



INVESTING IN THE FUTURE

Water's Role in Achieving the Millennium Development Goals

A primer for central governments in developed and developing countries, sub-sovereign national bodies, community organisations, banks and private investors, aid donors, multilateral financial institutions, United Nations agencies and other international organisations.



Why Water, Why Now?

Note to the Reader

Investing in the Future, produced jointly by the Swedish Water House and the Millennium Project, is based on the Interim Report of Task Force 7 on Water and Sanitation and seeks to reflect the integrity of the document. Original references, unless indicated here, can be found in the Interim Report available at www.unmillenniumproject.org. Comments or questions on this report may be sent to info@swedishwaterhouse.se.

Chapter 1 of this document addresses broader water resource issues as they relate to all of the Millennium Development Goals (MDGs). Chapter 2 addresses domestic water supply and sanitation as it relates specifically to Target 10, a key target which resides within MDG 7 ("Ensure Environmental Sustainability").

In its terminology and phraseology, this document will attempt to be consistent vis-à-vis the distinctions between Chapters 1 and 2. Thus, the terms "water resources development and management," "water resources management," "water as a resource" or simply "water resources" are used in reference to the development and management of water as a resource for meeting the MDGs as a whole. Likewise, terms such as "domestic water supply and sanitation services" or simply "water supply and sanitation" are used for water and sanitation in the context of Target 10.

The overall terms "water" or "water and sanitation" are used explicitly and only to embrace both domestic water supply *and* water resources development and management.

It is possible.

We stand on the brink of a historic opportunity, but time is of the essence. Because globalisation has made our world interconnected, vicious cycles of global poverty, hunger, disease, illiteracy, environmental degradation and gender inequality can – and should – be significantly reduced by 2015.

Such was the vision of an unprecedented gathering of world leaders in 2000 at the United Nations in New York when they agreed to the Millennium Development Goals (MDGs), which are now the centrepiece of the global development agenda.

But the MDGs (see Table 1) are about more than the United Nations, or developing countries or awareness-building. Rather, they are concrete, measurable targets. Meeting those targets will open a host of opportunities for:

- individuals to live healthy, productive and long lives;
- poverty and the instability it breeds to be quashed;
- companies to prosper and find new markets;
- families and societies to realise the many economic and social benefits that come with women's empowerment;
- consumer freedom of choice; and
- educational opportunities that the future discoverer of a cure for cancer might not have otherwise had, and more.

And for the Millennium Development Goals, water is a key. From Wall Street to White Hall to Windhoek, water is crucial to all forms of social and economic development, just as it is a necessity for most of nature's processes. This policy brief illustrates water's importance in the Millennium Development Goals and the efforts to combat the world's most plaguing problems. It is based primarily on the Millennium Project Task Force on Water and Sanitation Interim Report, entitled "Achieving the Millennium Development Goals for Water and Sanitation: What Will It Take?"

This brief will show how:

- poverty, hunger, environmental problems and diseases would be directly combated and significantly scaled back if fought with water access as a primary goal;
- child and maternal mortality rates would drop; and
- other important issues, including education and gender equality, would indirectly benefit from achievement of the safe drinking water and basic sanitation targets identified within the MDGs.

Currently, 1.1 billion people lack access to safe drinking water, and 2.4 billion people lack access to sanitation. This is nothing less than a political, moral and even economic scandal – the “biggest scandal of the last 50 years,” according to the Water Supply and Sanitation Collaborative Council. Providing access to water supply and sanitation should be seen as an investment opportunity rather than an economic cost. As it currently is, the situation limits development prospects in general and economic development in particular.

”Water is the dividing line between poverty and prosperity.”

*Kalpanatai Salunkhe, Rural Development Officer,
Maharashtra, India*

The picture seems bleak, but the outlook could be better if stakeholders of all kinds – among them governments, businesses, lenders, civil society and aid organisations – commit themselves to the goal-oriented action of the Millennium Development Goals. And global goals do work, according to Sir Richard Jolly in a paper prepared for the 2003 Human Development Report. The International Drinking Water Supply and Sanitation Decade of the 1980s may not have achieved its “dream” of universal water and sanitation coverage, he indicates, but its impact was nonetheless huge and can be considered a success: access to safe water increased an estimated 130% and to basic sanitation by 260%. Other global goals “largely achieved” include smallpox and polio eradication, reduction in infant mortality to below 120, and reduction of child deaths from diarrhoea by half and diarrhoea incidence by one quarter. Many other goals have been “largely,” “considerably” and “partly” achieved.

Through improved water governance, partnerships, increases in financing of water infrastructure, debt reduction, agricultural subsidy elimination and a strong focus on capacity building, the poorest of the poor in developing countries would begin to receive relief, become healthy, and, in turn, live in healthier and more stable societies from which the original water investments could continue to flourish.

