

**MEETING THE CHALLENGE
OF THE U.N.'S MILLENNIUM
DEVELOPMENT GOAL ON
ACCESS TO SAFE WATER**

**Infrastructure: The Business of Water
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“We resolve further:

- **To halve, by the year 2015, the proportion of the world’s people.....who are unable to reach or to afford safe drinking water.”**

**United Nations Millennium Declaration
Adopted September 18, 2000**

The governments of Africa have nine years and 192 days from today to comply with the above mandate of the U.N.’s Millennium Development Goal on increasing access to safe water for their people. Unfortunately, many will fail. Some will fail because of a simple lack of national will; others will fail because of their inability to draw the inevitable connection between increasing access to safe water, fostering sustainable economic growth and poverty reduction mandated by the International Monetary Fund and the World Bank.

HEALTH IMPLICATIONS

According to the UNICEF, 43 per cent of the children in sub-Saharan Africa drink unsafe water, and, consequently, one in five will die before their fifth birthday. A child dies every 10 seconds from drinking contaminated water according to the World Bank. Each day, 8,640 children die needlessly from the effects of drinking contaminated water for a total of over 3 million annually. The Director General of the World Health Organization, Dr. Lee Jong-Wook, recently observed the beginning of the **“International Decade for Action: Water for Life 2005-2015”** by noting that “one billion of our fellow human beings have little choice but to use potentially harmful sources of water” and that the 30,000 people who die each week from preventable diarrhoeal disease constitute a silent humanitarian crisis that thwarts progress toward achieving the Millennium Development Goals (“MDG’s”).

Who can deny the nexus between increasing access to safe water and improving people's health?

ROLE OF WOMEN AND CHILDREN

Women and children literally bear the burden of walking up to three times per day to and from their water source carrying water on their heads and backs according to the International Institute for Environment and Development. Invariably, the water they bring back to their village is contaminated with waterborne and airborne diseases.

Clearly, if there were a safe water source in each village, women would be freed up to be much more productive and children would have the time to attend to school instead of being either too sick or too busy fetching water. There is little doubt that school attendance would soar if a safe water source were actually located at each school. ¹

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1. WaterAid, the British NGO dedicated, *inter alia*, to the provision of safe domestic water to the world's poorest people, has issued a comprehensive report of this subject entitled "Water and Sanitation the Education Drain". This report is available at: www.wateraid.org/documents/education%20report.pdf. The report concluded that government failures on water are undermining children's chances of an education and that one of the main reasons 104 million children worldwide do not attend school is the lack of safe water and sanitation. By failing to achieve the water and sanitation targets by 2015, governments will undermine the education target of the MDG to achieve universal primary school education for every child by 2015. In Madagascar, according to the report, 3.5 million school days are lost each year due to poor sanitation. In Tanzania, there was a 12% increase in school attendance when water was 15 minutes away instead of an hour.

DEBUNKING THE HAND PUMP MYTH

The six inch high object pictured on the right played an important role in the development of rural America and America's West about 150 years ago. Each day the hand pump salesman would climb aboard his horse drawn buggy carrying little more than this "sample" of the hand pump which could bring much-needed water to each community.

Hand pump technology has not changed too much in the past 150 years. Because of the relative low cost, they are favored by many international lending agencies, donors and NGO's on the theory that a hand pump is better than nothing at all. The truth is that there is very little difference between having a hand pump and still being relegated to trekking long distances to fetch water.

In order to produce 15 liters of water using the popular "Mark II" hand pump, at 25 meters water depth, the unit would require 40 consecutive strokes with 20KG of force for each stroke in 60 seconds. The force required would increase to 30 KG of force per stroke at a depth of 40 meters. Throughout sub-Saharan Africa the task of operating the hand pump usually falls to women and children. Women and children cannot even begin to maintain the rate of 40 strokes per minute with the required force and even if an "Arnold Schwarzenegger" were available, he would only be able to produce 4,500 liters in five hours of **non-stop** pumping.

Several studies in Africa have demonstrated that at any given time between 30%-60% of all hand pumps are broken and completely useless. Without several critical nylon and rubber



spare parts that are usually only made in India, the pumps will remain broken down and useless and access to water in the borehole will be impossible.

