GLOBAL WATER CHALLENGE

Clean Start: Focusing on School Water, Sanitation, and Hygiene: A Reflection From GWC

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Introduction

No one will contend that safe water and clean toilets are optional in schools. Yet, according to UNICEF, half the schools in the world that open their doors every day have no source of safe water for students and no clean latrines for them to visit. This means that millions of children go to school either with the water that they will consume for the rest of the day or with no water at all. And they use any open space around their school to relieve themselves or wait until they get home. When there is no water in the school, children cannot wash their hands and disease travels rapidly through crowded classrooms. Many of these children lack access to safe water at home too, and often suffer from chronic diarrhea and host intestinal parasites that stunt their growth. None of these conditions make learning pleasurable or easy. In the long term, educational achievement is one of the most important determinants of health, life expectancy, economic productivity, and the wellbeing of future generations. Safe water to drink, water and soap to wash hands, and clean and private toilets make healthy, child-friendly schools, and healthy schools make healthy children.

This paper outlines the rationale for investing in safe water, sanitation and hygiene programs at school and summarizes GWC's experience of investing in schools and the lessons we have learned.

Why schools?

School enrolment is on the rise in most parts of the world. With the vast majority of school-age children now enrolled, schools present an opportunity to reach thousands of children with safe water and hygiene and health messages.

According to UNESCO, 668 million children are enrolled in primary school.[1] This is approximately 84 percent of the total number of school-age children in the world. Targeting schools for water and sanitation improvement and hygiene training allows funders to reach children from households at all income levels, as primary education is very highly subsidized or completely free in most countries.[2] As schools are politically neutral spaces, most community members can agree to investment in education. In many parts of the world, schools depend on parents for preparing mid-day meals, running stores, and maintaining buildings and infrastructure. This allows hygiene programs to reach parents directly. Even when parents are not present in school every day, there is some evidence that children bring home messages about health and hygiene, and over time influence the behavior of younger siblings and parents.[3] Research on the role of children as agents of behavior change has demonstrated that students are willing participants in hygiene and health programs and great communicators of messages to peers and community members, so long as they can have a voice in the messaging and can frame it in an age appropriate way.[4] Public health interventions such as large-scale de-worming and distribution of water treatment such as chlorine, both of which have significant and documented impacts on the health of children, can also be combined with water, sanitation, and hygiene programs. These interventions dramatically reduce the incidence of diarrhea, improve the ability of children to learn and process information, and increase attendance rates.[5]

Despite overwhelming evidence that schools should be supported at higher levels, UNICEF estimates that half the schools in the world lack safe water and sanitation. Based on this, one may assume that more than 300 million children go to school every day without safe water

1 *EFA Global Monitoring Report: Education for All by 2015: Will We Make It? (Education for All Global Monitoring Report)* (2008. ed.). Oxford Univ Press., p. 42

2 Conditions of war or other civil unrest are two situations in which children are unable to go to school for long periods of time.

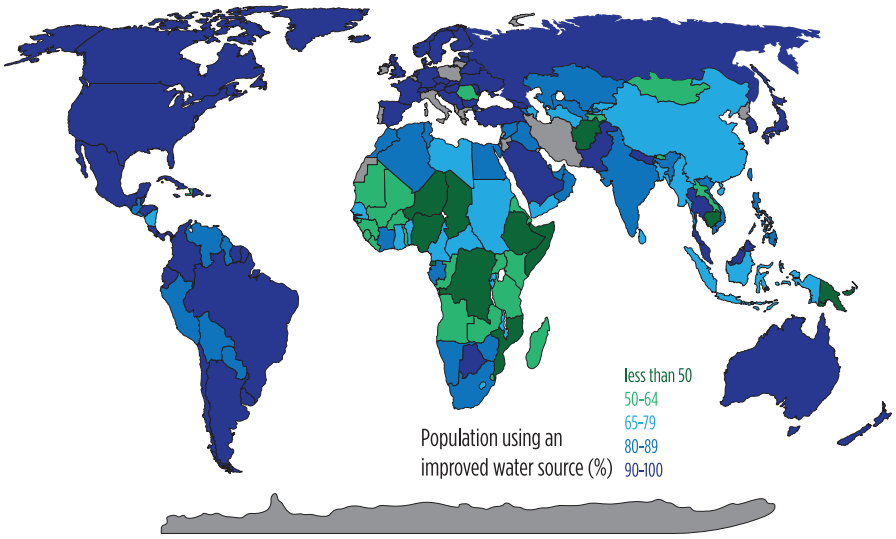
3 Rayamajhi, M. (2004). "Nepal – The School Sanitation and Hygiene Education (SSHE) Program of NEWAH." http://www.irc.nl/page/16710

4 Mwanga, J. R., B. B. Jensen, P. Magnussen, and J. Aagaard-Hansen (2008). "School Children as Health Change Agents in Magu, Tanzania: A Feasibility Study." *Health Promotion International 23* (1), 16-23. J.