Table 1: Millennium Development Goals*

To be achieved by 2015

- 1 Eradicate extreme poverty and hunger**
- 2 Achieve universal primary education**
- 3 Promote gender equality and empower women**
- 4 Reduce child mortality**
- 5 Improve maternal health**
- 6 Combat HIV/AIDS, malaria, and other diseases**
- 7 Ensure environmental sustainability**
- 8 Develop a global partnership for development**

*Within the framework of the 8 goals, there are 18 targets (and 48 indicators) to measure progress towards the Millennium Development Goals. Table 2 on page 5 highlights how improved water resources management and access to water supply and sanitation aids in achieving many of these targets.

And things are being done. Substantial investments are being made to clean wastewater, protect watersheds, create closed processes and raise awareness of water, sanitation and hygiene. Recognising the economic links, the private sector is also taking the water crisis more and more seriously. An enormous amount, however, remains to be done.

To understand the problems – and the solutions – we must understand the broader water resources management actions needed to help achieve the Millennium Development Goals as a whole, and we must achieve Target 10 on domestic water supply and sanitation. This policy brief is the first in a series of briefs which will explore this special relationship in more detail. Future briefs will also offer recommendations for how the historic opportunities with the MDGs can be seized.



Photo: Frida Lanshammar

1. Water Resources and the Millennium Development Goals

Photo: A. Waack/Pan American Health Organization



Water resources management is an essential ingredient to virtually all the MDGs, as Table 2 summarises. Its role in combating poverty and hunger, ensuring environmental sustainability, improving health and reducing gender inequalities is analysed in more detail below.

Combating poverty and hunger

One in five people on the planet, two-thirds of them women, live in extreme poverty. Of the world's 6 billion people, 2.8 billion live on less than \$2 a day, and 1.2 billion on less than

\$1 a day. Chronic hunger itself affects 800 million people. In this era of progress and plenty, 17% of the world's people are on the brink of starvation and eleven children under five die from malnutrition every minute. The cost of this, in terms of human suffering and lost development opportunities, is unimaginable.

In addition to the role that improving access to domestic water and sanitation plays in reducing poverty, water's role as a resource for agriculture, energy and industry is essential to fighting poverty and hunger. Meeting the MDG in this area will be impossible without better water management and a dramatic expansion of access to water. Ensuring an adequate food supply, achieving aggregate progress against poverty at the national level and relieving poverty at the community and household level simply cannot occur in many parts of the world given current water shortages since insufficient water stymies overall economic growth.

For the poor, fulfilling humankind's most basic aspirations, such as living a long and healthy life, having sufficient resources to earn a living and seeing one's children reach adulthood, is predicated on the state of the environment, including water resources. Environment is central to poor people's sense of well-being, empowerment and control over their own lives. It affects the ability to choose jobs and livelihoods, to assert cultural and religious values, to find adequate time for education and leisure, to cope with crisis and to enjoy freedom from violence, exploitation and fear.

Did You Know?

Poverty and Water: Three Dimensions for the Poor

- **Health** – Poor people are disproportionately affected by contaminated water and poor sanitation services, setting up a cycle of ill-health and further impoverishment that has severe financial and personal costs.
- **Livelihoods** – For rural poor, livelihood systems are rooted in the natural world and depend upon ecosystem health. Contaminated lakes, rivers and coastal areas mean less food, income and time for the poor.
- **Vulnerability** – Vulnerability is a critical dimension of poverty. Poor people are particularly at risk from environmental shocks and crises. Increasingly frequent and severe natural disasters (cyclones, hurricanes, floods, landslides, droughts) as well as changes in rainfall patterns, shifting agricultural zones and rising

sea levels impact developing countries and the poor who live there disproportionately. Extreme events can have a strong impact on the ability of many developing countries, especially in the tropics, to achieve the MDGs. Damage caused by floods and droughts and other extreme climate events can undo in a short period many years of steady development and growth and are often amplified throughout many areas of economic activity leading to widespread macroeconomic, financial and political consequences. In Kenya, for example, flooding during the El Nino event of 1997/98 is estimated to have cost some \$880 million (10% of GDP) through the loss of infrastructure such as roads, pipelines and water treatment plants.

