

Integrating WASH into NTD Programs

Bangladesh Country Assessment



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Acronyms and Abbreviations

A&T	Alive & Thrive
BRAC	Bangladesh Rural Advancement Committee
CDC	Communicable Disease Control
CLTS	Community-Led Total Sanitation
DFID	Department for International Development (UK)
DPE	Directorate of Primary Education
DPHE	Department of Public Health Engineering
END	End Neglected Tropical Diseases project in Asia
Gates	Bill & Melinda Gates Foundation
GOB	Government of Bangladesh
IEC	Information, education, and communication
INGO	International non-governmental organization
JMP	WHO/UNICEF Joint Monitoring Program for Water Supply and Sanitation
LF	Lymphatic filariasis
MDA	mass drug administration
MOHFW	Ministry of Health and Family Welfare
NGO	Non-governmental organization
NTD	Neglected Tropical Diseases
PEDP	Primary Education Development Program
PROTEEVA	Promoting Talent through Early Education
SHN	School Health and Nutrition Program
STH	Soil-transmitted helminthiasis
UNICEF	United Nations Children's Fund
WASH	Water, Sanitation and Hygiene
WHO	World Health Organization

Executive Summary

USAID's Neglected Tropical Diseases (NTD) program asked WASHplus to assess the intersection between water, sanitation and hygiene (WASH) and NTD in Bangladesh. As neither trachoma nor schistosomiasis is endemic to Bangladesh, the disease of concern in this assessment was soil-transmitted helminthiasis (STH). Four members comprised the WASHplus assessment team: Renuka Bery (Team Leader, WASHplus, FHI 360), Stephanie Ogden (WASH policy expert, CARE & Task Force for Global Health), Kerry Gallo (STH expert, Task Force for Global Health/Children without Worms), and for the first week only, Jim Johnson (NTD expert, END in Asia, FHI 360). Mustafa Kamal, the WASHplus behavior change and integration specialist accompanied the team to numerous meetings and all field visits.

The **assessment's purpose** was to examine the existing WASH policy and program context in Bangladesh and identify potential points of intersection for WASH and STH which, with investment, could improve the potential for reduced worm reinfection. The **methods** used included a semi-structured interview format to gather input from a range of stakeholders including government, INGOs, and local NGOs at the national level and in the field in the Barisal/Borguna region. We followed a snowball design, identifying an initial core group of stakeholders and using these meetings to identify additional key informants. In total, the team met with 20 different stakeholders and visited eight sites in Dhaka and Barisal Division including homes, schools, clinics and community outreach sessions.

Findings. Bangladesh has made enormous strides in the past 25 years in water and sanitation. The MDG target for water for Bangladesh is to reach 89 percent coverage by 2015. The Government of Bangladesh has set targets of safe drinking water and sanitation for all by 2011 and 2013 respectively. The proportion of population using an improved drinking water source is 86 percent and 54 percent use an improved sanitation facility.¹ Community-led total sanitation (CLTS) efforts have yielded a country that is 94 percent open defecation free,² however challenges still exist in depositing of fecal waste in a sanitary manner. Infant and child mortality has declined dramatically from 151/1000 to 46/1000³ and most children with diarrhea receive some oral rehydration therapy⁴ The Ministry of Health and Family Welfare's (MOHFW) Lymphatic Filariasis (LF) Elimination and STH Control Program under the Communicable Disease Control (CDC) Division is well established. It carries out a twice annual deworming campaign in all primary schools for all children, aged 5-12. Children under 5 receive deworming treatment as part of the Expanded Program for Immunization. STH reinfection rates, however, remain high. Despite annual deworming, current STH prevalence among school-aged children is estimated to

¹ WaterAid Country Strategy Plan: 2011-2016 Bangladesh

² Bangladesh: WASH Sector Brief, prepared for AusAID by the Institute for Sustainable Futures, University of Technology Sydney, October 2011, http://www.isf.uts.edu.au/pdfs/ISF_BangladeshWASH.pdf