The biggest drawback to the hand pump, however, is that they do not produce “safe water”. Water pumped into an open bucket with a hand pump with no filtration system may already be contaminated with waterborne diseases and is susceptible to being exposed to additional airborne diseases when left in an open container. Hand pumps are incapable of pumping water into a protected overhead tank or to pressurize the water for distribution through a central piping system to multiple points.

MILLENNIUM CHALLENGE CORPORATION
AND RURAL WATER SUPPLY PROJECTS

Since African governments remain responsible for complying with the MDG of halving by 2015 the proportion of their people without access to safe water, it stands to reason that countries which are eligible for MCC grants might seek to use these funds for that purpose. The two Compacts signed thus far by the Millennium Challenge Corporation, for Madagascar and Honduras, respectively, have been inextricably intertwined with the Poverty Reduction Strategy Paper (“PRSP”) of each country.² Thus, it will surely be essential for MCC-eligible countries to have prioritized “access to safe water” in their PRSP as a necessary first step toward inclusion of such a project in their Compact.

2. A PRSP is basically an outline by a highly indebted poor country of their proposed program for poverty reduction and how they will prioritize budget allocations to achieve that result. The MCC Board also approved Compacts for Cape Verde and Nicaragua on June 13, 2005. The specific details of each will be known when they are signed in July 2005. A Compact for Georgia is expected to be approved in the near future. See www.mcc.gov

Beyond that, it is not possible to know exactly how the MCC will evaluate requests from eligible countries to use their grants to comply with the MDG by 2015. This is particularly true since the MCC has thus far been noticeably silent and has failed to promulgate specific guidelines to give applicants some idea how their request for inclusion of such a project in their Compact might be treated.

Some insight into this process can, however, be obtained by reviewing an advertisement recently placed by the MCC to hire their “Director-Infrastructure, Water and Utilities”. The person to be hired is expected to have expertise in rural and urban water supply and sanitation systems as well as water resources management and the development of hydro resources.

The duties for this position are clearly spelled out:

“The Director will evaluate infrastructure projects submitted by eligible countries for consideration by MCC. Evaluation includes review of sector institutional, legal and regulatory frameworks; technical and economic feasibility of projects; environmental and social; and measurement of outcomes. Evaluations will be undertaken in the context of design of a country program of economic development assistance. The overriding purpose of infrastructure projects that will be approved by MCC is to stimulate poverty reduction through sustained economic growth in low income countries.”

Thus, it is quite clear that any MCC-eligible country desiring to use these grants to comply with the MDG on access to safe water must first have prioritized water in their PRSP as a means of reducing poverty and then to have devised a program for their Compact which will meet the evaluation criteria set forth above.³

3. In a stinging editorial on June 19, 2005 the New York Times was quite critical of Paul Applegarth, MCC’s CEO who resigned earlier in the week, for failing to deliver results quicker. The editorial also criticized the MCC’s Compact with Madagascar to improve land-titling, bank reforms and agribusiness centers but overlooked villages that “do not have **running water**, clinics or schools. Bank reform is fine but real growth cannot exclude the basics”.

**THE LINK BETWEEN PROVIDING ACCESS TO SAFE WATER,
SUSTAINABLE ECONOMIC GROWTH AND
POVERTY REDUCTION**

Providing access to safe water is the *sine qua non*, i.e., the essential ingredient for creating sustainable economic growth and achieving real poverty reduction. As long as access to safe water (a mere 12 per cent in one African country) remains abysmally low, children will continue to die needlessly, those who survive will waste time fetching water or constantly being sick, instead of receiving an education, and women will continue to lead marginal and unproductive lives. In this scenario, creating sustainable economic growth and achieving real poverty reduction will continue to be a myth.

WaterAid has done exhaustive research into the critical link between the PRSP process and the water supply and sanitation sector.⁴ WaterAid's comprehensive analysis in several African countries is essential for any developing country truly interested in creating sustainable economic growth and achieving real poverty reduction to:

- Investigate how resources allocated to water supply and sanitation priorities in the PRSP can be converted into WSS-related outputs and outcomes;
- Recommend how capacity for action by government may be strengthened to deliver on PRSP promises and how those commitments may be developed to achieve water-related poverty reduction outcomes, and;
- Estimate financing requirements to meet the MDG on access to safe water.