Table 2: Water – A Cross-cutting Tool for the MDGs

Millennium Development Goals and Assorted Targets	Improved water resources management and access to water supply and sanitation has benefits for each of the eight MDGs:
ERADICATE EXTREME POVERTY AND HUNGER Target 1: To halve the proportion of the world's people whose income is less than \$1/day	<ul style="list-style-type: none"> ■ Water is a factor of production in agriculture, industry and 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 more secure ■ Improved health increases productive capacities, reduces burden on those who care for the sick
Target 2: Halve the proportion of the world's people who suffer from hunger	<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
ACHIEVE UNIVERSAL PRIMARY EDUCATION Target 3: To ensure that children everywhere complete a full course of primary schooling	<ul style="list-style-type: none"> ■ 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
PROMOTE GENDER EQUALITY AND EMPOWER WOMEN Target 4: To ensure girls and boys have equal access to primary and secondary education	<ul style="list-style-type: none"> ■ Community-based organisations for water management improve social capital of women ■ Reduced health, and care-giving burdens from improved water services give women time for productive endeavours, education, empowerment activities ■ Water and sanitation facilities closer to home put women and girls at less risk for sexual harassment 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
REDUCE CHILD MORTALITY Target 5: To reduce by two-thirds the death rate for children under five	<ul style="list-style-type: none"> ■ Improved quantities and quality of domestic water and sanitation reduce main morbidity and mortality factors for young children ■ Improved nutrition and food security reduces susceptibility to diseases
IMPROVE MATERNAL HEALTH Target 6: To reduce by three-fourths the rate of maternal mortality	<ul style="list-style-type: none"> ■ Improved health and reduced burdens from water portage reduce 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 toward lower fertility rates, and fewer pregnancies per woman reduce maternal mortality
COMBAT HIV/AIDS, MALARIA AND OTHER DISEASES Targets 7 & 8: To halve, halt and begin to reverse the spread of HIV, malaria, other major diseases	<ul style="list-style-type: none"> ■ Better water management reduces mosquito habitats ■ Better water management reduces risk for a range of water-borne diseases ■ Improved health and nutrition reduce susceptibility to/severity of HIV/AIDS and other major diseases
ENSURE ENVIRONMENTAL SUSTAINABILITY Targets 9 & 10: 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	<ul style="list-style-type: none"> ■ Improved water management, including pollution control and water conservation, is a key factor in maintaining ecosystems integrity ■ Development of integrated management within river basins creates situation where sustainable ecosystems management is possible and upstream-downstream conflicts are reconciled ■ Biodiversity conservation, combating desertification furthered by sound water management
Target 11: To have achieved a significant improvement in the lives of at least 100 million slum dwellers	<ul style="list-style-type: none"> ■ Improved domestic water supply and sanitation and better water management reduce the biological pathogens and chemical hazards to which slum dwellers are exposed

Source: *Interim Report of the Millennium Project Task Force on Water and Sanitation and Global Water Partnership.*



Photo: David Dahmén

Most of the world's poorest people, 800 million to one billion rural people, live in arid areas and depend directly on natural resources, including water, for their livelihoods. Many dry lands people are subsistence farmers who also keep some livestock, while others are pastoralists, a threatened nomadic way of life. In dry, rural countries like Mali and Eritrea, most of the population lives in this way, whereas in countries with both humid and dry regions, the dry areas are home to the poorest of the poor. For instance, in the driest regions of Kenya, 84% of the population is impoverished; the life expectancy in Nairobi is 66 years, whereas it is 53 in Wajir, which lies in Kenya's arid northeast.

Retaining as much water as possible is a question of survival, but in arid areas a substantial amount of rainwater is lost through surface run-off, evaporation and percolation. People in dry lands are uniquely vulnerable not only to drought and other natural disasters, but also to economic and social changes. Achieving sustainable development in the dry lands has significant implications for reducing poverty and hunger globally.

Agriculture is and will continue to be a key sector for the poor in low-income countries, accounting for as much as 80% of export earnings. It is also the thirstiest sector: irrigated agriculture accounts for almost 70% of the global freshwater use. Limited and unreliable access to water affects agricultural productivity in many regions, a problem rooted in rainfall variability that is likely to increase with climate change.

Today, under-performing irrigation systems and poor water management practices worsen the existing water shortages in many countries. Irrigation and poor drainage lead to salinisation and water logging. Excessive extraction for irrigation has lowered water tables to critical levels in many places. Pesticide and fertiliser use in agriculture pollutes groundwater. Invasive species have covered huge water areas throughout the world, clogging irrigation channels, threatening infrastructure and leading to the collapse of fisheries.

Better water resources management practices are needed which lead to "more crop per drop," a necessity since world population growth will increase demands for food, primarily from developing countries. Currently, the 17% of the world's cultivated land under irrigation produces 40% of its food. Much of the projected increased demand for food will have to come from improved and expanded irrigation, but this will be only a partial solution since poor, small-scale farm-

ers cannot invest in irrigation. In fact, most crops produced worldwide are still grown in rain-fed agriculture. Improving the livelihoods of the farmers in the developing world necessitates practices that ensure "more crop per drop."