5 World Bank and World Health Organization(WHO) (2003) School Deworming: at a glance .(www.worldbank.org/hnp)

6 This estimate is based on UNESCO's calculation that 668 million children are enrolled in primary school and UNICEF's estimate that half the schools in the world lack adequate sanitation and safe water for students.

or access to a clean toilet.[6] Moreover, the rest of the school-age children who are not even enrolled in school can be assumed to also lack such access, as poverty is the single largest roadblock to school enrolment.[7]



Health impacts

Each year 120 million children are born in the developing world. Of these children, at least half will live in households that do not have access to improved sanitation facilities and a fifth in households that do not use an improved source of water.[8] [9] Even among those who do access an improved source, the water that is consumed may be highly contaminated because of unsafe transportation and storage. Poor quality and insufficient quantity of water for basic hygiene, combined with lack of access to improved sanitation, together lead to the vast majority of diarrheal diseases.

Diarrhea, which rarely leads to deaths in developed countries, is a leading cause of death among children under age five, leading to 1.5 million deaths each year.[10] Although there are no estimates of exactly how many children (or school-going children) over the age of five die from diarrhea-related causes, one can safely say that chronic diarrhea related to water-related diseases is fairly common among children of all ages. Germs are transferred among sick children more easily when they have little or no water or soap to wash hands.[11] Aggravated cases of diarrhea result in children missing school. In addition, even when they are in school, 400 million children are often unable to learn effectively as they suffer both physical and mental impairments caused by intestinal helminth (parasites) infections. [12]

Diseases such as typhoid and cholera, which are transmitted through contaminated water and food, can spread like wildfire through communities, sickening both children and adults. While oral rehydration therapy has led to declines in the number of deaths due to cholera, it remains a dreaded illness which can easily overwhelm poor communities with little access to medical care. In many cases, cholera and typhoid occur seasonally on a regular basis. A recent study shows that children bear the greatest burden of cholera and that protecting them against it not only reduces the disease burden in their own age group, but also the transmission of the disease to their family members and others in the community. Schools can effectively protect children and their families by teaching proper hygiene and handwashing with soap, and through use of point-of-use treatment, such as chlorine, throughout the year.[13] [14]

7 90 million people have been pushed into poverty by the current global recession. Gains from a decade of growth have been erased in some places. The role of governments and donors in assuring that children who are among those who are now impoverished do not suffer the long term impacts of this recession through a loss of educational opportunity and healthcare. 8 Improved sanitation facilities include flush or pour flush latrines connected to piped sewers or septic tanks, or pit, ventilated improved pit (VIP) latrines; pit latrines with slabs, composting toilets. Improved access to Water means access to public taps or standpipes, tube wells or boreholes, protected dug wells, protected springs and rainwater collection, piped household water connection located inside dwelling, plot or yard. UNICEF and WHO (2008) *Progress on Drinking Water and Sanitation: Special Focus on Sanitation*, p.6, p.22.

9 UNICEF (2006) *Progress for Children: A report card on water and sanitation* No. 5, September 2006, p.3.

10 UNICEF and WHO (2009) *Diarrhea: Why children are still dying and what can be done,* The United Nations Children's Fund (UNICEF)/World Health Organization (WHO)

11 Lopez-Quintero, C., Y. Neumark, and P. Freeman (2009)."Hand washing among school children in Bogotá, Colombia." *Am. J. Public Health American Journal of Public Health 99* (1), 94-101.

12 Deworm the world http://www.dewormtheworld.org/index.html

13 Deen, Jacqueline L., Lorenz von Seidlin, Dipika Sur et al. (2008) "The High Burden of Cholera in Children: Comparison of Incidence from Endemic Areas in Asia and Africa," PLoS *Neglected Tropical Diseases* 2(2): e173.

