

How IWRM will contribute to achieving the MDGs

Water runs through and sustains all life and human activity. Without reliable access to enough water, social and economic development cannot occur. A quick review of the Millennium Development Goals (MDGs) shows that the achievement of most of them will have to be underpinned by water in one way or another.

This short policy brief seeks to outline why water is so important in the achievement of the MDGs and to consider how it should be managed if it is to be effectively harnessed to this end. Specifically, it seeks to explain why the structured approach known as Integrated Water Resources Management (IWRM) has been adopted by the international community and how it can contribute to meeting the MDGs.

While access to safe water is a specific target of Millennium Goal 7 (to which sanitation was added, during the 2002 World Summit on Sustainable Development) the starting point for this review is to consider how water and its management contributes to all the MDGs for it is in this context that the contribution of the IWRM approach becomes clear.

IWRM provides a framework within which to consider tradeoffs between different development objectives and, where possible, to identify win-win water investments. By aligning and integrating interests and activities that are traditionally seen as unrelated or that, despite obvious interrelationships, are simply not coordinated, IWRM can foster more efficient and sustainable use of water resources to achieve the MDGs. It must be emphasised however that an IWRM approach will support not just achievement of the MDGs but also the long-term economic development, poverty reduction and environmental sustainability that will be needed to sustain that achievement.

The MDG process provides an opportunity to re-examine and modify the current development paradigm such that national development and poverty reduction strategies consider more explicitly (1) the multi-faceted role that water resources management plays in poverty alleviation, environmental protection, and economic development; and (2) the tradeoffs between, and potential synergies among, a multitude of objectives (e.g., equity, economic efficiency, and environmental protection). IWRM is not simply a process designed to carry us to a set of 2015 targets, but a way of thinking that enhances our capacity to tackle multi-objective, multi-sectoral development planning—such as is embodied by the MDG process.

Water resources management and development and the MDGs

This section looks at how water and better water management contributes to the achievement of the various MDGs. It also highlights opportunities where water can complement other development investments and vice versa and where there are opportunities to contribute to multiple MDGs.

Goal 1. Eradicate extreme poverty and hunger

Access to water supply and sanitation, often used in broad definitions of ‘poverty’, is a Millennium Target in itself (as part of Goal 7). It is invariably the poor who must spend much of their resources (money and time) carrying water to their homes; it is the poor who carry the greatest burden of productivity-sapping disease as a result of not having access to safe water and sanitation.

But water is essential to economic development, which can create productive livelihoods for the poor. Water can also offer important direct opportunities for the poor to address their food and income needs. In many rural communities, the availability of food on which to subsist is dependent on the uncertainties of nature’s cycles—on whether the rains come and the rivers flow. Creating conditions in which the poor can benefit from opportunities offered by access to water is one of the more important contributions that IWRM can make to poverty reduction.

Poor communities are also particularly vulnerable to floods, droughts and similar water-related disasters which destroy their assets and incomes. It is possible to manage climatic uncertainty, to understand and predict the water cycle, to store and distribute water when it is scarce and protect communities from it when it is over-abundant. These all require the structured, collective, and above all, planned human intervention that IWRM can facilitate.

Goal 2. Achieve universal primary education

The challenge of primary education may seem removed from that of water until it is recognised that in many communities, children’s time is a valuable commodity and school attendance competes with work such as carrying water. Water-related disease also affects school attendance. And the availability of adequate sanitation is a key determinant, for girls in particular, of attendance at school—for example, a study in the Nokali district of Pakistan showed that installing water and separate sanitation facilities for girls increased their attendance by 15%.¹

Goal 3. Promote gender equality and empower women

The burden of reproducing families and sustaining households has always fallen disproportionately on women. The fetching and storing of water is a task which takes much of their time and that of their female children in many poor communities. Women are also often the primary users of water for productive activities such as agriculture. Properly applied, IWRM approaches can ensure that they have a voice in decisions about water that affect them and can gain access to water to help boost their incomes. Any intervention that makes safe water more easily available is a direct contribution to the promotion of gender equality, lightening the domestic burden on women, and enabling them to participate more actively and effectively in the affairs of their community.