Water is also important for industry and other types of economic activity, including both large-scale activities and small, often home-based activities where the poor are themselves entrepreneurs, such as food processing for vending in markets. Here, access to water is critical for activities that can mitigate poverty. Investments in water infrastructure such as dams and irrigation schemes can act as a catalyst for local and regional development. Likewise, water can be critical in supplying energy services to poor people in rural areas. Safe, environmentally friendly and affordable energy services aid poverty reduction. Energy for heating, cooking and illumination is not only a boon to the activities of daily life; it is also critical to agriculture and the small-scale productive activities that are important to poor, rural economies.

Ensuring environmental sustainability

The overall MDG (labelled goal #7) of "ensuring environmental sustainability" has three specific targets. Water is a key dimension of each of these three targets. Let us take each one in turn.

Target # 9: Integrate the principles of sustainable development into country policies and programs; reverse loss of environmental resources.

Water is perhaps the most fundamental of all environmental resources and key to the viability and long-term sustainability of the world's ecosystems. Ecosystem health is critical to the quantity and quality of water supply. Human activities, such as infrastructure development, modification of river flows, land conversion (like deforestation), increased agricultural production, over-fishing, the introduction of exotic species and the release of pollutants, upset this delicate balance.

Several threats to overall ecosystem health, and consequently to the ability of ecosystems to provide the services upon which human life depends, are particularly relevant to water resources.

Did You Know?

The Ecosystem-Water Dynamic

- Climate change and resulting alterations in weather patterns, water distribution and fisheries will impact seriously on marine ecosystems and small island developing states, and will also threaten poor populations unable to protect themselves from flooding, erosion, water shortages and coral bleaching.
- Loss of species diversity and genetic diversity within species impacts the health of marine and coastal environments, as well as of wetlands.
- Global fisheries, marine ecosystems and coastal habitats are fast degrading due to over-fishing and contamination from land-based activities.
- Freshwater ecosystems are losing ground to runoff, silting, fertilisers, pollution and invasive species.
- Dry lands are further degrading due to desertification, dropping water tables and over-irrigation.
- Small islands have been hit hard by invasive species and the destruction of coral reefs.

Target # 10: Reduce by half the proportion of people without sustainable access to safe drinking water and sanitation.

This is, of course, the MDG target on water and sanitation. Although clearly this target is much more than an "environment" target, given its implications for human health and poverty reduction, officially it "resides" in the MDG structure under the overall goal of ensuring environmental sustainability.

Target # 11: Achieve significant improvement in the lives of at least 100 million slum dwellers, by 2020.

For poor people living in slums, all of the water-related problems discussed above in relation to the other Millennium Development Goals are magnified. The concentration of people, production and pollution amplifies biological and chemical hazards. Poor slum dwellers, unlike the wealthy, can't insulate themselves from these threats. They are exposed to a host of environmental risk factors because they live in poor quality housing often built in hazardous locations (e.g., near industrial sites, in flood-prone areas). Poor urban dwellers are also frequently outside, given the types of work they are likely to do, because they generally face long commutes, and because their houses are overcrowded. As a result, morbidity and infant mortality rates are higher for them.

Two-fifths of the people in Africa, Asia, the Pacific, Latin America and the Caribbean live in urban areas, and every passing day swells their ranks. UN-Habitat estimates that over 900 million people in the developing world live in slums. In least developed countries and sub-Saharan Africa,

more than 70% of the urban population lives in slums, a figure expected to increase.

Tackling urban environmental problems is critical to meeting the MDG target of improving the lives of 100 million slum dwellers. The main challenge is addressing threats to health, livelihoods and security stemming from hazardous living conditions and poor services, i.e. lack of sanitation and solid waste systems, among others. Many steps taken to reduce environmental hazards, such as building with better materials and ensuring adequate drainage systems, also contribute to disaster preparedness, as does improving urban planning and zoning so that the poor are not relegated to flood-prone or otherwise unsafe living sites.

Improving health

The management of water resources more generally has significant health impacts in terms of vector-borne diseases

"Food and agriculture are by far the largest consumers of water."

World Water Development Report 2003

Photo: Maas Lannerstad



and water contamination. Vector-borne illnesses such as malaria are passed to humans by insects and snails that breed in aquatic ecosystems. These diseases are becoming more difficult to treat due to the growing resistance of bacteria to antibiotics, parasites to other drugs and insects to insecticides. Improved water management practices are becoming an increasingly important tool in combating this category of disease. For instance, improving irrigation techniques to avoid standing or slow water can have a big impact on malaria. Improved disposal of household wastewater eliminates a choice breeding ground for mosquitoes.