³ http://www.who.int/maternal_child_adolescent/data/media/cah_chp_bangladesh.pdf

⁴ http://www.unicef.org/infobycountry/bangladesh_bangladesh_statistics.html

be 14.7 percent.⁵ Children aged 12-15 years of age are not reached with a deworming program in secondary schools, while women of child-bearing age may receive deworming during antenatal care visits.⁶ Deworming medicine is available in the marketplace and for purchase from BRAC community health workers, and people do purchase it. The potential downscaling of the LF Elimination Program presents a challenge for STH control; ceasing albendazole treatment for LF may further exacerbate STH reinfection levels in the future.⁷

Bangladesh claims some of the highest STH infection rates in the world. STH are endemic in many provinces throughout the country, affecting all three ecological zones in the country. In 2005, surveys in Bangladesh found a 79.8% prevalence of worm infections, with nearly 20 million Bangladeshi children at risk for STH.⁸

Political will to engage in WASH for STH control is high, and a degree of coordination between government entities responsible for WASH and STH exists, particularly at the central level. The Government of Bangladesh (GOB) has prioritized water and sanitation, and stakeholders throughout the government see WASH as a critical component of national development. Indeed, the assessment team witnessed high **knowledge of good hygiene practices** among communities visited. Children and adults alike know when and how to wash their hands; however, supportive technology such as handwashing stations and soap are still needed to promote sustained adoption of these practices. Finally, momentum is growing around improving the nutritional status of children; several programs are integrating improved hygiene into nutrition activities and these could be **operational platforms** on which to place STH, as both STH and nutrition programs have a common outcome—reduced levels of stunting.

Another natural point of confluence for WASH and STH is the **primary school setting**. Government mechanisms exist among primary education (Directorate of Primary Education (DPE)), WASH (Department of Public Health Engineering (DPHE)), and health (CDC) stakeholders to coordinate efforts to improve water access and sanitation coverage at primary schools and to support national deworming weeks.⁹ This high investment in primary education (8.5% of the GOB annual budget) services 63,000 schools and also covers WASH infrastructure needs. Part of this investment includes UNICEF's Primary Education Development Program (PEDP) III program that now engages DPHE to assure 100% WASH block coverage in 18,000 schools. A *Better Health for Better Education* health education curriculum authored by DPE exists for teachers, although it did not appear to be implemented in the schools visited. For example, neither teachers nor local DPE representatives recognized it in Barisal. The *Little Doctors* program conceived by the CDC is being rolled out nationally in primary schools and offers a mechanism that could potentially be strengthened.

⁵ Lymphatic Filariasis (LF) Elimination and STH Control Program, 2013

⁶ Interview with director of Center for Disease Control, 2013

⁷ Interview with Children without Worms. 2013

⁸ Surveying Success To Help The Children of Bangladesh, 2013. END in Asia. URL - <http://www.fhi360.org/resource/surveying-success-help-children-bangladesh>

⁹ Interviews with Directorate of Primary Education and Department of Public Health Engineering

Challenges and Gaps. Bangladesh has invested heavily in hygiene education over the past decade. The knowledge on hygiene is high among people (over 90%) whereas corresponding practice of hygienic behavior in terms of handwashing is found to be extremely low. The national hygiene strategy is still in a formative stage; and its institutional location is yet to be determined. Extensive and long term behavior change communication will be required to bring along generational change in hygiene behavior,¹⁰ and many stakeholders from a wide range of programs conduct some form of hygiene education or promotion. This has resulted in **knowledge gain but very little behavior change.** During the assessment, the team did not uncover whether supportive technologies such as handwashing stations, soap, etc. are missing or whether habit formation takes place over a much longer time period. Further, public investment in WASH is not sufficient to ensure total coverage, particularly of sanitation. While households may practice fixed-point defecation, the team saw latrines in Barisal in varying conditions, and many appeared to discharge effluent into the surrounding environment (land and water bodies) perpetuating continued exposure to feces.

The hygiene stakeholders do not appear to be coordinated, and coherence was lacking. The assessment team found that **hygiene messages did not appear to be harmonized** across programs, although stakeholders reported that the Information, Education, and Communication (IEC) division of MOHFW has a committee that approves materials. Any behavior change program interventions and best practices for hygiene and handwashing with soap may be shared among some implementers, but any coordination and sharing appeared ad hoc.

