

**MONITORING TARGET 10 AND BEYOND:
KEEPING TRACK OF WATER RESOURCES FOR THE
MILLENNIUM DEVELOPMENT GOALS**

An Issues Paper Prepared for CSD 12¹

Millennium Project Task Force on Water and Sanitation

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INTRODUCTION

At the United Nations Millennium Summit in September 2000, 189 heads-of-state adopted the Millennium Development Goals (MDGs), which set clear, numerical, time-bound targets for making real progress, by 2015, in tackling the most pressing issues developing countries face. Improving water resources development and management is a critical factor for meeting these goals – not only the specific Target 10 (to cut in half, by 2015, the proportion of people without sustainable access to safe drinking water and basic sanitation²), but also the broader goals of eradicating extreme poverty and hunger; achieving universal primary education; promoting gender equality and women’s empowerment; reducing child mortality; improving maternal health; combating major diseases; and improving environmental sustainability. Therefore, efforts to achieve the MDGs must involve planning and action in water resources development, management and use, both to meet MDG Target 10 and to meet the MDGs as a whole.

Monitoring is a critical component of such planning and action. Monitoring change in situations over time is necessary to gauge the effectiveness of interventions and measure the impact of policy reforms and investment at the national and sub-national levels. Monitoring is also critical to compare needs and prioritize action among countries at the international level, which implies a need for standardized approaches, data, and methods of information gathering. And at all levels, civil society’s most powerful advocacy tool is accurate information, the end product of reliable monitoring efforts.

Although achieving the MDGs depends upon both expanding access to domestic water supply and sanitation services as called for in Target 10 and sound development and management of water resources more generally, the challenges related to tracking progress in these two areas are very different – principally because reaching Target 10 is in itself a measurable goal, whereas water resources management is not an end in itself but rather an input to efforts to increase food production, reduce poverty and disease, and protect ecosystems. In part because of this, the international community has a fairly well developed conceptual framework and institutional mechanism for monitoring target 10, whereas similar frameworks and institutions for monitoring water resources management and development in relation to the MDGs are still in their infancy. As a result, measuring “success” in this area presents a host of issues that the international community has yet to resolve.

This issues paper explores issues and challenges and makes recommendations concerning monitoring progress toward the MDGs – both in terms of the *very specific domestic water supply and sanitation goals set out in Target 10 and the nature, quality, quantity, and current and projected use patterns of water resources for all the MDGs*. It was prepared under the direction of the Millennium Project Task Force on Water and Sanitation, one of ten Task Forces constituted under the Millennium Project – a three year project commissioned by the UN Secretary General to help the international community as a whole reach the Millennium Development Goals by addressing the question “what will it take to achieve the MDGs?” Rather than being a comprehensive survey of monitoring

² Target 10 is set for the period 1990-2015.

and assessment issues relating to water and the MDGs³, the paper pulls together and further elaborates some of the key issues highlighted by the Task Force in its Interim Report⁴, both in its analysis and its initial propositions. In doing so, it identifies specific issues that will be addressed further by the Task Force in preparing its final Report.

PART I: MONITORING TARGET 10

With respect to Target #10, the international community has a relatively well defined conceptual framework for defining and measuring the target, as well as an institutional mechanism, based on this conceptual framework, for measuring progress towards the targets. This section begins by reviewing the current situation, both in terms of the conceptual framework and the institutional framework, another outlines some directions for the future.

The Conceptual Framework for Monitoring Target 10

The conceptual framework for monitoring MDG target #10 (“to halve, by 2015, the proportion of people without sustainable access to safe drinking water and basic sanitation”) can be said to comprise three things: (a) the terminology for access to both water and sanitation; (b) the operational meaning of the agreed terminologies; and (c) survey instruments and indicators for assessing progress towards the targets. Before analysing this framework, it is important to highlight four inherent issues – the first relates to monitoring the MDGs as a whole, including MDG Target #10, whereas the other three relate only to target #10.

- First, the targets can and should be set and monitored at both global and national levels – and even sub-national levels for large nations like China, India, Brazil, and Nigeria. National targets must be owned by each country – some countries, for example, are well on track to achieving one or more of the above targets and can aspire to something much more ambitious than the Millennium Development targets that are being recommended as voluntary minimum targets for all countries. Likewise, intermediate milestones (e.g., for 2005 and 2010) should be set at both national and global levels (as well as sub-national levels where appropriate). Progress at both levels should be monitored and evaluated in terms of these intermediate milestones.
- Second, the baseline date for target #10, which was not made explicit in the original wording, needs to be clarified. Several other MDG Targets call for specific improvements with respect to some baseline year, but with the exception of the Slum Dwellers Target (#11), they all specify this baseline year as 1990.

³ For a comprehensive review of monitoring issues relating to the MDGs for domestic water supply and sanitation, see “Monitoring Millennium Development Goals in the Water and Sanitation Sector: A review of experiences and challenges”, draft report prepared by Francois Brikke, Kathleen Shordt, and Christine van Wijk, International Water and Sanitation Centre, for BMZ in cooperation with GTZ and KFW, January 2004.

⁴ The Task Force Final Report will be available early in 2005; the Interim Report of the Task Force can be found at <http://www.unmillenniumproject.org/documents/tf7interim.pdf>.

Taking into account that the UN Statistics Division and UNICEF use 1990 as their baseline year, and that as a result the Secretary-General's report on progress towards achieving the MDGs will use the same year, the Task Force in its work has adopted the same baseline date, in order to ensure maximum consistency with other UN publications and the work of the Secretary-General.