Creating financial, economic and social sustainability

A recent study by the Kenyan government showed that the main impediment to rural development is access to adequate amounts of water for small-scale agriculture. In Machakos, Kenya – an area traditionally reliant on rain-fed agriculture – members of a self-help women's group, Mwethya, each contributed \$3 per month for the development and maintenance of a "water harvesting" tank. Access to this improved water resource enabled them to switch their cash crop and economic position. From growing tomatoes, an income of \$735 was accrued compared to \$146 normally earned from an annual rain-fed crop, e.g. maize. Source: Alex Odour, CGIAR.



Photo: SJWI

Did You Know?

Water and Disease Mitigation

Worldwide, over 2 billion people are infected with schistosomiasis and soil-transmitted helminthes, of whom 300 million suffer serious illness; there is a 77% reduction in schistosomiasis from well-designed water and sanitation interventions. Malaria kills one million people each year, 90% of them in Africa. It causes at least 300 million cases of acute illness each year, and is the leading cause of deaths in young children. Along with HIV/AIDS, malaria is one of the major public health scourges eroding development in the poorest countries in the world, and costs Africa more than \$12 billion annually. It has slowed economic growth in African countries by 1.3% per year, the compounded effects of which are a gross domestic product level now up to 32% lower than it would have been had malaria been eradicated from Africa in 1960.

Persistent Organic Pollutants, or POPs, are another danger as a source of water contamination. POPs are produced and released into the soil, air and water by human activity such as irrigated agricultural, industry and improper waste disposal. Derived from pesticides, other agrochemicals, industrial chemicals and the by-products of industrial processes, they can accumulate in living organisms to levels harmful to both human and environmental health. They include such substances as dioxin, PCBs and DDT. Rural and urban poor, who are most exposed to environmental hazards, and especially women, children and infants, are generally the groups most affected by POPs.

Evidence points to links between human exposure to specific POPs and cancers and tumours; learning disorders and changes in temperament; immune system changes; reproductive disorders; birth defects; a shortened period of lactation in nursing mothers; and diseases such as endometriosis and increased incidence of diabetes. These substances appear to become highly concentrated in human tissue and breast milk, and can be passed to the developing fetus through the placenta. Even in small amounts (parts per trillion) these substances can have serious impacts on the development of the

brain and reproductive system of children. When integrated into the food chain, their damaging effects on ecosystem and human health are prolonged.

Reducing gender inequalities

The management of water resources has significant gender dimensions. For example, social and economic analyses, including documenting natural resource uses, is incomplete without an understanding of gender differences and inequalities. Understanding the differences between women and men (who does what work, who makes which decisions, who uses water for what, who controls which resources, who is responsible for the different family obligations) can contribute to more effective initiatives.

In addition, without specific attention to gender issues, initiatives and projects can reinforce and even worsen inequalities between women and men. Few initiatives thought to be “gender neutral” are just that. Projects and programs often bring new resources, such as training, tools and technology, yet one’s gender can influence access to these opportunities. Moreover, projects aimed at women can even be “captured” by men when significant new resources are at stake.

Finally, even water-related environmental challenges impact women more negatively than men. For example, studies in Bangladesh show that women suffered most following the 1991 cyclone and flood. Among women aged 20–44, the

death rate was 71 per 1000, compared to 15 per 1000 for men. The reasons: women were left at home by their husbands to care for children and protect property; their saris restricted their mobility; they were malnourished and thus physically weaker than men; and during the cyclone, the lack of purdah (partitions used to separate women from men or strangers) in public shelters may also have deterred women from seeking refuge.

The good news in relation to the above is that studies have also shown that the involvement of both women and men in integrated water resources initiatives can increase project performance, results and sustainability.

Combining water and micro-enterprise training in India

Recognising that water and livelihood go hand-in-hand, a local chapter of India’s Self-Employed Women’s Association (SEWA) revived the deteriorated piped water supply system as well as the traditional water sources through a micro-enterprise program for women entrepreneurs. SEWA believes providing access to water unlocks the human potential because of both time and energy saved. SEWA has organised entrepreneurs to manage the maintenance of the water supply, recognising that when the piped supply breaks down women must spend long periods of their productive hours fetching water. The water project is linked to a micro-enterprise program that organises and trains women, provides market research, marketing, quality control and micro-credit. Source: Asian Development Bank.



Photo: David Dahmén



2. Targeting Target 10

Why does it matter?

Given the myriad development challenges already described, Target 10 – halving the proportion of people without access to water and sanitation services – has been singled out because of the relationship between water supply and sanitation and questions of human health, overall economic development and equity; and because of humankind’s shared understanding of our responsibilities to one another, a common understanding enshrined in many international human rights instruments.

“Excrement kills. It kills by the million ... It is the number one enemy of world health. And it deprives hundreds of millions of people not only of health but of energy, time, dignity and quality of life.”

