JMP Methodology
and What Lies Ahead

JMP Estimates

The WHO/UNICEF Joint Monitoring Programme for Water Supply and Sanitation is tasked with providing estimates that are comparable among countries and across time. Because definitions of 'improved' sanitation facilities and drinking water sources can vary widely among countries, the JMP has established a standard set of categories that are used to analyse national data on which the MDG trends and estimates are based (Table 6).

The population data used in this report, including the proportion of the population living in urban and rural areas, are those established by the United Nations Population Division, 2010 Revision.

The definitions and data sources used by the JMP are often different from those used by national governments. Estimates in this report may therefore differ from national estimates.

According to the JMP, an improved drinking water source is one that, by the nature of its construction, adequately protects the source from outside contamination, particularly faecal matter. An improved sanitation facility is one that hygienically separates human excreta from human contact. The coverage estimates for improved sanitation facilities presented in this report are discounted by the proportion of the population that shared an improved type of sanitation facility. The ratio (the proportion of the population that shares a sanitation facility of an otherwise improved type) derived from the latest household survey or census is subtracted from the trend estimates of improved sanitation facilities.

For each country, the JMP estimates are based on fitting a regression line to a series of data points from household surveys and censuses. Because the regression involves retrofitting

		Drinking Water	Sanitation

Improved		Use of:
		■ Piped water into dwelling, yard or plot
		■ Public tap or standpipe
		■ Tubewell or borehole
		■ Protected spring
		■ Protected dug well
		■ Rainwater collection
			Use of:
			■ Flush or pour-flush to:
			  – Piped sewer system
			  – Septic tank
			  – Pit latrine
			■ Ventilated improved pit (VIP) latrine
			■ Pit latrine with slab
			■ Composting toilet

Unimproved		Use of: ■ Unprotected dug well ■ Unprotected spring ■ Cart with small tank or drum ■ Tanker truck ■ Surface water (river, dam, lake, pond, stream, canal, irrigation channel) ■ Bottled water (considered to be improved only when the household uses drinking water from an improved source for cooking and personal hygiene)	Use of: ■ Flush or pour-flush to elsewhere (that is, not to piped sewer system, septic tank or pit latrine) ■ Pit latrine without slab, or open pit ■ Bucket ■ Hanging toilet or hanging latrine ■ Shared or public facilities of any type ■ No facilities, bush or field (open defecation)

TABLE 6   Definitions of improved and unimproved drinking water sources and sanitation facilities
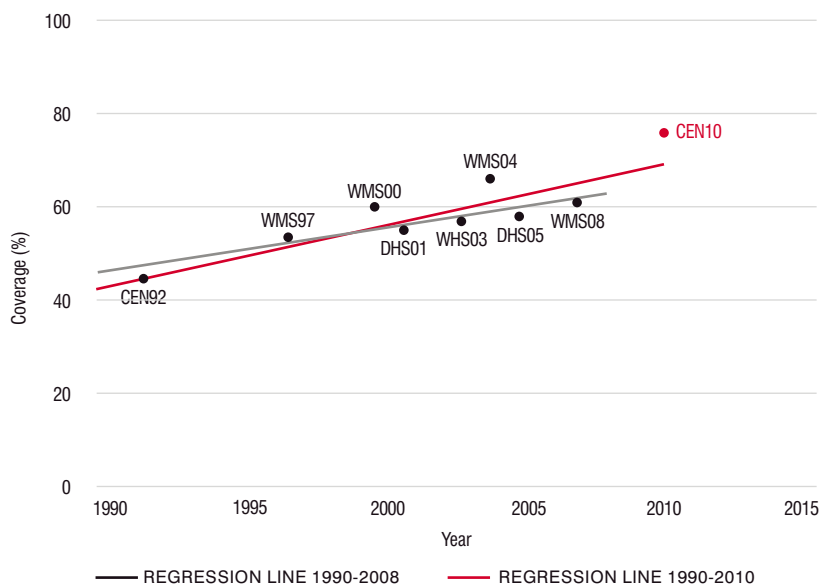

FIGURE 38   Examples of a JMP country file with regression lines

the entire time series, estimates may differ from and may not be comparable to earlier estimates for the same reference year (including the 1990 baseline year), due to the addition of newly available data or the addition

of missing data from the past. Figure 38 shows the impact of adding data from a recent census (denoted in red as CEN10) to a file with eight previous data points. The red line will be used to determine the 2010 estimate and

re-estimate coverage in the entire 1990 to 2010 period.