14 Zwane, Alix Peterson and Michael Kremer (2007) "What Works in fighting Diarrheal Diseases in Developing Countries? A Critical Review," *The World Bank Research Observer* 2007 22(1):1-24

Dirty drinking water and unclean hands are also the source of intestinal parasites in more than a third of the world's children. Most of these children are poor, get infected soon after they stop breast-feeding, and can be infected and reinfected their entire life. Around 60 million school-age children experience such terrible infections, which can be related to a six-month development delay in cognition and learning. Absenteeism is also greater among infected students. Safe water provision, when undertaken with deworming, has a much more pronounced impact on children's health, rates of diarrhea, and learning potential.

Particular impacts on girls

Educating girls has direct benefits for them and also for the children they will bear in the future. Children of uneducated mothers are more than twice as likely to die or to be malnourished than children of mothers with a secondary or higher education. In some countries, giving girls one additional year of schooling can save as many as 60,000 lives. Educated women have fewer and healthier children, who are more likely to be economically resourceful and productive adults.[15] While helping girls to successfully complete primary school and move on to secondary education requires more than just water and sanitation at schools, these two are critical inputs into better schools. Teaching girls about health and hygiene in primary school years is crucial, as many of them become mothers at young ages. Girls report that the absence of privacy, generally afforded by having doors that lock and being located at a safe distance from the school, causes them embarrassment and fear of using the toilet.[16] Furthermore, since girls are required to help mothers to fetch water, they often arrive at school late after having completed their chores. Some studies in rural India report that girls' attendance at schools rises when communities gain access to water, leading to a general rise in literacy levels in the area.[17] Studies from India and Nepal have presented some evidence, albeit self-reported, that when girls have access to safe and clean toilets and water at school, they are somewhat less likely to miss school during their menstrual cycle each month.[18] However, the presence of sanitary products, safe and clean toilets, and sufficient water goes hand in hand in hand. Each contributes to the creation of a clean, safe, and girl-friendly school.[19]

Interventions and the range of costs

Government expenditure on primary education has been rising in most countries in the last decade. However, as a percentage of total GNP, it is still quite low in many parts of the world. As the total numbers of children enrolled in school rises, governments are expected to spend more on building new schools and supporting existing ones. In many areas, communities provide both monetary and in-kind support for the local school, contributing labor and other inputs for new classrooms and making repairs and minor improvements to water and sanitation infrastructure. The poorest communities in urban and rural areas are often unable to bear too great a burden, exacerbating already existing disparities in education.

The cost of providing a source of safe drinking water for a school varies based on the infrastructure needed. If the school has insufficient water and needs a supplementary source, rainwater harvesting can provide a sustainable, low-cost solution. Shallow wells and protected springs can also be used as sources of water for schools and are cheaper than deeper wells (boreholes). In Central America, springs are connected to piped networks that also supply schools. These networks are, however,

15 Save the Children (2005) "The Power and Promise of Girls' Education: Key findings and recommendations." SAVE pp 4-9

16 Freeman et al. (2009) DRAFT: A Review of the Impacts of School-Based Water, Sanitation, and Hygiene. Emory University School of Public Health, Unpublished Paper; SWASH+ Program

17 Op cit. Freeman et al.

18 WaterAid- Nepal (2009) "Is menstrual hygiene and management an issue for adolescent school girls? A comparative study of four schools in different settings of Nepal" http://www.wateraid.org/documents/plugin_documents/wa_nep_mhm_rep_march2009.pdf

19 Water for People, India has carried out several iterations of girl-friendly toilets that are designed by girls themselves. These toilets afford girls privacy, respond to their expressed needs and take into account the safe disposal of sanitary products. More importantly, the conversation that preceded the design of these toilets has allowed girls to speak more openly about menstrual health. Water for People-India observed the same in their West Bengal program where one of the reasons that girls chose not to use new bathrooms because they did not feel that they were private enough. Ned Breslin, Rajashi Mukherjee and Mark Duey (2008) "Rethinking Women, Girls and Water Supply and Sanitation"
http://www.waterworld.com/index/display/article-display/365907/articles/water-wastewater-international/volume-24/issue-3/other-features/rethinking-women-girls-and-water-supply-and-sanitation.html