Though government respondents mentioned that WASH is a priority, **schools still lack sufficient WASH infrastructure.** While the schools visited had a tube well, toilets and handwashing stations were insufficient to adequately serve the high numbers of students in each school. Elements of hygiene education are incorporated into the core curriculum, but the schools visited did not demonstrate strong hygiene implementation. And knowledge is often hard to practice in schools with insufficient infrastructure. Further, didactic teaching practices witnessed by the assessment team may convey information, but that approach does not inspire a learning-by-doing atmosphere, which perhaps compounds the lack of behavior change.

While WASH interventions have an impact on STH, more **research is needed** to clarify which WASH interventions have the greatest impact on different target populations.

Recommendations. The team categorized potential opportunities into domains identified by a roundtable discussion hosted by the Bill and Melinda Gates Foundation in December 2012, to identify practical next steps for collaboration between the WASH and NTD sectors. Considering the current strengths and gaps related to WASH for STH control in Bangladesh, it appears that USAID's NTD program can most effectively support WASH for STH control through the capacity building; research; and advocacy, policy, and communications realms.

¹⁰ WaterAid, Bangladesh Strategy, March 2011

The team examined three specific criteria when developing the recommendations: 1) potential for impact; 2) cost reasonableness, and 3) feasibility. The recommendations are:

Recommendation 1. Create and facilitate a national Hygiene Stakeholder Cluster Group

Recommendation 2: Develop a teacher-training strategy/innovation workshop on water, sanitation and hygiene by adapting the existing WASHplus' WASH-Friendly Schools materials to *emphasize behavior change* rather than knowledge creation.

Potential Recommendation 3. Conduct operations research that addresses the identified knowledge gaps at the WASH/STH intersection.

Introduction

More than 1 billion people worldwide suffer from one or more painful, debilitating tropical diseases that disproportionately impact poor and rural populations, cause severe sickness and disability, compromise mental and physical development, contribute to childhood malnutrition, reduce school enrollment, and hinder economic productivity.¹¹ Five of these NTDs can be controlled and/or eliminated with four to six years of mass drug administration (MDA). These diseases include lymphatic filariasis (elephantiasis), onchocerciasis (river blindness), schistosomiasis (snail fever), soil-transmitted helminthiasis (STH)—round worm, whip worm, hook worm—and trachoma.

The USAID NTD portfolio currently has programs to eliminate and/or control NTDs in 24 countries. Although it has been proven that MDAs are key to reducing the spread of disease quickly and cost effectively, consistent reinfection occurs **if behaviors and the environment remain unchanged**. STH, schistosomiasis, and trachoma are all clearly linked to inadequate sanitation, contaminated food and water, and poor hygiene, which provides an opportunity for WASH-related approaches to help change behaviors and the environment. It is unlikely that trachoma can be eliminated without face washing and improved environmental hygiene, and the cycle of STH treatment and reinfection will likely persist until sanitation and hygiene practices and conditions are improved.

Purpose of Assignment

USAID's NTD program has engaged WASHplus as a partner in a phased assignment to identify and present WASH interventions to help eliminate and/or control STH, schistosomiasis, and trachoma. Phase 1 is a desk review that documents the current state of knowledge within WASH and NTD programs and explores any coordinated WASH-NTD integration programs or WASH activities that have been proven or tried to help achieve elimination or control targets. This scan included a global review and more detailed analysis of seven countries. Phase 2 is a joint WASHplus/USAID NTD department assessment in two to four countries to document country-level WASH and NTD activities in depth and identify promising coordinated approaches and partners. Phase 3 will be to design and implement an integrated activity in one to two countries as the budget allows.

This report captures Phase 2 activities for one country, Bangladesh.