Questions are often raised about the appropriateness of using a linear trend line. It can be argued that other types of curve-fitting procedures might better reflect the progression of coverage over time. However, the paucity of data points in many countries makes the use of more complex procedures inconsistent with good statistical practice. When MDG monitoring commenced, linear regression was deemed the best method for the limited number and often poorly comparable data on file (some countries had as few as two data points for many years), especially given the relatively short time frame of the MDGs – 25 years is only a fraction of the time needed to go from no access to full coverage. Unfortunately, the current use of linear regression to derive estimates does not allow rapid changes in coverage to be captured. The increased availability of more comparable data now allows for the exploration of more sophisticated modelling in preparation for a new, post-2015 drinking water target.

Growth of the JMP Database

Since 2000, the JMP has steadily increased the number of data points per country. This report is based on data from more than 1,100 surveys and censuses from developing countries and 300 reports from developed countries, covering the period 1980 to 2010. This is a fivefold increase in data sources since the JMP report in 2000. Most of these surveys are from the developing world, since few household surveys are conducted in the developed world, and censuses in the developed world rarely collect information about access to drinking water and sanitation. For the developed countries, the JMP relies on reports submitted by governments.

On average, the JMP has six surveys or censuses on file for each of the 153 countries in the developing world (Figure 39). The median number of surveys is five. The countries with fewer than five surveys on file represent just 10 per cent of the developing world population, and the

four developing countries for which there are no data points represent just 0.01 per cent. For the other countries, the average number of surveys on file is nine and the median is eight. This increase in data points over time has greatly increased the accuracy of the estimates prepared by the JMP.

Data Limitations

The current JMP method of monitoring assesses progress solely on the basis of the types of facilities used. It does not take into account other important parameters, such as drinking water quality, the availability of adequate quantities of water for domestic use, the number of service hours available, the distance to a water source or sanitation facility, or the time household members spend on access and use of sources and facilities. The JMP has had access to limited data on some of these questions, either through household surveys or other data, such as the 'Rapid Assessment of Drinking Water Quality' studies, which the JMP commissioned between 2002 and 2008. Though these partial data sets are sometimes reported on in updates, they are seldom robust enough to draw conclusions on a global scale. (For more information on water quality, see the 2011 UNICEF and WHO thematic report, *Drinking Water: Equity, Safety and Sustainability.*)

While there is broad agreement that the reliability and sustained functioning of water and sanitation systems should somehow be captured, there are no broadly agreed-upon standards against which these should be measured. Indeed, 'sustainable access', a term used in the MDG target, has not been adequately defined in measurable terms, particularly since sustainability involves so many dimensions.
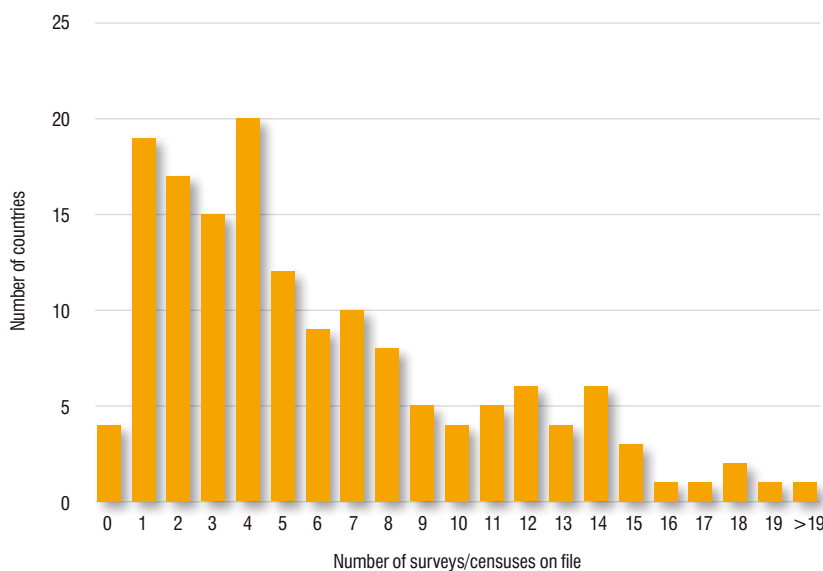