20 The cost of drilling a deep well can range from $23 per person in Sub-Saharan Africa to $55 in Latin America and the Caribbean. Since such water supply facilities can support much larger populations, they tend not to be provided exclusively for schools. . (WHO and UNICEF (2000). *Water Supply and Sanitation Assessment 2000 Report*. Geneva: WHO and UNICEF.) According to GWC's funded-programs in Kenya and Tanzania, the cost of a rainwater harvesting system per student is about $6.25. However, such tanks are built at schools for the purpose of serving primarily school children. In areas of seasonal and unreliable rainfall patterns, rainwater tanks cannot provide sufficient quantities of water to meet all the needs of students throughout the year.

dependent on electricity to pump water into storage tanks. Not all schools, especially in sub-Saharan Africa and South Asia, are connected to electricity and therefore water storage is a difficult and expensive option for them.

The expense associated with drilling a borehole, specifically for a school, is so high that governments do not build such infrastructure costs into their education budgets.[20] When schools are more than a kilometer from the nearest, reliable, improved source, students do not have regular access to drinking or hand-washing water at the school because they are unable to carry sufficient quantities of water to the school in the morning. In some cases, a communal source, such as a deep well, is attached to a standpipe at the school and students can access water at the standpipe during school hours. This is the most reliable way of getting water at the school and one that is preferred by teachers, parents, and students alike. However, it is also expensive and its reliability is entirely dependent on the maintenance of the well by the community and the upkeep of the tap at the school.

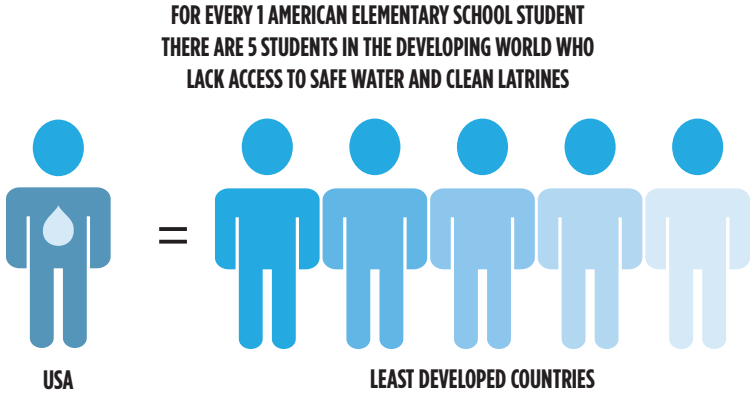
Most governments have some guidelines for providing sanitation infrastructure in schools. These range from a simple latrine-to-student ratio to detailed designs that must be used in the construction of toilets, hand washing stations, etc. In reality, standards are almost never met and school sanitation infrastructure is woefully inadequate or missing altogether.

Over the past decade many agencies and non-governmental organizations have experimented with designing infrastructure that will be easier to use and maintain at the school level. A serious review of which designs have been the most cost-effective and sustainable would be of great value to the sector.

What works and how do we know?

In the last decade, UNICEF has led the way in campaigning for water, sanitation, and hygiene (WASH) at schools. Anecdotal evidence has shown that schools which successfully provide water and sanitation do see improvements in attendance, especially among girls. Country program evaluations from UNICEF report that schools initiatives lead to changes in the behaviors of households, with more families adopting hygiene behaviors and making investments in toilets, handwashing stations, etc. However, another assessment of six country pilot projects, published by UNICEF and International Water and Sanitation Center (IRC), states that it is difficult to isolate the impact of school WASH programs from other awareness raising programs on households and the communities.[21] Other studies have provided evidence, usually self-reported and not observed, on the impacts of schools programs on health and absenteeism. However, there are very few rigorous, peer-reviewed evaluations of school WASH programs and their long-term impacts, especially on health and educational outcomes. The few evaluations that have been conducted show that when a school does provide treated water (with chlorination) to students for drinking and sufficient quantities of water for handwashing there is a decline in reported cases of diarrhea, a decline in absenteeism – probably associated with cases of severe diarrhea, and an actual saving in terms of averted costs in medicines, tutoring for children who missed schools due to illness, and in purchasing wood used for boiling water.[22] [23] [24] In these analyses, schools use point-of-use treatment and handwashing as interventions.

The main concern with schools programs is not their immediate impacts on the welfare and health of children, but rather their ability to sustain such impacts over time.



