments in communities and individuals (Gupta 2012), along with institutions, will allow India to expand and ensure safe access to water and sanitation to all its residents well beyond 2015.

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