FIGURE 39   Number of surveys and censuses in the JMP database

The JMP intends to explore how best to comprehensively monitor these important aspects of the existing MDG target. It is also interested in examining other issues, such as the impact of seasonality on access, the adequacy of particular sanitation options in high-density urban areas, and safe disposal and treatment of pit latrine contents and sewerage. Other issues should also be monitored, including social obstacles to access for certain population groups, affordability and participation in water and sanitation governance, but may best be undertaken by other monitoring mechanisms. For instance, the Global Assessment and Analysis of Sanitation and Water Supply (GLAAS) is a new monitoring platform that tracks investments and aid targeting water and sanitation. As such, it complements the JMP, and the JMP and GLAAS coordinate closely.

Data Reconciliation

The JMP has been proactive in holding in-country workshops to explain the methodology behind the JMP biennial reports. This has proved helpful in increasing understanding of what the JMP is actually measuring – that is, the use of improved drinking water sources and sanitation facilities, rather than verifying whether the infrastructure exists. This is important for ensuring the quality of the data being collected in a country and in building trust with national partners.

Recent efforts to reconcile such discrepancies have been initiated by the JMP and partners such as WaterAid in a number of countries in Asia and Africa. These reconciliation processes have brought together senior staff from national statistics offices and relevant line ministries to assess discrepancies among national data sources and also discrepancies

between these sources and the international estimates generated by the JMP. In most countries, this has led to an increased awareness of the need to use standard definitions of access and data collection methods across line ministries and among different national monitoring mechanisms. This represents a major step forward in reconciling national data. The catalytic role of the JMP in this process – sharing its experiences in global monitoring to promote the strengthening of national monitoring – is becoming increasingly important. The process has allowed the JMP to fill important data gaps with survey and census data that it did not yet have on file. It has also helped to identify additional household surveys that are nationally representative and that the JMP is able to use.

JMP Task Forces

Three JMP technical task force meetings have been convened by WHO and UNICEF over the past two years:

The Sanitation and Methodology Task Force examined the issue of the 'floating baseline' (the fact that the coverage estimate for 1990 changes every time new data are added and the trendline re-drawn). It also explored alternative estimation methods, discussed ways to make sanitation estimates more accurate, and considered the proposal for an alternative indicator of performance (discussed on pages 11 and 22). In addition, the task force is reviewing the definition of 'pit latrine with slab', since the current definition includes parameters that are not measured by household surveys. The task force will oversee the commissioning of research to assess differences in health outcomes between the use of individual household facilities and shared or public facilities.

The Water Quality Task Force explored options for including water-quality measurement in future JMP reporting. The task force considered recent research on new field-based, low-cost water-quality test kits for measuring *E. coli*, which was determined to be the most promising water-quality indicator for global monitoring. MICS and DHS have agreed to pilot a new water-quality module using these new kits, though ways must still be found to keep related costs manageable. The task force also recommended that a second round of updated 'Rapid Assessment of Drinking-Water Quality' studies be carried out. In addition, the feasibility of using drinking-water regulator data and of strengthening the role of such data in global monitoring will be explored.

The Urban Task Force looked into challenges specific to monitoring coverage in urban areas and to the role that the JMP can play in assessing progress in these settings. The task force reviewed the characteristics of urban settings, determined what aspects of water supply and sanitation need to be measured for global monitoring, agreed how measurements can be carried out, and reviewed the linkages between monitoring at municipal, subnational, national and global levels. The task force recommended the use of innovative methods such as remote sensing to add a spatial element to global monitoring.