Gourisankar Ghosh, Executive Director, Water Supply and Sanitation Collaborative Council

Regardless of which rationale for investment in water supply and sanitation one finds persuasive, what matters is that advocates, policy makers and practitioners are able to articulate to a range of key constituencies a compelling case for action and that governments and other important actors respond with the necessary measures.

It is difficult to imagine how significant progress within the Millennium Development Goals can be made without achieving Target 10. Meeting it is vital in terms of the poverty, gender and health MDGs, and also has a significant impact on other goals.

Poverty: At national and international levels, most definitions of poverty – the United Nations Development Programme’s Human Poverty Index, for example – are based at least in part on access to basic water and sanitation services. Vulnerability, as we know, is a critical dimension of poverty, and households with access to safe, reliable water and sanitation services are less vulnerable than those who must figure out on a daily basis how to meet their needs.

Improved access to domestic water supply and sanitation brings considerable economic benefits at the household level. There is a strong link between health and household livelihood security; the inadequate water and sanitation services upon which the poor are forced to rely damage their health, causing high health costs relative to income, an increase in morbidity, and a decreased ability to work. In addition, sufficient water supply is critical to the success of many household-based micro enterprises.

Did You Know?

Economics of Access to Domestic Water Supply and Sanitation

- Poor people spend much more of their income on water than do the rich, and the absolute price they pay to water vendors is often ten times or more the tap price.
- Reducing the ill health and disease of children through improved water and sanitation frees the time of the adults who care for them (particularly women) for more productive activities; it also keeps the children themselves from missing school. Less illness (among both children and adults) means that adults miss fewer days of work, be it as employees, entrepreneurs or farmers, with positive impacts on overall income and livelihood security. Seventy-three million working days are lost each year in India to water-borne diseases at a cost of \$600 million in terms of medical treatment and lost production. Lower health costs mean more disposable income.
- Access to water near the home saves time for women and girls – time that can be spent on productive activities and education, which lay the groundwork for economic growth. Forty billion working hours are lost each year in Africa to the need to carry water.

Health: Water-related diseases are the most common cause of illness and death among the poor, and children in particular, of developing countries. Realising the health-related MDGs goals, particularly those targeting child mortality and major diseases, will require a dramatic increase in the number of poor people in developing countries with access to clean water and adequate sanitation services as well as attitudinal and behavioural shifts with regard to water and sanitation as well as hygiene, a critical but often overlooked element in discussions usually dominated by questions of access and service provision.

Photo: Mats Lannerstad



Did You Know?

Health Impact of Poor Quality Water and Sanitation

- At any given time, almost half the people in the developing world suffer from one or more of the following preventable diseases: diarrhoea, ascariasis, dracunculiasis (guinea worm), hookworm, schistosomiasis (bilharzias, or snail fever) and trachoma.
- More than half the world's hospital beds are filled with people suffering from water-related diseases. In China, India and Indonesia – three of the world's most populous nations – twice as many people die from diarrhoeal diseases than from HIV/AIDS each year.
- Approximately 4 billion cases of diarrhoea each year cause 2.2 million deaths, mostly among children under five; this is equivalent to approximately 6,000 children dying every day, or one child dying every 15 seconds. Water, sanitation and hygiene interventions reduce diseases by between one-quarter and one-third.
- Some six million people are blind from trachoma, with 500 million people at risk from this disease; it is the leading cause of blindness in the developing world.
- Water containers typically hold 20 litres of water and weigh 20 kgs. Carrying such heavy loads, commonly on the head or back, for long distances each day, can result in headaches, fatigue and pain or even serious injury to the head, neck, spine and pelvis. Women are responsible for carrying water and spinal and pelvic injuries can cause problems during pregnancy and childbirth; reducing water portage burdens can reduce maternal mortality risks. (Children who carry water can also suffer serious and lasting injury.)

The vicious circle of poverty and ill-health is endemic among the poorest: poverty renders women and men ill-equipped to protect them and their children from biological pathogens and chemical hazards or seek treatment for illness; and their poor health, impaired ability to work and high health costs further mire them in poverty.

Adequate water supply and sanitation, coupled with hygienic behaviours (especially hand washing, safe water handling and storage, and the safe disposal of feces) are fundamental to health because the main culprit in the transmission of water-related disease is the “fecal-oral” cycle. A handy mnemonic device describes the factors that fuel this destructive cycle – the “Five F’s”:

- *Fluid (drinking contaminated water and having too little water to wash)* – Drinking contaminated water transmits waterborne fecal-oral diseases like cholera, typhoid, diarrhoea, viral hepatitis A, dysentery and dracunculiasis (guinea worm disease). Insufficient quantities of water for washing and personal hygiene leads to water-washed disease; when people cannot keep their hands, bodies and domestic environments clean, bacteria and parasites thrive, causing skin and eye infections, including trachoma, and fecal-oral diseases are more easily spread.
- *Feces (the contamination of water, soil and food with human fecal matter)* – Sanitation facilities hinder fecal-oral disease by preventing human fecal contamination of water and soil. It is particularly important in controlling worm infections. Because children are the main victims of diarrhoeal diseases (which can be either waterborne or water-washed), they are also the mostly

”The water and sanitation goals are intrinsically interconnected with the eight Millennium Development Goals.”