- Third, “sustainable access” must be viewed from a social and economic perspective as well as an environmental one. It includes a physical/infrastructure dimension – for example, access to drinking water means the existence of infrastructure in good working order – but also embraces a concept of use. Access to sanitation cannot simply be measured in terms of whether a toilet is installed, but whether that toilet is working and used for safe disposal of excreta with improved hygienic practices, as otherwise the contribution to human health will be negligible or even negative. Sustainable access also includes a time dimension. Can a family that must spend more than two hours queuing up for their turn at the community tap be thought to have sustainable access, even if that tap is just 20 metres from their home?
- Fourth, target #10 itself has four components, since “people without sustainable access to safe drinking water and basic sanitation” encompasses four fairly distinct groups. This is depicted in greater detail in Figure 1, below. An overall monitoring strategy will therefore need to have distinct sub-strategies to address problems of urban water supply, rural water supply, urban sanitation and rural sanitation.

Figure 1. Components of MDG Target #10

| | |
|---|--|
| <p>Urban Water Supply</p> <p>Reduce by half, by 2015, the proportion of urban people without sustainable access to safe drinking water</p> | <p>Urban Sanitation</p> <p>Reduce by half, by 2015, the proportion of urban people without sustainable access to basic sanitation</p> |
| <p>Rural Water Supply</p> <p>Reduce by half, by 2015, the proportion of rural people without sustainable access to safe drinking water</p> | <p>Rural Sanitation</p> <p>Reduce by half, by 2015, the proportion of rural people without sustainable access to basic sanitation</p> |

As mentioned earlier, the conceptual framework for the MDG targets for water and sanitation comprises (a) the terminology for access to both water and sanitation; (b) the operational meaning of the agreed terminologies; and (c) survey instruments and indicators for assessing progress towards the targets. Each of these is elaborated on below.

The target for drinking water was defined at the Millennium Summit as part of the MDGs. The baseline global data available on the current status of this target are what is contained in the “Global water supply and sanitation assessment 2000” (GWSSA2000) prepared under the WHO/UNICEF Joint Monitoring Program (JMP -- see below). Whereas the MDG target on water uses the terminology of “safe drinking water,” the JMP Report uses the terminology of access to “improved” water technology types. It has been argued that this “change in terminology reflects both the past misrepresentation, and the future uncertainty, in judging and defining services as “safe” in terms of human health.⁵

It is very difficult to measure global coverage of safe water or sanitary excreta disposal routinely, because monitoring aspects of service such as the quality of water at point of consumption or the correct usage of sanitary facilities is not currently within the scope of national surveys or other data sources. Surveys typically register the presence of water and sanitation facilities of different technology types. The GWSSA2000 assumed that those technologies that can be categorized as “improved” are inherently safer or more sanitary than others that are considered “not improved.” Therefore, the coverage estimates from JMP are expressed as the percentage of population with access to improved drinking water sources and improved sanitation as defined in Box 1.

Box 1. Improved and Unimproved Water and Sanitation Facilities as defined by the JMP

| | |
|--|--------------------------------------|
| Improved water supply | Improved sanitation |
| Household connection | Connection to a public sewer |
| Public standpipe | Connection to septic tank |
| Bore hole | Pour-flush latrine |
| Protected dug well | Simple pit latrine |
| Protected spring | Ventilated improved pit latrine |
| Rainwater collection | |
| Unimproved water supply | Unimproved sanitation |
| Unprotected well | Service or bucket latrine |
| Unprotected spring | (where excreta are manually removed) |
| Vendor provided water | Public or shared latrines |
| Bottled water ¹ | Latrines with open pit |
| Tanker truck-provided water | |
| ¹ Not considered “improved” because of limitations concerning the potential quantity of supplied water, not its quality | |

It appears, however, that the meaning of “improved” is still an issue. One interpretation has been proposed by a task force on monitoring established by the Water Supply and Sanitation Collaborative Council, WSSCC. According to the WSSCC task force, *a person is said to have access to “improved” water supply if the person has access to*

⁵ Hunt, C. (2001). How Safe is Safe? A Concise Review of the Health Impacts of Water Supply, Sanitation and Hygiene. London, WELLS (LSHTM/WEDC):22

*sufficient drinking water of acceptable quality as well as sufficient quantity of water for hygienic purposes*⁶.

As mentioned earlier, the target for sanitation was established at the 2002 World Summit on Sustainable Development, WSSD. The terminology chosen for this target is “basic sanitation.” In contrast, the terminology used in the JMP report is “improved sanitation.” The term is defined in the JMP report as a sanitation system in which excreta are disposed of in such a way that they reduce the risk of fecal-oral transmission to its users and the environment. It would appear, however, that in choosing “basic sanitation” as the preferred terminology, the Summit had something more in mind. It linked access to sanitation to improved human health and reduced infant and childhood mortality. Basic sanitation was defined more explicitly to include actions on the following:

- Development and implementation of efficient household sanitation systems;
- Improvement of sanitation in public institutions, especially in schools;
- Promotion of safe hygiene practices;
- Promotion of education and outreach focused on children, as agents of behavioural change;
- Promotion of affordable and socially and culturally acceptable technologies and practices;
- Development of innovative financing and partnership mechanisms;
- Integration of sanitation into water resources management strategies in a manner that does not negatively impact on the environment (includes protection of water resources from biological or fecal contamination).

It is apparent that the WSSD definition is broader than what is envisaged in the JMP report and is more impact-oriented, particularly in communities that currently have very low levels of sanitation service. The WSSD is also not focused on the construction of a particular number of toilets as the target goal, but rather on the creation of an overarching process for improved health and hygiene through basic sanitation. The JMP may also be concerned with this broader goal, but has developed a definition and indicators of “improved sanitation” that are simpler to operationalize. On the other hand, an emphasis on the presence or absence of particular household technologies ignores health risks associated with poor disposal of sullage or wastewater from domestic sources (*e.g.*, filariasis and schistosomiasis). Moreover, issues of privacy and dignity are also important components of monitoring in sanitation, as they influence willingness to use sanitation facilities regularly.