21 UNICEF and International Water and Sanitation Center (IRC) (2006) *School Sanitation and Hygiene Education: Results from the Assessment of a 6-country Pilot Project*. IRC.
22 Reilly, M. C. Freeman, M. Ravani, J. Migele, A. Mwaki, M. Ayalo, S. Ombeki, R. M. Hoekstra, and R. Quick (2008). The impact of a school-based safe water and hygiene program on knowledge and practices of students and their parents: Nyanza province, Western Kenya, 2006. *EPIDEMIOLOGY AND INFECTION 136* (1), 80-91
23 Migele John, Sam Ombeki, Mary Ayalo et al. (2007) Short report: Diarrhea Prevention in a Kenyan School through the use of a simple, safe water and hygiene intervention. *American Journal of Tropical Medicine and Hygiene*. 76(2), Pp. 351-353.
24 Quintero et al (2009) op cit.

While the absence of WASH infrastructure in schools remains a concern, so too is a lack of maintenance. A large number of schools have broken and unusable latrines and rainwater collection pipes or tanks and handwashing stations that lack water and soap. For a number of reasons investments in these schools have not been sustained over time. Two main reasons are generally cited for the breakdown of infrastructure: poor design and/or construction and lack of dedicated resources for operation and maintenance. While most governments allocate budgets for teacher salaries, books, and even addition of classrooms, little to no allocation is made for ongoing repairs and maintenance of WASH infrastructure or the purchase of soap and water treatment for the school. Latrine-to-student ratios in most schools are abysmal, with hundreds of students sharing one toilet, affording no privacy for young girls. The disappearance of soap from schools continues to pose a problem even for schools which successfully maintain other infrastructure.[25]

Global Water Challenge's schools programs

In 2006, GWC began supporting an innovative program to extend safe water and sanitation to schools in Western Kenya, based on early results from a pilot supported by the Coca Cola Foundation. The intensive, five-year, practical research program (School Water, Sanitation, and Hygiene plus Community Impact—SWASH+) is generously supported by the Bill and Melinda Gates Foundation, and implemented by a consortium of partners led by CARE.[26] The goal of the program is twofold: to create a scalable model for WASH in schools which can be adopted by the Government of Kenya and applied to all the primary schools in the country, and to evaluate certain hypotheses on the impacts of school WASH. The program was designed to use schools as an entry point into communities and examine whether teaching children certain lessons on safe water and hygiene would lead to effective and sustainable change in hygiene behavior among pupils and their families. In addition, the program is evaluating alternative designs and technologies for cost and maintenance.

GWC also supports a four-country program in Central America (Guatemala, Honduras, El Salvador and Nicaragua), coordinated by the Millennium Water Alliance and implemented by three GWC partners—CARE, Catholic Relief Services and Water for People. The overarching goal of this program is to create sustainable WASH models that are expanded by the local governments. Partners work closely with local governments to fund and manage these programs which will reach about 200 schools directly. An additional schools program in Rwanda, implemented by Manna Energy Foundation, is experimenting with an innovative approach by generating carbon credits through the installation of solar-powered water treatment systems. This program, if successful, could lead to improved water and sanitation coverage for all secondary schools in the country. In Tanzania, African Medical Research and Education Foundation (AMREF) is investing in every village in Mtwara Rural region with support from the European Union's Water and Sanitation Umbrella Program. GWC's contribution leverages this investment to reach primary schools in these communities. A country program in Mexico is composed of projects implemented by three NGOs in the poorest regions of Mexico, which have the lowest water access and sanitation coverage. The three grantees are collaboratively identifying impact indicators that they will agree to monitor through the life of the project. Their goal is to improve the reliability and sustainability of safe water at schools and to test alternative models of ecological sanitation that will be both cost effective and environmentally appropriate for dry areas. All investments seek to create sustainable models of school WASH programs that are not only effective in the short term but supported in the long term by parents, communities, and governments.

In 2008, GWC funded a consortium of universities and non-governmental organizations[27] to help implementing organizations design appropriate evaluation tools, select impact indicators, and look critically at predictors of program sustainability. The consortium is now growing and working closely with implementing organizations, including several GWC partners and grantees, to collaboratively develop monitoring plans that can reliably measure changes in key impact and sustainability indicators.