Goal 4. Reduce child mortality

In most poor communities, the health of children is directly related to the quality of their immediate nurturing environment, in which water and sanitation services and their management play a key role. Children are at risk when they are without safe water to drink,

¹ *Linking poverty reduction and water management* (see resources and further reading).

without adequate water to stay clean, without some sanitation facility to remove human wastes safely and when their care-givers are without the knowledge or power to make decisions about these issues. In developing countries, water-related diseases are almost always amongst the most important causes of death of children under the age of five, using deaths from diarrhoea as a proxy. More than 1.5 million children under five die every year from diarrhoea (more than from malaria and HIV/AIDS combined).

Goal 5. Improve maternal health

The burden of fetching water and dealing with water-related disease in the family falls disproportionately on women and puts pressure on their own health. Measures that help women to reduce this burden and to improve family health, will contribute to improved maternal health specifically, as well as to gender equality more generally.

Goal 6. Combat HIV/AIDS, malaria and other diseases

Access to safe water and sanitation services can help to reduce poverty—which in turn is an important determinant of HIV/AIDS—and help to keep HIV-infected people healthy and productive. Effective water management at local level can also help to reduce malaria and other diseases endemic in poor communities such as dengue fever, which is now spreading more rapidly than malaria.

Goal 7. Ensure environmental sustainability (including the target of halving the number of people without access to water and sanitation)

Water is key to the sustainable utilization of land, plant and animal resources. In many countries the main environmental problems, whether it is pollution, erosion or the loss of biodiversity in wetlands and estuaries, relate to water. If the water resources environment is not managed and protected, it will not be able to sustain human communities. A direct contribution offered by IWRM to Goal 7 is to facilitate, in a structured way, the achievement of a balance between economic, social objectives and activities, and environmental sustainability.

Similarly, IWRM can help to ensure that the provision of water supply and sanitation services (the other dimension of Goal 7) is reliable and sustainable. Certainly, the disposal of waste water from sanitation is a major environmental challenge in many countries, best addressed through IWRM. Similarly, the reliability of domestic water supplies in dry seasons often depends on influencing the behaviour of other water users.

Goal 8. Develop a global partnership for development

Water is a resource that knows no political boundaries. Just as many communities depend on water shared with their neighbours, so too do many countries. What is also shared between countries is the common commitment to achieve the MDGs and, if water is key to meeting the MDGs, cooperation in its management is critical. There are many ways in which countries will need to cooperate if the MDGs are to be reached, by no means limited to financial and technical support for specific activities. Integrated water resource management is one mechanism through which such partnerships can be built, particularly where rivers and lakes are shared between more than one country.

What will it take to manage water for achievement of the MDGs?

One important outcome of the Millennium Declaration is that a great deal of work has already been undertaken to identify what it will take to achieve them. In the area of water, Task Force 7 of the Millennium Project has produced a review “Health, Dignity and Development: What Will It Take?” which covers much of this ground in relation to water supply and sanitation services.

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The work of Task Force 7 focused primarily on the water supply and sanitation services (simply put, the taps and toilets issues dealing with water in pipes) which in many countries represent the most acute and immediate needs. But it recognized that without investment in water resource development and greater attention to the management of water resources (the water as it occurs naturally in lakes, rivers and underground), any gains in water services were unlikely to be sustained and that it would be difficult to achieve the broader Millennium Development Goals. For example, it recommended an integrated approach to land, water and ecosystems in policy and planning and that the target set at the World Summit on Sustainable development—for countries to develop national IWRM and water efficiency strategies—be used as an opportunity to incorporate water into MDG planning processes.

What specific water resources issues are critical to meeting the MDGs?