With these considerations in mind, the Task Force defines and is using the term “basic sanitation” as follows:

⁶ A survey instrument being prepared by the WSSCC task force gives further elaboration of the meanings of these two aspects of improved water supply.

Access to, and use of, excreta and wastewater facilities and services that provide privacy and dignity while at the same time ensuring a clean and healthful living environment both at home and in the immediate neighbourhood of users.

With basic sanitation, access at the household level should be sufficient. Yet, one of the goals of such access is public health and environmental pollution prevention. Hence, at the very minimum, the definition of access should reflect a healthful environment at the neighbourhood level. While this may be sufficient in a rural environment or in a dispersed settlement, it would be woefully inadequate in an urban area, especially in urban slum areas or in congested urban areas and mega-cities. For such situations, we would need to go beyond access at the household level to provide proper collection systems like an appropriate forms of sewerage, together with facilities for proper treatment and disposal of the collected sewage.

In defining indicators that will be used as the basis for monitoring, it is necessary to strike a balance between “ideal” consistency with conceptual definitions and measurable indicators that provide approximations to the ideal definitions. It is such measurable indicators that should form the basis for developing the main monitoring instruments at the national and international levels. For instance, from a gender perspective, ideally the definition of “improved” water supply would include some measure of the distance between a household and its water source, as the distance women must travel for water has many impacts on their lives, from the amount of time they must spend on water gathering to questions of physical safety. Similarly, having separate sanitation facilities for men and women and, at schools, for girls and boys, as well as the physical location of such facilities, also affects a regularity of use, women’s physical safety, and girls’ school attendance. Disaggregating service access data by sex would also yield important information, allowing for assessment of the degree to which both men and women are benefiting from interventions in this area.

However, if the information collected from, for instance, household surveys – among the most reliable methods – does not track access by sex, distance to water sources, or the presence of separate sanitation facilities for men and women, then creating monitoring indicators based on these considerations presents a host of operational difficulties. There is a need to strike a workable balance between what is desirable to measure and what is possible to measure, and cost is an important variable in this exercise.

The current institutional mechanism for monitoring Target 10

As part of the overall United Nations strategy for helping the international community as a whole reach the Millennium Development Goals, there is an overall MDG reporting process, which focuses on the question “where do we stand?” This effort, which monitors progress towards achieving the Millennium Development Goals as a whole and is based on national reporting systems, is spearheaded by UNDP.

Within this overall reporting process, there is an international institutional mechanism for monitoring the water and sanitation targets that dates back to 1990. In that year, at the

end of the water decade, the World Health Organization (WHO) and the United Nations Children's Fund (UNICEF) combined their efforts in monitoring the water supply and sanitation sector by establishing the Joint Monitoring Programme for Water Supply and Sanitation (JMP). The purpose of the JMP was to:

- Monitor sector progress towards internationally established goals on access to water supply and sanitation;
- Monitor sector trends and programmes;
- Build national sector monitoring capacity; and
- Inform national and global policy-makers on the status of the sector.

Over the past decade, the JMP focused on monitoring access coverage at the global and regional levels. To that end, the JMP compiled coverage rates on water supply and sanitation using information provided primarily by water utilities and government sources. JMP sector assessment reports based on this methodology were issued in 1991, 1993 and 1996.

The latest JMP report, the *Global Water Supply and Sanitation Assessment 2000 Report* (GWSSA2000), which provides a comprehensive review of the water supply and sanitation sector at the end of the millennium, marks a significant shift in the way in which data is derived. The coverage estimates⁷ are primarily based on user-based data derived from nationally representative household surveys⁸ and census rather than provider-based data. This shift to evidence-based data was made possible after the introduction of the Multiple Cluster Indicator Surveys (MICS) by UNICEF in 64 countries in 1995 and the MICS2 around 2000 in 67 countries. These 120+ MICS results, in addition to the now over 150 Demographic and Health Surveys (funded by USAID and conducted by ORC-Macro) and data from national census efforts, provide a large enough database to calculate coverage estimates based on evidence-based data.

Data derived from household surveys is more accurate and reliable than that supplied by governments and water utilities. In many cases, provider-supplied estimates are based on

⁷ If possible, coverage estimates are based on all available national household surveys and censuses. All available surveys and censuses are plotted on a time scale. A linear trend line, based on the least-squares method, is drawn through these data points and determines the estimates for 1990 and 2000. In case household surveys and censuses are not available, coverage data given through the GWSSA 2000 questionnaire is used.

⁸ To be used in the calculation of coverage data for a country, surveys must meet certain criteria. The survey needs to be representative of the entire country. Further, it needs to be well documented, and details about the data should be available. In the JMP approach, coverage data are based on the type of services used, so if a survey only gives one total figure for people with "access," that survey cannot be used to calculate the coverage estimates because it is not clear whether this access meets the JMP standard of "improved." However, details of surveys, even those not used, have been included in the country files and are visible in the graphs for purposes of comparison. Examples of valid surveys are the Demographic and Health Survey of Macro International (funded by USAID), UNICEF's Multiple Indicator Cluster Survey and some of the World Bank's Living Standard Survey. Many censuses have also been used, but sometimes their data are given with insufficient detail.

facilities constructed under their programmes multiplied by an estimated number of users per facility. This means that facilities constructed by households themselves, by NGOs, or by the private sector may not have been included. It also means that systems that have broken down or for other reasons are not being used might be counted. Urban and peri-urban slums, even those that are home to hundreds of thousands of people, are often not counted in official government reports because of questions of tenure; access in such areas tends to be very poor, and when the people living there are not counted, a significant over-reporting of coverage can result. In addition, political, institutional, career, and other pressures can sometimes create incentives for suppliers to inflate the numbers of people reported to have access. Therefore, household-level information gathered through household surveys gives a better reflection of the real situation on the ground.