25 Quintero et al (2009) op cit.
26 SWASH+ Kenya is implemented by CARE, Emory University School of Public Health, Great Lakes University, Kenya, KWAHO and Water.org.
27 The Consortium is composed of Emory University Center for Global Safe Water, London School of Hygiene and Tropical Medicine, GWC, MWA, Save, AMREF.

Predictors of Sustainability

Keeping water flowing from school taps, keeping latrines clean, and ensuring that soap and water are always available for handwashing are not as simple as they sound. Schools programs that are able to set clear goals and objectives, anticipate challenges, internally monitor and evaluate their own performance and adjust their programs accordingly are most likely to innovate and succeed in the long term. In the past year, GWC partners and grantees have established ongoing monitoring for sustainability, in addition to monitoring impact of the schools wash programs.

Some of the main predictors of sustainability at the school level include the following:

- *A close and reliable water source*

  The SWASH+ Kenya program has found that the school must have a reliable water source within a kilometer for there to be long-lasting behavior change with respect to treating drinking water and providing water for handwashing at school. When distances are longer than a kilometer, the burden of carrying sufficient quantities of water to school for handwashing becomes too great and water is not made available regularly. Providing an alternate source, such as rainwater collection can be valuable to ensure uninterrupted supplies when traditional sources run dry. However, rainwater by itself is usually not sufficient to meet all the needs of students.

- *Level of involvement of community members, students, parents and teachers in school activities*

  In Central America, parents, especially mothers, are closely involved in the day-to-day activities of the schools. As a result, they are aware of all the new activities that students undertake; they know when something is working and when it is not. As heads of parent associations, mothers are responsible for collecting funds for school activities, coordinating parent volunteers, and liaising with the local education office on issues related to funding, curricula, etc.. When parents are involved in schools they are also reached directly with the same hygiene messages that are taught to their children, making it more likely that behavior will be reinforced at home. Involved parents are important but not sufficient. Grantees from Mexico report that teachers, especially in remote rural areas, are often the most reluctant participants in school WASH programs. They may view their rural assignments as hardship posts and have little interest in the long-term success of the school. Without committed teachers, programs that rely on classroom instructions cannot be effective.[28]

- *Sufficient budget to cover the purchase of soap, chlorine and to replace hardware*

  While governments often allocate funds to pay the salaries of teachers, construct new classrooms and purchase textbooks, they rarely do so for providing safe water and sanitation at schools. In most schools, parents contribute some resources for maintenance, purchasing extra hardware that governments do not cover, and paying for extracurricular activities including drama, music and dance. Even in the poorest communities, parents contribute their labor and time for the construction of classrooms, replacing roofs, etc.. One of the goals of schools programs should be to ensure that budgets account for operation and maintenance of all water and sanitation infrastructure, and that school management, whether it is teachers, the principal, or parents, know where to find these resources and allocate them appropriately. Having a champion in the form of a village elder, local government official, or an official at the national level can go a long way in elevating the importance of schools programs from the local to the national level.

- *Appropriate technologies and inputs available in the market or from the district/local government*

  There are two issues with respect to new hardware and habits introduced to students. The first is regarding the acceptability of the technology that is being introduced. Many schools programs promote the use of dry/ecosan toilets, soap for handwashing, and point-of-use treatment for water. However, if people have not used such infrastructure in the past for cultural reasons, it is difficult to change behavior in the short term. For example, in Honduras, despite government and non-governmental attempts to promote chlorination, rural communities have refused to treat the water. They

28 Monitoring reports from GWC grantees Grupo de Estudio Ambientales (GEA-Mexico) and SARAR-T (Mexico).

29 Report from Diana Betancourt, Program Manager, Water for People, Honduras. Reported in MWA Grant report to GWC, dated September 2009.

report that it changes the taste of the water, and because they use the same water to wash their coffee, it also alters the quality of the coffee bean. As a result, chlorinators are rarely refilled with chlorine and e-coli contamination in drinking water continues to be a problem.[29] The availability of products and parts in the market is the second determinant of continuity of use. When products are not easily available in the market and replacement parts are hard to find, sustainability of the intervention becomes even more challenging.