*Millennium Project Task Force
on Water and Sanitation*

likely source of infection; the safe disposal of children’s feces is thus critical. Fecal matter should be treated as close to the point of defecation as possible.

- *Fingers (unwashed hands preparing food or going into the mouth)* – Research shows that hand washing does more for reducing child mortality and the incidence of infectious intestinal diseases than the provision of safe water or even latrines. Yet hygiene gets surprisingly little focus.
- *Food (eating contaminated food)* – Contaminated food presents the same health risks as drinking contaminated water, and careful food handling combats gastro-intestinal illnesses.



Photo: Maas Lannerstad

- *Flies (spreading disease from feces to food and water or directly to people)* – Flies are particularly problematic where open-air defecation is the norm.

Breaking the oral-fecal cycle depends upon the adoption of healthful practices (like hand washing) and use of technologies that contain and sanitise fecal matter.

It is often easy to forget how effective and affordable preventative approaches can be. Improving the quantity and quality of water that households receive and improving the management of human excreta are arguably the most effective health interventions that can be made in the poorest countries, particularly for children.

Gender: The iconic image of a woman carrying water on her head is emblematic of a lifelong burden that keeps girls from attending school, prevents women from engaging in productive work, and fetters progress toward the MDGs on universal primary education and gender equality.

Throughout the developing world, in urban as well as rural areas, women have roles and responsibilities that, for the most part, men do not share. They include securing water for household needs like drinking and washing; cooking and ensuring overall household food security; and caring for children, the elderly and the ill.

These traditional roles and tasks mean that poor women are hit hardest by the inadequate services in informal urban settlements. It is they who must spend much of the day waiting in line for water, thus forestalling their ability to engage in productive activities, adult education or other domestic responsibilities, not to mention rest and recreation. They are in greatest physical contact with contaminated water and human waste, exposing them to a host of biological pathogens and chemical hazards, and are saddled with the unenviable

First sight

Enock Matonya from Chololo in Tanzania is 17 months old and has trachoma, a common and easily spread eye infection that has caused over six million people in the developing world to become blind. Children are particularly susceptible to this easily preventable disease that is caused by poor hygiene and a lack of clean water. However, life in Chololo is now changing as the community has been working with WaterAid, an international charity, to build a new water supply and learn about good hygiene. Their new water scheme is nearly finished and water is flowing from six tap stands providing the community clean, safe water. Enock's older sister, Eshati Elia, has been learning about safe hygiene in her school as part of the WaterAid project and now that there is a supply of clean water the family can wash Enock's face regularly to keep the trachoma at bay. Source: WaterAid, www.wateraid.org

Photo: Mats Lammerstad



*”To halve by 2015
the proportion of people
without sustainable access
to safe drinking water and
sanitation.”*

Target 10 in the Millennium Development Goals

task of finding a way to dispose of the family’s wastewater and feces (no small challenge in areas where diarrhoeal diseases are endemic and sanitation facilities nonexistent). Having no safe, private sanitation facilities in areas where people are living tooth-to-jowl means going the whole day without relieving oneself and then risking exposure at night – a humiliating, stressful and uncomfortable daily routine that can damage health.

In rural areas, this gender division means that resource degradation is felt most keenly by women and girls. In some countries, spending six hours and up to 20 km per day collecting water to meet the family’s needs is not unusual. The need to travel further from home for water can expose women and girls to sexual harassment and opportunistic rape – this can also happen when women who lack safe, nearby sanitation facilities move about at night in search of privacy.

Rural and urban women must also care for children and family members who fall sick with water-related illnesses, an all-too frequent occurrence. Having healthier children is, of course, a hoped-for end in itself, but higher rates of child survival are also a precursor to lower fertility rates. Having fewer children reduces women’s reproductive responsibilities as well as their maternal mortality and morbidity risks.

The impact of poor water and sanitation services on poor women’s physical security, opportunities for adult education, overall productivity, income-generating capacity, nutritional status, time and overall health and well-being is severe. These negative impacts starts in girlhood since they, rather than boys, generally help their mothers collect water. In some parts of the world this becomes a girl’s responsibility by age ten.