The current JMP-database contains water supply and sanitation coverage data of over 350 national household surveys and census conducted throughout the developing world during the past 15 years. The widely cited figures of 1.1 billion people without access to drinking water and 2.4 billion without access to sanitation are derived from this JMP database.

Limitations of household surveys

The current major survey instruments only ask a question about the time taken to collect water. No questions are asked about the reliability of the supply, the water quality or affordability, the distance between the household and the facility, or the time taken to collect water. Nor do the surveys assess how hygienic a sanitary facility really is.

Both the DHS and MICS surveys strive to strike a balance between obtaining information and the time needed to conduct a survey interview. Costs are an issue. A regular MICS or DHS survey interview takes between 45 minutes to one hour. MICS surveys are usually conducted in 4000 – 6000 households, DHS surveys in 6000 – 9000 households. Limiting the number of survey questions to those that have relevance for global level monitoring is therefore of utmost importance.

Although the current five-to-seven questions on water and sanitation in the MICS and DHS may be expanded with a few additional indicators with global relevance, it is likely that the demands of the sector require additional information. Current demands include information on hygiene and hygiene behavior (like hand-washing) and disaggregation of data for peri-urban areas or sub-national level. GIS mapping of the current survey instruments is not enough as the current DHS and MICS survey designs stratify their sampling for an entire country and not for separate regions. Regional stratification as is done in a very large country like India could easily increase the sample size five-to-ten fold to 60,000 households. Such surveys therefore are better done at the individual country level targeting specific regions of interest – the benefits of global monitoring of sub-regional coverage most likely do not outweigh the costs. Rapid appraisal techniques are likely a good and cost-effective alternative to household surveys to assess particular water, sanitation and hygiene problems in specific sub-regions.

Directions for the Future

As part of its work to articulate what it will take to meet the MDGs related to water and sanitation, the Task Force has put forward the following proposition relating to monitoring:

At the national level, monitoring and evaluation systems should focus on access to services, not on infrastructure, in order to provide decision makers with a basis for their decision making.

Monitoring and assessment systems for access to water supply and sanitation services need to be active and adequately resourced from the sub-national to the international level. Equally important, these systems need to employ valid and reliable measures of access to water supply and sanitation services. Historically, monitoring has focused on the presence or absence of particular water and sanitation infrastructure; information about the functioning, use, and reliability of systems was typically not collected. At this time, however, there exists the opportunity to improve and strengthen monitoring such that a more accurate picture of access to water and sanitation services can be obtained. More specifically:

- Access to services, rather than to infrastructure, should be at the center of monitoring efforts. At a minimum, monitoring should assess whether infrastructure is functioning and provides reliable service. The parameters that matter most to users—including the convenience, reliability, sustainability, and adequacy of water supply and sanitation services—should be measured over time. Monitoring of equity of access (*e.g.*, by women and the poor) must be undertaken to assess the impacts of investments on different segments of society.
- Monitoring systems should employ a sample survey approach (in lieu of, or in addition to, self-reporting methodologies) such that policy and planning can be based on more objective and accurate information regarding access to water and sanitation services.
- Collected data should not only be analyzed and reported to national and international institutions, but should also be organized and shared in a user-friendly manner with NGOs, civic groups, and the public at large.
- Moreover, the flow of information between monitoring bodies and NGOs and other civil society groups should not be one-way; these groups should be involved in the design of surveys and the selection of survey locations. Such groups working on the ground, particularly those that have won community trust, could make valuable contributions to the information-gathering process as well as help validate data reported by others.

Monitoring is imperative if countries are to focus their efforts and resources where needs and challenges are greatest, such as urban slum areas, peri-urban areas and rural areas. In many cities, provinces, and countries, surprisingly little is known about the characteristics of households that lack access to water supply and sanitation services. Such basic assessments should be undertaken such that the obstacles to expanding access are

understood and relevant financial, policy, and planning instruments are devised to respond. In most countries, the greatest challenge to increasing water and sanitation service coverage will be in dense urban slums, peri-urban zones, and rural areas.

Existing resources must be better used. Making the most of such resources is a prerequisite to reaching the goals. Based on improved information, governments at national, regional and local levels must reallocate their scarce existing resources towards achieving the Millennium Development Goals. Subsidies must promote basic services for all rather than luxury services for some. Ensuring the most cost-effective use of resources and their allocation to highest priority investment needs requires a thorough restructuring of local and national public expenditures.

At the global level, there is also a need to enhance monitoring and assessment, given that the achievement of the MDGs is a global commitment.

One issue that requires analysis relates to the Joint Monitoring Programme (JMP), which has largely been funded by its two lead agencies, UNICEF and WHO, and whose mandate appears difficult to achieve given its limited resources. There is a clear need to strengthen the JMP as the key global mechanism for monitoring access to water supply and sanitation, and to provide it with the substantial resources necessary to enable it to do its job effectively and truly monitor progress toward the MDGs on Water Supply and Sanitation. Some important principles here include:

- The focus must change from measuring infrastructure provision to measuring sustainable access to safe and adequate services, and from collecting provider system data to collecting data on actual service delivery according to agreed norms.
- National strategies and monitoring indicators should be respected; but to promote comparability of data, a few common parameters that can be readily measured at the household level should be identified and tested by the JMP for use in collecting standardized household data on access to safe water supply and basic sanitation.
- Access should be monitored at both national and sub-national levels, using sample survey techniques to complement quantitative national statistics of infrastructure provision.
- The JMP should promote a stakeholder approach, encouraging national governments to cooperate with local as well as international civil society agencies, including representatives of user groups.
- The JMP should play a more active role in promoting capacity building for monitoring purposes at national and sub-national levels.
- The JMP and national governments must adhere to agreed programs for the publication of monitoring data in a consistent format at national and international levels; reports should be publicly available to promote transparency.