To understand how an IWRM approach may contribute to sustainable development and the achievement of the MDGs, it is helpful to consider the challenges of the water cycle. The first challenge is the distribution of water. Communities first deal with the uneven physical distribution of water by going to where it can be found. This is why great civilizations grew along the rivers of the world, which provided not just the water they needed but also a range of associated goods, including security and transport as well as food and building materials and the removal of human wastes.

As societies grow and develop, they often expand away from reliable sources of water and, to manage the consequences, build infrastructure to store and transport water to where it is needed. This leaves them vulnerable to social and economic changes as well as to conflict. Water availability also varies with time and indeed, long-term variations in climate have in some places upset the reliability of those arrangements and contributed to the decline of whole civilizations. While important advances have been made in weather and climate prediction, it is not yet possible to make reliable seasonal predictions of water availability and how it will be affected by climate change, a further challenge that water management must address.

The second set of challenges relates to the quality of water resources. As population densities and economic activities increase, so too does their impact on water, particularly the impact of human wastes. While the first concern tends to be the impact on the health of people, water quality also impacts on the productivity of land, as the “salinisation” of productive lands can render them infertile and destroy whole economies. Pollution as well as over-use can also destroy aquatic ecosystems on which communities depend for their livelihoods.

The human “demand side” of water is also complex. The growth of human settlements complicates water supply and management. Small settlements can meet their needs from local resources but, as they grow, water has to be brought from farther away. Similarly, human impacts on water quality in small settlements can be relatively easily managed. However, as cities grow, their environmental impact spreads well beyond their boundaries. In both cases, the “environmental footprint”, the area affected by the human settlement, expands with both economic development and population numbers.

This impacts on the poor and the achievement of MDGs in two ways. First, where services require more infrastructure and supplies come from farther away, they tend to cost more; access increasingly becomes a function of income and wealth rather than a simple relationship with the local environment.

In the competition for more and higher quality water services, wealthier households and communities tend to fare better. The local sources of water of poor households are captured by others, impacting their domestic supplies and their incomes. The resources they enjoyed are often polluted, impacting on their health. And where land is scarce, the poor are often forced into areas vulnerable to drought and floods.

Whereas an IWRM approach to water management cannot in itself deal with all these

impacts, it can, if properly implemented, provide some opportunity for the needs of poor communities to be considered and for the communities themselves to engage in management processes and decisions. At the same time, it can enable decisions to be made about environmental protection and the tradeoffs that need to be made between environmental sustainability and economic and social priorities.

Why adopting an IWRM approach makes sense

Where water is plentiful and there are not many pressures on the resource, its management can be a local matter. A village can store rain water in a small dam for the dry season, without significant impact on its neighbours. A farmer may divert water from a stream to irrigate a field without affecting the town downstream. But when new users demand a share and there is not enough water in the stream, when the water in the dam is no longer enough to meet the needs of the village, when the town suffers drought, then action has to be taken to reconcile the needs of all the users.

The impacts of one community on another go beyond the mere quantity of water abstracted. As populations grow and settlements spread, the waste from one impacts on another. When farmers, seeking to use land and water more productively, apply fertilizer and pesticides to their fields, some inevitably washes off and flows into the water courses. When the town grows so large that water used in it can no longer be disposed of by simply allowing it to soak into the ground, its wastewater goes back into the streams. One community's resource now contains the upstream communities' waste.

As societies grow, so too do the challenges of managing their water and wastewater. An isolated household can keep its drinking water separate from its waste, as can a small village. But at the scale of cities, the challenges become greater and it becomes critical to bring together different water users to make decisions about water use and management.

While this may appear to be obvious, it does not reflect what actually happens in many societies where, for instance, the arrangements governing how much water farmers can take from streams often do not consider what occurs downstream. The "right" to use water may simply depend on whether their land is close to a stream. Similarly, while a rural village household can dispose of its waste simply by throwing it into the bush, when that household moves to the city, its waste becomes its neighbours' pollution.