4. WaterAid's analysis can be viewed in its entirety at:
www.wateraid.org/in_depth/policy_and_research/poverty_reduction_strategy_papers/default.asp

**S.492 – “SAFE WATER: CURRENCY
FOR PEACE ACT OF 2005”**

It was important that Congress enact the “African Growth and Opportunity Act” (AGOA), because it was the first piece of legislation in our history that was devoted solely to Africa. Since its passage five years ago, AGOA has proven to be an economic boon to 37 sub-Saharan African countries and to many Africans.⁵

S.492, introduced in March 2, 2005 by Senators Frist, Reid and Lugar, proposes to make access to safe water and sanitation for developing countries a specific policy objective of the United States foreign assistance programs. The Bill recites the litany of health-related problems caused by the consumption of unsafe water and the well-known statistics on the number of people without access to safe water and improved sanitation.

If passed, S.492 will authorize the President, in conjunction with the U.S. Agency for International Development and the Overseas Private Investment Corporation, to establish a five year pilot program to study the feasibility and desirability of a program to assist countries that lack the basic infrastructure to provide clean water and sanitation. A variety of financial incentives would be available to assist countries that “have a high proportion of their population that is susceptible to water-borne illness as a result of a lack of basic infrastructure for clean water and sanitation” including, investment insurance and guarantees as well as loan guarantees.

S.492 deserves our strongest support. When it is enacted into law, it has the potential of significantly increasing access to safe water and sanitation across Africa in much the same way that AGOA has increased economic growth across the continent.

5. The full text of S.492 may be reviewed at:

<http://thomas.loc.gov/cgi-bin/bdquery/z?d109:s.00492>

PUBLIC-PRIVATE PARTNERSHIP AND THE ROLE OF MULTILATERAL LENDING ORGANIZATIONS IN INCREASING ACCESS TO SAFE WATER

In 2003-2004, MWI Corporation entered in a Public-Private Partnership with USAID-Mali, a local NGO and our representative in Mali to provide a sustainable method of increasing access to safe water using MWI's *SolarPedalflo* technology.⁶ We were fortunate to work with a USAID Country Director who was creative, made things happen and was capable of thinking "outside the box".⁷

6. The *SolarPedalflo* is the patented product of MWI and is an innovative rural water supply system that is capable of delivering a continuous and reliable source of potable water in remote communities without electricity. Using a minimum of 350 watts of solar power, the *SolarPedalflo* is capable of producing 12,000L daily of filtered (down to 1 micron), chlorinated and pressurized water, free of waterborne and airborne diseases and protected in an overhead tank. Such clean water has been shown to result in healthier babies as well as significantly reduced infant mortality rates, and it has also been demonstrated that when used in combination with simple hygienic practices, the *SolarPedalflo* can dramatically reduce the incidence of diarrhea and cholera. The *SolarPedalflo* can even operate in low light conditions in the early morning and early evening hours due to a proprietary linear current booster that provides the necessary current to run the one-half-horsepower motor that drives the pump. As a secondary source of power, available at night or on cloudy days, the *SolarPedalflo* uses the body's most powerful muscles, the legs, to operate the pedals to pump the water. The pedaling is always smooth and uniform due to a unique flywheel that acts as an energy storage device, thereby allowing even young children to pedal with ease. Compared to most hand pumps that become difficult to use at water depths of more than 45M, assuming they even work at all, the *SolarPedalflo* can comfortably operate at water depths down to 55M. The MWI *SolarPedalflo* is now in operation in twelve African countries and has freed women and children from the arduous daily chore of trekking long distances to fetch contaminated water, thereby allowing women to become more productive and permitting children time to go to school. The *SolarPedalflo* has been shown to out produce the flow of four handpumps to provide clean drinking water to an entire rural community and will help ensure that these twelve countries achieve the United Nation's Millennium Development Goal of halving by 2015 the proportion of people without sustainable access to safe drinking water.

7. The typical response by some USAID offices in sub-Saharan Africa to the suggestion of a creative rural water supply project using *SolarPedalflo* technology is either that "this doesn't fit in our program" or "we are putting all of our resources into HIV / AIDS". These are particularly interesting responses since contaminated water kills many more people than HIV / AIDS does and one cannot help but wonder how effective anti-retroviral drugs would be when consumed with a glass of contaminated water.