PART II: MONITORING WATER RESOURCES FOR ALL THE MDGS

As mentioned earlier, there are significant differences between the way in which water resources for all the MDGs are monitored and Target 10 is monitored. The international community does not have a conceptual framework for defining and measuring the contribution of water resources to progress towards the targets nor an institutional mechanism, based on this conceptual framework, for tracking progress. This part of the report reviews the current situation, both in terms of the conceptual framework and the institutional mechanisms.

Conceptual Framework for Monitoring Water Resources for the MDGs

The key way in which monitoring water resources for the MDGs differs from tracking progress in reaching Target 10 is that, whereas target 10 is in itself a measurable goal, water resources development and management is not an end in itself but rather an input to broader efforts to attain the MDGs – to increase food production, reduce poverty and disease, protect ecosystems. Developing a solid conceptual framework for monitoring water resources management and development in relation to the MDGs therefore presents a host of issues that the international community has yet to come to grips with, let alone resolve. As an initial step in this direction, we present below what we believe to be four essential foundations on which a conceptual framework for monitoring water for all the MDGs might be built:

1. A framework for sorting out the multiple ways in which the development, management and use of water resources will impact on the MDGs. Table 1 represents a very preliminary attempt to summarize some of these multiple ways in which the development, management and use of water (including expanding access to domestic water supply and sanitation services as called for in Target 10) impacts on the goals, targets and indicators embodied in the MDGs (which in turn are summarized in Table 2), and can be used as a framework to trace what specific parameters need to be monitored to ensure that the development, management and use of water is having the maximum possible positive impact on the achievement of the MDGs. Meeting the poverty target (target #1), for instance, will require not only attaining equity in access to safe drinking water, but also reducing poor people's vulnerability to water-related diseases, disasters like floods and droughts, and water-based conflict; promoting equality for women and girls in access, rights, entitlements and decision-making related to water; and maximizing the social and economic benefits from available water resources, while ensuring that basic human needs are met and the environment is protected for future generations.
2. A set of intermediate targets that relate the development, management and use of water resources to each of the key relevant MDG targets. Following

the concepts of “nested systems frameworks”⁹, the relationship between water and any one of the MDGs can be described as a set of nested systems, each with its own particular set of intermediate objectives. The primary link between these systems is that the outputs from one system become part of the inputs into the next system. In this context, three types of intermediate targets could be monitored: process measures, which refer to the processes internal to any given system; output measures, which describe the quality and quantity of outputs at a point where they become inputs to the next higher system; and impact measures, which refer to the impact of these outputs on the MDGs as a whole. Importantly, this requires monitoring not only of the inputs to and outputs from any subsystem, but also the efficiency with which inputs to any subsystem are turned into outputs. In relation to the hunger target, for example, it is important to measure not only the water consumed in irrigated agriculture and the resultant food output, but also the relationship between the two – the “crop per drop” ratio.

3. For each intermediate target, an analytical system to define and measure the target. As with target #10, this will require, for each intermediate target, (a) terminology for defining precisely what we mean by the contribution of water resources management and development for that target; (b) the operational meaning of the agreed terminologies; and (c) survey instruments and indicators for assessing progress in water resources management and development towards the target. In the case of the hunger target, for example, an intermediate target might be the proportion of land area that is effectively irrigated in relation to the proportion of land area that would need to be irrigated if the hunger target is to be met. For both the poverty and the hunger targets, one parameter to monitor might be the degree to which the unequal distribution of water in time and space can be controlled, for example by measuring the proportion of storage infrastructure (both surface and sub-surface) and early warning systems that are effectively in place in relation to the infrastructure and management systems that would be needed to effectively control floods and droughts.
4. A system for monitoring the extent to which each country’s vision of Integrated Water Resources Management is translated into tailored solutions as a base for achieving the MDGs as a whole. Although water management and development will be essential to meeting the MDGs as a whole, efforts to make the MDGs a reality on the ground are going to demand possibly conflicting uses of the same water resources. For this reason, there is increasing acceptance that the management of water resources must be undertaken with an integrated approach, that assessment

⁹ Small, Leslie and Mark Svendsen, 1992. *A framework for assessing irrigation performance*. International Food Policy Research Institute (IFPRI), Working Papers on Irrigation Performance No. 1, Washington, DC: IFPRI.

of the resource is of fundamental importance as the basis for rational decision-making and that national capacities to undertake necessary assessments must be fully supported. Management decisions to alleviate poverty, to allow economic development, to ensure food security and the health of human populations as well as preserve vital ecosystems, must be based on our best possible understanding of all relevant systems. From this point of view, the implementation of one of the Task Force's fundamental propositions – that the vision of Integrated Water Resources Management needs to be translated into tailored solutions to specific countries as a base for achieving the MDGs as a whole – also needs to be carefully monitored. In the short term, this implies monitoring the target set in Johannesburg requiring countries to have formulated IWRM plans by 2005.

Clearly, these four essential foundations only begin to scratch the surface of the needed conceptual framework for monitoring water for all the MDGs. In further developing this framework, a wide range of issues will need to be taken into account. Perhaps the most important of these is that, since the relationship between water and the MDGs is enormously site specific, intermediate targets -- as well as intermediate milestones (e.g., for 2005 and 2010) --will need to be set and monitored at national levels (and sub-national levels for large countries). In addition, baseline dates will need to be set for all targets (1990 is recommended in all cases, unless special circumstances dictate otherwise). Finally, as with target #10, intermediate targets for water resources will need to give attention to both development and management issues, recognizing the key role of investment in infrastructure and the vast deficiencies in infrastructure endowments in the poorest countries most at risk of failing to achieve the MDGs. Intermediate targets will thus need to include both a physical/infrastructure dimension – for example, access to water for irrigation means the existence of infrastructure in good working order – as well as a concept of use – for example, whether a tube well is working and used effectively.