In both cases, some collective agreement has to be reached to create a tolerable living environment. A dam can be built to store water and release it in the dry season; canals dug to transport it so that all farmers can meet their needs. But who should pay to make available what used to be a free resource? Whose responsibility is it to take the wastewater from urban households—which individually can just empty it into the ditch outside—and dispose of it safely where it causes no risk to people's health and to downstream ecosystems?

Integrated water resource management is a structured process that addresses the need to bring together those who use water and those who impact on it to work together to solve their water challenges. But it goes further than that. If water management is seen simply as balancing competing claims and impacts, it will eventually run out of solutions when there are simply too many users and too little water.

At this point, the value of the integrated approach to water management becomes clear. If farming practices can be improved to produce more crops with less water, more farmers can share the existing resource. If a city needs additional water to sustain its growth and, as in most countries, farmers are using the lion's share, the city could fund those measures to improve the efficiency of water use. Even trade can help since if export markets can be opened to high value crops like out of season fruit and vegetables, less water may even provide more income for the people concerned.

Similar considerations apply to wastewater. The way that households are provided

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with sanitation determines how much wastewater they generate and what action is necessary to make it safe again. Where there is competition for water supplies, the wastewater from a city may be used as process water for factories and mines or as a nutrient-rich flow for irrigated agriculture. The city pays less to treat it, the industry pays less to obtain it.

Once the blinders of the individual user are removed, all sorts of solutions appear to what seem to be intractable water management problems. Urban design and conservation measures can allow growing cities to reduce their water requirements even as their population increases. But this requires the engagement of urban planning professionals and architects with water managers. Integrated water resources management offers a systematic way to build and nurture these linkages.

It has been argued that the challenge of water management is simply a matter of resource economics; that if the right prices were set and the right markets established, the problems would be solved. This ignores the fundamental challenge of water, namely that because it is as necessary to human survival as the very air we breathe, issues of distribution and welfare have to be addressed. Similarly, market economics cannot easily address environmental challenges, such as the need for water resources to be protected as part of the biodiversity on which human survival ultimately depends.

IWRM is thus predicated on the need to reconcile the three E's:

- Social Equity
- Economic Efficiency
- Environmental Sustainability

It recognizes that robust systems are needed to encourage structured decision-making on tradeoffs between different communities with different objectives. Otherwise, these tradeoffs will simply occur in an unintended way, reflecting power and position, invariably at the expense of the poor and voiceless—and of future generations.

In addition to the traditional armory of the water resource engineer, instruments for IWRM thus include:

- policy and regulation,
- institutions and social processes,
- economic instruments,
- planning, and
- information and communication.

Linking IWRM Strategies and Plans to National Development Strategies to achieve the MDGs

There is obvious synergy between the various MDGs; it will be difficult to make progress on a few without progress on the others. This is certainly true for those in which water plays a role. In this context, an important dimension of IWRM is that it creates a framework for water management options to be introduced into broader national development planning in a structured way.

As explained above, IWRM engages water users to develop solutions to water challenges that are appropriate in terms of social and environment impacts as well as economic efficiency.

If the process is to be effective however, it should inform and, in turn be guided by, a broader perspective on national development. This occurs in many different ways in each country. However, for the poorer developing countries where the challenge of meeting

MDGs is greatest, recent developments in the approach to external assistance (which will remain a critical component of national MDG strategies) are important.

The 2005 Paris Declaration on Increasing Aid Effectiveness recognizes that the key to achieving broad development goals is to concentrate on “strengthening partners’ national development strategies and associated operational frameworks”. In this context, IWRM is an instrument whose time has come. In addition, the 2005 World Summit—building upon the original target on national IWRM and water efficiency plans set at the 2002 World Summit—called for assistance to developing countries in efforts to prepare IWRM and water efficiency plans as part of their national development strategies.