- *Activities and messages that reinforce hygiene messages in the school and at home*

  While children spend a substantial portion of the day at school, they are home for many more hours and the availability of safe water, safe storage and hygiene behaviors practiced at home are critically important. This provides schools programs with both a challenge and an opportunity. If the programs are able to engage parents, children and parents will share messages and reinforce behavior. In addition, since older children commonly care for younger siblings, they are likely to influence health practices in the home through their own behavior. Schools that allow their students the opportunity to be creative and design their own messages and the methods by which they are communicated are often more successful than those which rely on teachers and outsiders to design messages. A GWC grantee in Mexico works closely with the entire community to design and create models of dream schools. These are then used as aspirational and educational tools. In the schools in Mtwara, students use traditional masks and instruments to entertain the entire community with song and dance, the messages of which focus on health and hygiene. These performances bring the entire community together and are a great source of joy and pride for students and parents alike.

- *Incentives to sustain hardware and software investments*

  Students, teachers, and parents face competing demands for their time. Recognizing their achievements and rewarding improvements in schools is a way to ensure that activities will continue in the future. Competitions among schools energize the entire student body and schools can then be rewarded with prizes that can be displayed for the entire community to see. AMREF uses flags and pennants to reward winning schools. Similarly, teachers and administrators should also be recognized for their efforts. Designing simple incentives that rely on community-based monitoring can go a long way in achieving improved outcomes at the school level.

Conclusion

There is little doubt that safe water, clean toilets, and germ-free hands lead to improved health outcomes. Schools are one venue to reach thousands of children each day with these common-sense inputs for improved health. Healthier students learn better, become productive members of society, and can share the importance of basic public health measures in their own homes and communities. Based on what we have learned, we would recommend that access to clean water and sanitation in schools become a priority for governments and donors around the world. This goal is within reach. Policymakers, donors, and practitioners must now commit to making interventions in school effective, long lasting, and catalytic for long term improvements in health, educational achievement, and economic wellbeing.

Annex 1. HDI and Access of LDCS

Country	Enrolment in primary. Public and private. All programs. Total, 2007	Human Development Index Rank	Access to safe water and sanitation in schools
Samoa	30199	96	15,100
Maldives	50270	99	25,135
Equatorial Guinea	81099	115	40,550
Kyrgyzstan	407669	122	203,835
Vanuatu	37518	123	18,759
Sao Tome and Principe	31397	128	15,699
Bhutan	106100	131	53,050
Lao People's Democratic Republic	891807	133	445,904
Solomon Islands	...	134	
Myanmar	5013582	135	2,506,791
Cambodia	2479644	136	1,239,822
Comoros	...	137	
Yemen	3282457	138	1,641,229
Mauritania	483776	140	241,888
Madagascar	3837343	143	1,918,672
Nepal	4515059	145	2,257,530
Sudan	3959310	146	1,979,655
Bangladesh	16312907	147	8,156,454
Haiti	...	148	
Djibouti	56667	151	28,334
Tanzania (United Republic of)	8316925	152	4,158,463
Senegal	1572178	153	786,089
Lesotho	400943	155	200,472
Uganda	7537971	156	3,768,986
Angola	...	157	
Timor-Leste	173983	158	86,992
Togo	1021617	159	510,809
Gambia	218638	160	109,319
Benin	1601146	161	800,573
Malawi	2943248	162	1,471,624
Zambia	2790312	163	1,395,156
Eritrea	331855	164	165,928
Rwanda	2150430	165	1,075,215
Guinea	1317791	167	658,896
Mali	1716956	168	858,478
Ethiopia	12174719	169	6,087,360
Chad	1324298	170	662,149
Guinea-Bissau	...	171	
Burundi	1490844	172	745,422
Burkina Faso	1561258	173	780,629
Niger	1235065	174	617,533
Mozambique	4563633	175	2,281,817
Liberia	539887	176	269,944
Congo (Democratic Republic of the)	8839888	177	4,419,944
Central African Republic	494985	178	247,493
Sierra Leone	1322205	179	661,103
Afghanistan	4718077		2,359,039
Kiribati	...		
Somalia	290481		145,241
Tuvalu	...		
TOTAL	112,226,137		56,113,069

** According to UNICEF, half the schools in the world that open their doors every day have no source of safe water for students, and no clean latrines for them to visit.*
Data was unavailable for some countries
HDI from UNDP Human Development Report 2007/2008
Enrolment Figures from UNESCO Institute for Statistics
List of LDCs from United Nations Office of the High Representative for Least Developed Countries, Landlocked Developing Countries and Small Island Developing States

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