Institutional Mechanisms for Monitoring Water Resources for the MDGs

Within the overall MDG reporting process referred to earlier, there is currently no global system in place to produce a systematic, continuing, integrated and comprehensive global picture of freshwater and its management in relation to the MDGs. Designed to help close this gap is the World Water Assessment Programme (WWAP), which focuses on assessing the situation of freshwater throughout the world. Its primary output is the periodic World Water Development Report (the most recent report came out in 2003; the next volumes are slated for 2006, 2009, 2012, and 2015). The Programme focuses on terrestrial freshwater, but links with the marine near-shore environments and coastal zone regions as principal sinks for land-based sources of pollution and sedimentation and as areas where the threat of flooding and the potential impact of sea level rise on freshwater resources is particularly acute.

The Programme is undertaken by UN agencies working in concert, is hosted by UNESCO, and serves as an "umbrella" for coordination of existing UN initiatives within the freshwater assessment sphere. In this regard it links strongly with the data and

information systems of the UN agencies, for example GRID, GEMS-Water, the Global International Waters Assessment (GIWA) of UNEP, the Global Runoff Data Center (GRDC) of WMO, AQUASTAT of FAO, the International Groundwater Resources Assessment Centre (IGRAC) of WMO and UNESCO, the water supply and sanitation databases of WHO and UNICEF and the databases of the World Bank system.

Currently, data and information compilation and development of indicators is being undertaken in all key areas of water resources and reflected in the World Water Development Report. Organized in terms of the MDGs, these areas include:

Goal 1: Eradicate extreme poverty and hunger

- **Securing the food supply:** Food security, particularly of the poor and vulnerable, depends upon the more efficient mobilisation and use of water and the more equitable allocation of water for food production.
- **Water and industry:** Industry needs and private sector responsibility to respect water quality and take account of the needs of competing sectors has a significant impact on water quality and quantity.
- **Water and energy:** Water is vital for all forms of energy production, and there is a need to ensure that energy requirements are met in a sustainable manner.
- **Managing risks:** There is tremendous need in developing countries to provide security from floods, droughts, pollution and other water-related hazards, especially in light of climate change.

Goals 4, 5 and 6: Reduce child mortality, improve maternal health and combat HIV/AIDS, malaria and other diseases

- **Meeting basic needs (essentially focusing on the promotion and protection of human health):** Access to safe and sufficient water and sanitation is a basic human right and essential to health and well-being.

Goal 7: Ensure environmental sustainability

- **Protecting ecosystems:** Safeguarding the integrity of ecosystems requires sustainable water resources management.
- **Water and cities:** Urban areas are increasingly the focus of human settlements and economic activities, and they present distinctive challenges to water managers.

Integrated approaches to achieve all goals

- **The nature of the resource:** The availability of water (quantity and quality) from all sources and its variation through time affect all aspects of development.
- **Valuing water:** Managing water in a way that reflects its economic, social, environmental and cultural values in all its uses, and to moving towards pricing water services to reflect the cost of their provision taking account of the need for

equity and the basic needs of the poor and the vulnerable, are important components of sound water management;

- **Governing water wisely:** Good water governance requires the involvement of the public and the interests of all stakeholders in the management of water resources.
- **Ensuring the knowledge base:** Good water policies and management depend upon the quality of knowledge available to decision makers.
- **Sharing water resources:** Promoting peaceful cooperation and developing synergies among different uses of water at all levels within and between states concerned through sustainable river basin management or other appropriate approaches is critical.

Clearly, much needs to be done to help the World Water Development Report system become an effective process to monitor water resources for the MDGs. In addition to the conceptual problems referred to in the previous section, enormous measurement challenges remain to be tackled. Just to take one example, data and information collection is not done in a systematic and consistent fashion at any level, and thus it is difficult to compare data over time or between countries. In addition, there are problems of definition.

Nevertheless, the Task Force is of the view that UN-Water, which has recently been reconstituted to include representation from international NGOs like the Global Water Partnership and the World Water Council, is best placed to take the lead in addressing the current constraints on assessment and monitoring to meet the MDGs as a whole and that, under the direction of UN-Water, the World Water Development Report might be considered as a mechanism for periodically reporting on progress made in the area of water resources development and management towards achieving the MDGs as a whole. Such a role would complement that which the Joint Monitoring Programme (JMP) is currently playing as the official monitoring mechanism for the MDG targets on domestic water supply and sanitation services. The publishing of the WDDR in 2006, 2009, 2012 and 2015 would provide an ideal series of time-checks along the road to 2015.

PART III: USING MONITORING INFORMATION TO IMPROVE STRATEGIC FOCUS

A key issue at the global level on which the Task Force has reflected at length relates to the ways in which the international community might achieve high-level strategic focus that is not trapped by institutional interests. How can the key stakeholders -- the world leaders who pledged to the MDGs -- ensure that their agenda is faithfully taken forward by those working in the implementing institutions, and is not hijacked by institutional interests?

Against this background, the Task Force welcomes the recent bold decision of the United Nations Secretary General to establish a Advisory Board on Water and Sanitation, a group of eminent persons able to monitor inputs and outputs of the sector as a whole. Two issues are clearly crucial – what the Panel should do, and how it should do it.