Over 30 *SolarPedalflo* units will have been installed under this partnership in which the women in each village have been organized as a committee to decide who gets access to the water and when. Instead of wasting hours each day walking miles to a polluted river or trying to work a broken down hand pump, many women have become more productive and are earning money by growing vegetables in plots adjacent to the *SolarPedalflo* unit.⁸

The sustainability of such a project has turned on:

- The availability of a durable product like the *SolarPedalflo* which uses solar power with a backup of human pedal power and which can be maintained at the village level;
- The organization of the women in each village by USAID and the local NGO to control access to the unit and provide for its security;
- The readiness of MWI's local agent to perform repairs that cannot be handled at the village level and to stock spare parts to eliminate down time.⁹

8. USAID has reported the success of one of those installations at:
www.usaid.gov/stories/mali/ss_mali_waterpump.html

The *SolarPedalflo* unit replaced five hand pumps that were broken down 50% of the time. Shortly after the installation of this unit there was an outbreak of cholera in the region. This village was the only one to escape from the ravages of the disease because it had a protected clean water source. At the end of the first year of operation, the chief of the village reported that not one child had suffered from diarrhea.

9. Any comparison of a treadle pump to the *SolarPedalflo* is completely misplaced. A treadle pump is nothing more than a low cost technology for small-scale irrigation. See: "The treadle pump-An irrigation technology adapted to the needs of small farmers", <http://www.hrwallingford.co.uk/projects/IPTRID/grid/g8tread.htm>. The food and Agriculture Organization of the United Nations issued a detailed study in October 2000 entitled "the treadle pumps for irrigation in Africa". See: http://www.fao.org/documents/show_cdr.asp?url_file=/DOCREP/005/X8293E/X8293E00.HTM. As a viable option for small-scale irrigation, the study concluded (p. 8) that there are four preconditions vital for the sustained success of treadle pumps, including "a market-driven demand and suitable economic conditions and a significant population **able to afford the pump** (emphasis added) and sustain local demand for horticulture; a well-designed pump that is appropriate for the local farming, economic and manufacturing systems; a local private sector capability for mass production and quality control; effective private-sector distribution network, for agricultural inputs and equipment, including transport, infrastructure and retailers." Few countries in sub-Saharan Africa can meet these critical preconditions. In any case the treadle pump was never intended to be a village water supply system like the *SolarPedalflo* and whatever water a treadle pump might produce for human consumption can hardly qualify as "safe water".

Companies like MWI with patented, proprietary products like the *SolarPedalflo* are reluctant to jeopardize their patents by allowing the specifications of their products to be exposed to “would be” competitors through the World Bank’s Rules on International Competitive Bidding.¹⁰ Consequently, Multilateral Lending Organizations, such as the World Bank and the African Development Bank, need to dramatically increase the availability of direct grants for pilot projects to developing countries to determine the feasibility and effectiveness of patented products like the *SolarPedalflo* in increasing sustainable access to safe water.

10. A World Bank tender requiring bidders to meet an “objective standard”, *e.g.*, to create a sustainable method of providing potable water to a specific number of people for a specific period of time would be acceptable. Tenders based solely on technical specifications, however, are either too limiting or would encourage technological “copycats” and would be completely unacceptable to companies with patented, proprietary products.

Once their feasibility and effectiveness have been firmly established, these countries should either receive additional direct grants or be encouraged to freely borrow funds to make direct purchases of such patented and proprietary products for permanent projects without international competitive bidding.¹¹ Otherwise, borrowing countries will be denied the latest technology and will be relegated to acquiring the same old tired equipment through international bidding that breaks down 30-50% of the time, which has thus far failed to significantly increase access to safe water and which will never enable them to meet the MDG of halving by 2015 the proportion of her people without access to safe water.

11. World Bank Procurement Guidelines, including Rules on International Competitive Bidding, sections 2.11 – 2.65 and Rules on Other Methods of Procurement, including section 3.7 on Direct Contracting may be found at:

<http://web.worldbank.org/WBSITE/EXTERNAL/PROJECTS/PROCUREMENT/0..contentMDK:20197304~pagePK:84269~piPK:60001558~theSitePK:84266,00.html>

Section 3.7 provides for direct contracting without competition from a single source when the “required equipment is proprietary and obtainable only from one source”. Unfortunately, experience has shown that many countries are reluctant to utilize this provision to avoid accusations of corruption and the Bank has rarely allowed borrowers to make major direct purchases pursuant to this provision. Currently, there is no similar provision regarding the issuance of grants to acquire proprietary equipment directly from a sole source.