Looking Beyond 2015

Since 2000, the JMP has been the official instrument for measuring progress towards the MDG drinking water and sanitation target. In 2010 the JMP launched a new strategy, which defined its goals in the lead-up to 2015. One of the objectives of the strategy was to establish the JMP as a

platform for the development of post-2015 targets and indicators for safe drinking water and basic sanitation.

In looking beyond 2015, the strategy proposes a highly interactive process, starting with an initial scoping exercise, followed by discussions with researchers, practitioners and data-collection experts, facilitated by the JMP. This was to be followed by a series of consultations with stakeholders.

Initial discussions brought to light several shortcomings of the current MDG target: It requires a halving of the proportion of those without access, leaving many unserved. Furthermore, it incorporates concepts that are difficult to measure (the sustainability of access and the safety of drinking water have yet to be fully addressed). Previous global targets for universal access, such as those set during the Water Decade 1980-1990, proved elusive. However, it was also acknowledged that recent recognition of safe drinking water and sanitation as a human right could open the door to a new approach to setting future targets and indicators (Box 3). It was around this premise that the first stakeholder consultation was organized – in Berlin, in May 2011.

Despite the many criticisms of the current indicators of access and the system to monitor them, the participants at the Berlin consultation concurred that an altogether new monitoring system was unnecessary, since it would be too difficult to implement and would ultimately be counter-productive. Rather, it was agreed that the existing system can and should be improved to address the concerns raised during the consultation and in previous forums. The preferred option, according to attendees, would be to find a way of recalibrating existing targets, using a range of basic versus more advanced indicators based on

the technology category or service ladder concept. This would reflect, where feasible, the human rights criteria described in Box 3. A number of expectations for indicators were identified during the consultation, including that they should be measurable, comparable, policy-relevant, time-bound, and inexpensive to collect. It was determined that two linked types of monitoring would be needed to meet different needs at different levels:

For monitoring future global development targets: to keep basic access as the centrepiece of global targets, with special attention to human rights criteria, and to ensure consistency with current monitoring; to explore the inclusion of more water supply and sanitation indicators and different standards for rural and urban areas; and to propose indicators for capturing the equity and non-discrimination dimensions.

For more detailed sector and human rights monitoring: to expand the set of indicators using a number of service-level and human rights criteria. Indicators would be monitored partly by strengthening the existing national water sector monitoring infrastructure and operations in rural and urban subsectors, and through additional human rights monitoring. Non-discrimination and equity would become central components of monitoring.

The participants also agreed that attainment of universal coverage through at least basic access to both drinking water and sanitation services should be reflected in future targets.

Full details of the Berlin consultation are available on the JMP website: www.wssinfo.org

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BOX 3   ## Water and sanitation are human rights

On 28 July 2010, the UN General Assembly recognized that safe and clean drinking water and sanitation are human rights, essential to the full enjoyment of life and all other human rights. Subsequently, at its 15th session in September 2010, the UN Human Rights Council affirmed that the right to water and sanitation is derived from the right to an adequate standard of living and inextricably related to the right to the highest attainable standard of physical and mental health, as well as to the right to life and human dignity. The combined effect of the two resolutions was to anchor the right to water and sanitation in the framework of the right to an adequate standard of living, making it legally binding like any other of the rights inscribed in UN treaties.

Fundamental to the human rights framework is the concept of *progressive realization:* Governments cannot solve the drinking water and sanitation situation overnight, but they must make tangible progress towards the realization of this right. Human rights principles also define various characteristics against which the enjoyment of the right can be assessed, namely: availability, safety, acceptability, accessibility, affordability, participation, non-discrimination and accountability. A distinctive feature of the human rights framework is the principle of non-discrimination. This requires looking beyond average attainment and disaggregating data sets to determine whether any sort of discrimination is occurring.

This is a complex set of issues. However, if recognition of the human right to safe and clean drinking water and sanitation is to have any meaning, future targets and monitoring systems must endeavour to take these various aspects into account.