On the functions of the Panel, the Task Force is of the view that the Panel should focus on assessing progress in the attainment of the water and sanitation target and giving strategic direction. It should identify where there are blockages to progress and make recommendations for overcoming them as well as give credit to those who are progressing well. Areas of attention might include:

- Assessing policies and actions in the water and sanitation sectors and advising the international community and individual governments, especially those having difficulty in reaching the MDGs;
- Assessing not only level of access but also inputs being made in terms of financing by governments, the donor community and IFIs and the appropriateness of policy implementation in individual countries;
- Assessing the quality of data and statistics and the capacity to monitor policies and actions in the water and sanitation sectors, as well as the adequacy of monitoring systems, and make recommendations for their improvement;
- Identifying gaps in current national and international actions for the sustainable use of the world's water resources to meet the MDGs as a whole. A Panel that focused on the broader issue of water development and management to meet the MDGs as a whole would be more useful than one focused only on Target #10, and help address any possible implication that every MDG target should have its corresponding Panel.

On how to structure the work of the Panel, the Task Force believes it important for the Panel to draw upon the monitoring reports, assessments and major findings of key existing bodies, including in particular the reports by UN-Water and the Joint Monitoring Programme (JMP). It should also draw upon credible and respected non-UN, non-governmental sources of information. The Panel should have some independent means to undertake analytical work necessary for the proper discharge of its functions and to obtain independent technical support. Importantly, the Panel will need to have sufficient understanding of the underlying issues to enable it to assess what is presented by the various agencies concerned but with sufficient distance from the key actors to ensure independence of thought and action.

Clearly, maximizing the ability of the group to think and act independently lies at the heart of many of the above structural recommendations and will need considerable attention. Additional measures might include limiting the terms of office of the members of the panel. Funding for the operations of the Panel, the Secretariat and technical support should preferably be obtained from outside the UN system. Given the need for accountability and avoidance of conflict of interest, the Panel should not be advised by bodies that may be involved in defending their performance (though it should receive information from such bodies). Importantly, though the Panel should report to the Secretary General, it should not be viewed as a United Nations body and should not in any way be impaired in its ability to comment freely on UN functions.

Finally, attention will also need to be devoted to ensuring that the group does not fall into any of the "traps" that might limit its effectiveness or that of other key components of the

international system. In particular, it will be important to ensure that the establishment of the group does not lead in any way to a reduction of attention and resources to in-country action, but rather to do precisely the reverse. It should not lead to any weakening of existing monitoring mechanisms such as the JMP, but rather to their strengthening. It should not be viewed as a permanent body, but rather be created for a fixed term and cease to exist when its purpose has been accomplished. And it should not encourage a top-down view of the world, but rather provide a forum where in-country forces and external support groups, governmental decision makers and civil society can come together to recognize the reality of the problems on the ground and help achieve workable solutions.

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Table 1. Summary of the way in which water resources development, management and use relate to the realization of each of the MDGs.

| Millennium Development Goal by 2015 | Contribution of Water Resources Development and Management to MDG |
|--|--|
| <p>Poverty To halve the proportion of the world's people whose income is less than \$1/day</p> | <ul style="list-style-type: none"> • Water is a factor of production in agriculture, industry and other economic activities • Investments in water infrastructure/services as a catalyst for local/regional development • Reduced vulnerability to water-related hazards reduces risks in investments and production • Reduced ecosystems degradation makes livelihood systems of the poor more secure • Improved health increases productive capacities, reduces burden on those who care for the sick |
| <p>Hunger To halve the proportion of the world's people who suffer from hunger</p> | <ul style="list-style-type: none"> • Water is a direct input to irrigation for expanded grain production • Reliable water for subsistence agriculture, home gardens, livestock, tree crops • Sustainable production of fish, tree crops and other foods gathered in common property resources (also affects poverty when such goods are sold for income) • Reduced urban hunger due to cheaper food prices • Healthy people are better able to absorb the nutrients in food than those suffering from water-related diseases, particularly worms |
| <p>Primary Education To ensure that children everywhere complete a full course of primary schooling</p> | <ul style="list-style-type: none"> • Domestic water supply can lead to improved school attendance from improved health and reduced water-carrying burdens, especially for girls • Having separate sanitation facilities for girls and boys in schools increases girls' school attendance |
| <p>Gender Equality To ensure girls and boys have equal access to primary and secondary education</p> | <ul style="list-style-type: none"> • Community-based organizations for water management improve social capital of women • Reduced time, health, and care-giving burdens from improved water services give women more time for productive endeavours, adult education, empowerment activities, leisure • Water sources and sanitation facilities closer to home put women and girls at less risk for sexual harassment and assault while gathering water and searching for privacy • Higher rates of child survival are a precursor to the demographic transition toward lower fertility rates; having fewer children reduces women's reproductive responsibilities |
| <p>Child Mortality To reduce by two-thirds the death rate for children under five</p> | <ul style="list-style-type: none"> • Improved quantities and quality of domestic water and sanitation reduce main morbidity and mortality factor for young children • Improved nutrition and food security reduces susceptibility to diseases |
| <p>Maternal Mortality To reduce by three-fourths the rate of maternal mortality</p> | <ul style="list-style-type: none"> • Improved health and reduced labour burdens from water portage reduce mortality risks • Improved health and nutrition reduce susceptibility to anaemia and other conditions that affect maternal mortality • Sufficient quantities of clean water for washing pre-and-post birth cut down on life-threatening infections • Higher rates of child survival are a precursor to the demographic transition toward lower fertility rates, and fewer pregnancies per woman reduce maternal mortality |
| <p>Major Disease To halve, halt and begun to reverse the spread of HIV, malaria & major diseases</p> | <ul style="list-style-type: none"> • Better water management reduces mosquito habitats • Better water management reduces incidence of a range of other water-borne diseases • Improved health and nutrition reduce susceptibility to/severity of HIV/AIDS and other major diseases |
| <p>Environmental sustainability To stop the unsustainable exploitation of natural resources and to halve the proportion of people who are unable to reach or afford safe drinking water</p> | <ul style="list-style-type: none"> • Improved water management, including pollution control and water conservation, key factor in maintaining ecosystems integrity • Development of integrated management within river basin creates situation where sustainable ecosystems management possible and upstream-downstream effects are mitigated • Biodiversity conservation, combating desertification furthered by sound water management |