IWRM can make an important input to national development strategies by highlighting the areas in which water is a constraint to pro-poor development as well where water offers opportunities. As important, it can identify development options that may both facilitate and make development more feasible, and it can provide mechanisms through which this can be done.

Whether it is in the identification of agricultural and rural livelihood strategies, approaches to housing development in cities or informing industrial strategies, an IWRM approach, effectively applied, can contribute to overall national development strategies as well as to the MDGs well beyond what is traditionally considered to be the domain of the water sector.

Putting IWRM to work to achieve the MDGs

What must be done if we are to put IWRM to work to achieve the MDGs?

- First, there needs to be a recognition by government policy makers and development planners that better water management, in many different dimensions, is crucial to MDG achievement.
- Second, policy makers and managers in the water sector must understand that their work will be most effective if it is managed in a broader context and if they ensure that they are part of broader development planning processes.
- The adoption of an IWRM approach, deliberately linked to the appropriate national development planning processes, will enable the full potential of water management to contribute to the achievement of the MDGs.
- For IWRM to be effective, it must have a clearly identified champion within government to give strategic direction to the process.
- An important requirement for the governmental champion will be to ensure that the institutional framework for IWRM is established and capacitated, and includes provisions for the arbitration of the disputes, which will inevitably arise.
- Finally, since a key element of the IWRM approach is to ensure that all who are concerned in water’s use play a part in its management, these approaches must involve them in a structured way.

In this way, water management can become a catalyst for the larger processes of development that will not just achieve the MDGs but the broader goal of equitable and sustainable development.

Resources and further reading

- Health, Dignity and Development: What Will It Take? (Millennium Project Task Force on Water and Sanitation, final report)
http://www.unmillenniumproject.org/reports/tf_watersanitation.htm
- Implementing Integrated Water Resources Management (thematic and synthesis documents for 4th World Water Forum)
<http://www.worldwatercouncil.org/index.php?id=1403&L=0>
- Investing in the Future: Water's Role in Achieving the MDGs (Swedish Water House and Millennium Project)
http://www.siwi.org/downloads/SWH_MP_Policy_Brief1.pdf
- Linking Poverty Reduction and Water Management (Poverty-Environment Partnership)
<http://www.povertyenvironment.net/pep/?q=taxonomy/term/33>
- The Millennium Development Goals and Water
http://www.unesco.org/water/wwap/facts_figures/mdgs.shtml
- Millennium Development Goals Indicators (official UN site)
<http://mdgs.un.org/unsd/mdg/default.aspx>
- Water – A Shared Responsibility (World Water Development Report 2) Executive Summary and full report <http://www.unesco.org/water/wwap>
- Water and the Millennium Development Goals (Asian Development Bank site)
<http://www.adb.org/Water/Topics/MDGs/default.asp>
- The Wealth of the Poor: Managing ecosystems to fight poverty (World Resources Report 2005)
<http://population.wri.org/worldresources2005-pub-4073.html>

This brief was prepared by Mike Muller, a member of the GWP Technical Committee, with input from reviewers Akissa Bahri, Sarah Carriger, Jenna Davis, Humberto Peña, and Judith Rees.

About the Catalyzing Change Series

The brief is part of a series of policy and technical briefs designed to help countries accelerate their efforts to achieve the action target for the preparation of IWRM and water efficiency strategies and plans set by the 2002 World Summit on Sustainable Development (WSSD) and reinforced by the 2005 World Summit. The series tackles key issues and potential stumbling blocks and attempts to give countries at the beginning of the process the benefit of lessons learned from those further down the path.

The series complements *Catalyzing Change: A Handbook for Developing Integrated Water Resources Management (IWRM) and Water Efficiency Strategies*. The handbook and all associated briefs can be downloaded from www.gwpforum.org or hard copies can be requested from gwp@gwpforum.org.

The briefs in this series are intended to be dynamic rather than static documents. We will continue to update and improve them based on your input. Please send comments and questions to Christie Walkuski at walkuski@iri.columbia.edu.