Background

Statistics

With approximately 160 million people, Bangladesh has the world's seventh-largest population and one of its most densely populated. Bangladesh ranks 146 out of 186 countries on the

¹¹ USAID: Neglected Tropical Diseases Fact Sheet, 2012. <http://www.usaid.gov/news-information/fact-sheets/neglected-tropical-diseases>

Human Development Index.¹² Almost one-third of Bangladesh's landmass floods each year making it particularly vulnerable to climate change. By 2050, up to 8 percent of the low-lying lands may become permanently under water.¹³

Bangladesh has 7 divisions, sub-divided into 21 regions and 64 districts. According to WHO, maternal and child health is improving, however neonatal and maternal mortality remain unacceptably high. Malnutrition, to which poor access to clean water and sanitation contribute 50 percent, is widespread in Bangladesh. Nearly half of pregnant women suffer from malnutrition and anemia, and 48 percent of children are moderately underweight. One-third of all children in Bangladesh suffer from stunting.¹⁴

The WHO/UNICEF Joint Monitoring Program for Water Supply and Sanitation (JMP) estimates that 56 percent of the population has access to improved sanitation, while 81 percent use drinking-water from improved sources.¹⁵ Arsenic contamination of drinking water remains a serious problem causing an estimated 9,100 deaths per year.¹⁶ A 2011 World Bank study estimates the economic impacts resulting from poor sanitation and hygiene cost the Bangladesh economy US\$4.2 billion per year, or the equivalent of 6.3 percent of annual Gross Domestic Product.¹⁷

STH is a major public health burden in Bangladesh and affects as many as 92 percent of school-aged children in parts of the country.¹⁸ The other major neglected tropical diseases are Kala-azar (also known as visceral leishmaniasis), lymphatic filariasis (LF), and dengue, for which the government has control strategies and programs. Schistosomiasis and trachoma are not of concern in Bangladesh. STH is a major NTD in Bangladesh, endemic in all 64 districts. Under the direction of the LF Elimination and STH Control Program within the MOHFW's CDC Division, MDA has been administered in schools twice yearly in all 64 districts since 2005. Data gathered from the 2013 survey of 16 districts indicates that the STH rate has fallen from 79.8 percent in 2005 to 14.7 percent in 2013.¹⁹

The DPHE under the Ministry of Local Government, Rural Development and Cooperatives is responsible for providing water and sanitation services in rural and urban areas and schools. Bangladesh has universal primary education and the DPE is responsible for overseeing more than 63,000 primary schools in Bangladesh.

¹² Human Development Report 2013. The Rise of the South: Human Progress in a Diverse World. UNDP, 2013

¹³ [USAID Bangladesh: Environment Website](#)

¹⁴ [WHO Country Cooperation Strategy 2008-2013: Bangladesh](#). WHO

¹⁵ [Joint Monitoring Programme for Water Supply and Sanitation, 2012](#). UNICEF; WHO

¹⁶ [The effect of arsenic mitigation measures on disease burden in Bangladesh](#)

¹⁷ [Economic impacts of inadequate sanitation in Bangladesh](#), 2012. Water and Sanitation Program

¹⁸ Sept 23, 2011 blog post from End the Neglect, <http://endtheneglect.org/category/soil-transmitted-helminths-sth/>

¹⁹ LF Elimination and STH control programme, Communicable Disease Control Department, Ministry of Health, Bangladesh. September 2013

WASH services in Bangladesh have improved significantly in the last decade.²⁰ In 2012 the GOB reported that as of 2010, 121 million people have access to improved water supply and 83 million have improved sanitation facilities.²¹ However, significant challenges remain. A large numbers of households using shared latrines are not recognized as “improved,” and the private latrines in use are largely unimproved with effluent releases back into the environment. Further, an estimated 20 million people are still consuming arsenic-contaminated water.²² Extending and maintaining service provision is especially difficult in rapidly growing urban slums.

The public sector allocation for the WASH sector more than doubled in the past five years, from 2.3 percent of the Annual Development Program in 2007 to 5.6 percent in 2011.²³ Funding for water supply exceeds that for sanitation and hygiene promotion and is skewed to urban areas. Funding levels are greater for primary education which comprises approximately 8.5 percent of the total budget, and includes the water and sanitation needs of primary schools.²⁴

As a recipient of huge donor funding over the past several decades, Bangladesh has cultivated a large, diverse NGO sector. International NGOs currently manage numerous large donor projects that are in turn implemented by smaller, local NGOs on the ground. BRAC, a very large local NGO, runs a community health volunteer system that parallels the government community health worker system and implements many projects at the community level.²⁵

Methodology

WASHplus put together a team of four individuals with expertise in WASH and/or NTDs with additional expertise in behavior change, policy, and experience working with country MDA programs. The team was comprised of the following members:

Team member	Role/Affiliation	Expertise
Renuka Bery	Team Leader/ WASHplus/FHI 360	WASH integration specialist with behavior change expertise
Jim Johnson	NTD specialist/ END in Asia/FHI 360	NTD experience in Bangladesh and Asia, relationships with Bangladesh NTD team
Kerry Gallo	STH specialist/Task Force for Global Health/Children Without Worms	STH and NTD experience, relationships with STH control teams around the world and in Bangladesh

²⁰ http://www.unicef.org/infobycountry/bangladesh_bangladesh_statistics.html

²¹ Bangladesh: Statement of Commitment, Sanitation and Water for All, 2012

²² WaterAid. 2011. Country Strategy Plan: 2011-2016 Bangladesh
http://www.wateraid.org/~media/Publications/bangladesh_strategy_2011-16.pdf

²³ WaterAid. 2011. Bangladesh Country Strategy Plan

²⁴ Interview with Directorate of Primary Education staff

²⁵ Interview with BRAC staff

Stephanie Ogden	WASHplus/CARE and WASH-NTD coordinator for Task Force for Global Health	WASH policy, experience with WASH and NTD intersection
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The team, except for Jim Johnson, met with USAID (NTD and WASH) for a team planning meeting in mid-August to reconfirm the objectives of the assignment and to plan for the upcoming trip. A semi-structured set of questions was discussed as was a list of potential stakeholders to contact. The outline for the report was discussed and presented to USAID. The team briefed Jim Johnson in a mini-team planning meeting. His participation was also limited to the first week due to competing priorities. Mustafa Kamal, the WASHplus behavior change officer, accompanied the team to many of the interviews and to all the field visits.

The team prioritized the list of potential stakeholders and the FHI 360 office in Bangladesh set up appointments with members of these organizations. As the team met with different participants and identified new potential candidates, it made contact and set up additional meetings.

Despite the traffic and difficulty moving around Dhaka, the team successfully engaged a large number of stakeholders in Dhaka, including government personnel, members of international NGOs, donors, and BRAC.

Accomplishments and Limitations

Over the course of 15 days in Bangladesh, the team secured interviews with 25 distinct stakeholders at both national and district level and visited one region, Barisal. In total, the team conducted 10 field visits including to four schools, four households, and two community events (one at a health center and one at a farmer field school). In most cases, our visit was planned, which allowed those visited to prepare and showcase their best candidates. Further, while this represented a strong cross-section of various sectors and intersections, it cannot be considered representative of the country or of the different programs and sectors. Thus, our findings, the strengths, barriers and opportunities must be contextualized with these limitations in mind.

Findings

The team has summarized the findings here; a full account is available in Annex 3. As mentioned, Bangladesh has made great strides in the past 25 years—primary education is universal, tube wells are common, and Bangladesh is practicing fixed point defecation and prevalence of STH has declined dramatically.²⁶ Still challenges remain—safe drinking water is still elusive, latrines often discharge effluent into the environment, and hygiene behaviors can be improved.

²⁶ Interviews with director of Center for Disease Control Program, Ministry of Health and Family Welfare

The team visited a range of stakeholders in government, and international and local NGOs, and different programs in Dhaka and Barisal. Political will for WASH is high and many stakeholders recognize the critical value of WASH infrastructure coupled with hygiene behavior change. The government has developed a comprehensive National Hygiene Strategy that is now being implemented by DPHE that sits in the Ministry of Local Government. Some coordination exists between the DPE and DPHE as the latter is responsible for assuring tube wells and latrines in schools. The CDC Division liaises closely with DPE to organize the MDA of mebendazole during school health weeks. A health curriculum for teachers covers all WASH topics, and hygiene is integrated into all classes of primary school.

Donor engagement in Bangladesh is high. DFID, UNICEF, and World Bank all provide a large proportion of their funds directly to the government through sector program approaches. USAID funds its activities largely through NGOs. International and local NGOs are very active in Bangladesh in areas related to WASH. A number of programs are integrated including WASH and nutrition, and in some cases, the addition of early child development activities. These programs also promote hygiene education.