TABLE 2. – MILLENNIUM DEVELOPMENT GOALS, TARGETS AND INDICATORS (MDGs 1-7 ONLY, UPDATED OCTOBER 2003)¹⁰

A framework of 8 goals, 18 targets and 48 indicators to measure progress towards the Millennium Development goals was adopted by a consensus of experts from the United Nations Secretariat and IMF, OECD and the World Bank. (Road Map towards the Implementation of the United Nations Millennium Declaration, A/56/326)

GOAL 1. ERADICATE EXTREME POVERTY AND HUNGER

Target 1.

Halve, between 1990 and 2015, the proportion of people whose income is less than one dollar a day

Indicators

1. Proportion of population below \$1 (PPP) per day (World Bank)
2. Poverty gap ratio (incidence x depth of poverty) (World Bank)
3. Share of poorest quintile in national consumption (World Bank)

Target 2.

Halve, between 1990 and 2015, the proportion of people who suffer from hunger

Indicators

4. Prevalence of underweight children under five years of age (UNICEF - WHO)
5. Proportion of population below minimum level of dietary energy consumption (FAO)

GOAL 2. ACHIEVE UNIVERSAL PRIMARY EDUCATION

Target 3.

Ensure that, by 2015, children everywhere, boys and girls alike, will be able to complete a full course of primary schooling

Indicators

6. Net enrolment ratio in primary education (UNESCO)
7. Proportion of pupils starting grade 1 who reach grade 5 (UNESCO)
8. Literacy rate of 15-24-year-olds (UNESCO)

GOAL 3. PROMOTE GENDER EQUALITY AND EMPOWER WOMEN

Target 4.

Eliminate gender disparity in primary and secondary education, preferably by 2005, and to all levels of education no later than 2015

Indicators

9. Ratio of girls to boys in primary, secondary and tertiary education (UNESCO)
10. Ratio of literate women to men of 15- to 24-year-olds (UNESCO)
11. Share of women in wage employment in the non-agricultural sector (ILO)
12. Proportion of seats held by women in national parliament (IPU)

GOAL 4. REDUCE CHILD MORTALITY

Target 5.

Reduce by two thirds, between 1990 and 2015, the under-five mortality rate

Indicators

13. Under-five mortality rate (UNICEF - WHO)
14. Infant mortality rate (UNICEF - WHO)
15. Proportion of 1-year-old children immunized against measles (UNICEF - WHO)

¹⁰ http://millenniumindicators.un.org/unsd/mi/mi_goals.asp

GOAL 5. IMPROVE MATERNAL HEALTH

Target 6. Reduce by three quarters, between 1990 and 2015, the maternal mortality ratio

Indicators

- 16. Maternal mortality ratio (UNICEF - WHO)
- 17. Proportion of births attended by skilled health personnel (UNICEF - WHO)

GOAL 6. COMBAT HIV/AIDS, MALARIA AND OTHER DISEASES

Target 7

Have halted by 2015 and begun to reverse the spread of HIV/AIDS

Indicators

- 18. HIV prevalence among 15-to-24-year-old pregnant women (UNAIDS-WHO-UNICEF)
- 19. Condom use rate of the contraceptive prevalence rate (UNAIDS, UNICEF, UN Population Division, WHO)
 - 19a. Condom use at last high-risk sex
 - 19b. Percentage of population aged 15-24 with comprehensive correct knowledge of HIV/AIDS
- 20. Ratio of school attendance of orphans to school attendance of non-orphans aged 10-14 (UNICEF-UNAIDS)

Target 8.

Have halted by 2015 and begun to reverse the incidence of malaria and other major diseases

Indicators

- 21. Prevalence and death rates associated with malaria (WHO)
- 22. Proportion of population in malaria risk areas using effective malaria prevention and treatment measures (UNICEF - WHO)
- 23. Prevalence and death rates associated with tuberculosis (WHO)
- 24. Proportion of tuberculosis cases detected and cured under DOTS (internationally recommended TB control strategy) (WHO)

GOAL 7. ENSURE ENVIRONMENTAL SUSTAINABILITY

Target 9.

Integrate the principles of sustainable development into country policies and programmes and reverse the loss of environmental resources

Indicators

- 25. Proportion of land area covered by forest (FAO)
- 26. Ratio of area protected to maintain biological diversity to surface area (UNEP-IUCN)
- 27. Energy use (kg oil equivalent) per \$1 GDP (PPP) (IEA, World Bank)
- 28. Carbon dioxide emissions (per capita) (UNFCCC, UNSD) and consumption of ozone-depleting CFCs (ODP tons) (UNEP-Ozone Secretariat)
- 29. Proportion of population using solid fuels (WHO)

Target 10.

Halve by 2015 the proportion of people without sustainable access to safe drinking water and sanitation

Indicators

- 30. Proportion of population with sustainable access to an improved water source, urban and rural (UNICEF - WHO)
- 31. Proportion of population with access to improved sanitation, urban and rural (UNICEF - WHO)

Target 11.

By 2020 to have achieved a significant improvement in the lives of at least 100 million slum dwellers

Indicators

- 32. Proportion of households with access to secure tenure (UN-HABITAT)