The lack of adequate sanitation facilities also prevents girls from attending school, particularly when they are menstruating. Many parents simply will not allow their daughters to attend schools that do not have separate sanitation facilities for boys and girls – and few schools in poor areas do. Studies show that girls’ attendance at school is increased through improved sanitation. For example, in Bangladesh, a school sanitation program has increased the enrolment of girls by 11% every year since it began in 1990.

The disparities in girls’ and boys’ ability to attend school have life-long impacts, for women as well as for their future families and communities. This is why the MDG targets related to women’s empowerment track educational attainment from the primary grades upward. Even women who have had just a few years of basic education have smaller, healthier families, are more likely to be literate and have skills for earning a living, and are more likely to view educating their own children as a priority. According to the United Kingdom’s Department for International Development (DFID), each additional year of female education reduces childhood mortality by five to ten percent.

*”If a free society cannot help
the many who are poor, it cannot
save the few who are rich.”*

President John F. Kennedy



Photo: EU Audiovisual Library



Human values and human rights

Expanding access to water and sanitation is a moral and ethical imperative rooted in the cultural and religious traditions of societies around the world and enshrined in international human rights instruments.

Success in bringing water and sanitation to poor communities in the most difficult circumstances is due as much to the qualities and personal motivations of the people concerned as it is to the technical ingenuity and the financial resources available. Many services run on a shoe-string of hope by volunteers, religious groups or dedicated, poorly paid officials succeed because they mobilise enthusiasm and engagement, while other projects backed by extravagant budgets and massive expertise languish in a bureaucratic desert. Community-level interventions often meld economic and social development with spiritual growth and communal solidarity. They also clearly balance rights on the one hand with responsibilities on the other; experience shows that the most sustainable community-level interventions have significant community investment of labour, other in-kind resources and user fees in the design, construction, maintenance and operation of facilities. The MDGs themselves are built around a shared understanding of what we as human beings owe to one another and are informed by principles of fairness, justice and the obligation of the individual to pursue the mutual good that characterise religious and ethical systems the world over.

Conclusion

Water is crucial to all forms of social and economic development, just as it is a necessity for most of nature's processes, and it is the basic building block for health, food production, economic sustainability and improved human livelihoods. Water is crucial in three fundamental ways: humans drink it, and through sanitation, it defines their health; food production and economic activities depend on it; and it is finite and mobile, circulating constantly between the sea, the atmosphere and the continents in a giant natural desalination system, the global water cycle. Its many different functions in the life support system make it a common denominator for the achievement of the Millennium Development Goals and their targets.

The global community of stakeholders, including governments, the private sector groups, civil society, lenders and others, must join together to collaborate and implement an incentive-based and innovative plan of action that allows for the attainment of these goals. There must be a renewed commitment by political leaders to engage in partnerships, open trade and increased aid. Doing so will give developing countries a fair chance to achieve the targets so nobly enshrined in the Millennium Development Goals.

Key Points from “Investing in the Future”

- **THE MILLENNIUM DEVELOPMENT GOALS:** (1) hunger and poverty eradication, (2) universal primary education, (3) gender equality, (4) reduced child mortality, (5) improved maternal health, (6) reduced HIV/AIDS and other diseases, (7) ensured environmental sustainability, and (8) a development compact among nations.
- **BILLIONS** of people do not have access to safe drinking water (1.1 billion) or sanitation (2.4 billion).
- **OPPORTUNITIES** presented by the Millennium Development Goals can substantially improve the lives of billions of people across the planet by 2015.
- **INVESTMENT** in water resources, including domestic water supply and sanitation, leads to improved human health, productivity, purchasing power and dignity.
- **REDUCED** gender inequalities through easier access to water empowers women in developing countries economically, politically and educationally.
- **FOOD** security and improved nutrition, for which access to water is crucial, reduces susceptibility to many easily preventable diseases and lowers child and maternal mortality.
- **GLOBAL** security, including the threat of terrorism, is linked to human and environmental insecurity, which are linked to water.
- **PREVENTABLE** diarrhoeal disease alone kills 2.2 million children annually.
- **RENEWED** political commitment and financial investment can solve the global water crisis.



The Swedish Water House
(www.swedishwaterhouse.se) supports international policy development and co-operation through knowledge generation

and dissemination and partnership building primarily within the areas of sustainable river basin management and integrated water resources management. The Swedish Water House is initiated by the Swedish Government and aims at increasing understanding as a way to stimulate action.



The Millennium Project (www.unmillenniumproject.org) is the independent advisory body to United Nations Secretary-General Kofi Annan that is commissioned with recom-

mending, by June 2005, operational strategies for meeting the Millennium Development Goals (MDGs). This includes reviewing current innovative practices, prioritising policy reforms, identifying frameworks for policy implementation, and evaluating financing options. The Project's ultimate objective is to help ensure that all developing countries meet the MDGs.