Stakeholder interests		
Organization	Activities	Stake
<i>Government</i>		
Ministry of Health and Family Welfare, Communicable Disease Control Division, LF Elimination and STH Control Program	<ul style="list-style-type: none"> Twice-annual deworming in schools National Task Force multiple stakeholders from MOHFW, Directorate of Primary Education, NGOs – annual meeting Technical committee twice annual meetings Little Doctors program 	<ul style="list-style-type: none"> Recognizes need for strong WASH practice to maintain gains made through deworming Seeks robust scaled programs, not pilots
Ministry of Education, Directorate of Primary Education	<ul style="list-style-type: none"> Assure primary education for all Budget includes funds for water and sanitation access in schools Develop and implement national curriculum Support for bi-annual school-based deworming 	<ul style="list-style-type: none"> Needs to coordinate with MOHFW for deworming and <i>Little Doctors</i> programs Needs to coordinate with DPHE to improve infrastructure outlays in schools
Ministry of Local Government, Department of	<ul style="list-style-type: none"> Maintain statistics on national school W/S facilities Supporting primary school water and sanitation facilities. Installs/rehabilitates 31,000 tube wells + 5,000 latrines and provides 2 years of 	<ul style="list-style-type: none"> Must coordinate with DPE on infrastructure Seeking expanding role to promote WASH behavior change

Public Health Engineering	maintenance.	
<i>Donors</i>		
USAID/ Bangladesh mission	<ul style="list-style-type: none"> • Support nutrition and food security projects (SPRING, Alive and Thrive, SHIKHA) which incorporate handwashing messages • Support WASHplus program (including WaterAid) 	<ul style="list-style-type: none"> • Recognizes WASH as key input to achieve disease control goals
DFID	<ul style="list-style-type: none"> • Contributes to World Bank operated multi-donor trust fund that goes to GOB MOHFW operational plans. No direct line item to support NTDs, but CDC receives funds for specific projects. • Specific WASH program closed, being reissued next year 	<ul style="list-style-type: none"> • Recognizes importance of WASH to health programming • Tied to MDG outcomes
UNICEF	<ul style="list-style-type: none"> • Advise DPHE and DPE on construction of child-friendly WASH blocks for schools • Support deworming of < 5 children through the Expanded Program on Immunization • SHEWA-B project assessed impact of WASH on STH infection 	<ul style="list-style-type: none"> • Support WASH implementation through government system (WinS) • Seek improved advocacy for improved hygiene practice
<i>NGOs</i>		
WaterAid	<ul style="list-style-type: none"> • Implement WASH Plus project • Intersectoral collaboration – partner with other organizations to integrate WASH into programming • School WASH integrated into community projects • 2014 is a ‘health focus’ year; seeking 2-3 health-related indicators to include in their M&E framework. 	<ul style="list-style-type: none"> • Extensive WASH programs with local NGOs • Seeks new health hooks for WASH such as NTD and nutrition • Support national push to increase behavior change for hygiene
Save the Children	<ul style="list-style-type: none"> • School Health and Nutrition (SHN) programs support deworming and hygiene education • SPRING (implemented by Helen Keller Institute): supports household food production, child feeding, hygiene behavior/tippy taps in food preparation area: implementation vehicles => community, clinics, agriculture extension. • PROTEEVA project: supports pre-primary education with additional aids for nutrition and hygiene education including deworming program. 	<ul style="list-style-type: none"> • WASH supports nutrition outcomes • WASH supports learning outcomes • Deworming supports nutrition and learning outcomes
FHI 360	<ul style="list-style-type: none"> • Alive and Thrive: Counsels new and pregnant mothers on breastfeeding, complementary feeding, and handwashing behaviors (implemented by BRAC and others) • SHIKHA: Using A&T model, but implementing in different areas • WASH Plus project to include health and hygiene components, also sanitation. 	<ul style="list-style-type: none"> • Handwashing seen to improve nutrition outcomes; particularly before preparing children’s food and feeding • WASHplus project integrating WASH and nutrition. Seeking sanitation alternatives.

CARE Bangladesh	<ul style="list-style-type: none"> • Integrated programming incorporating health, hygiene and WASH elements with nutrition, livelihood, equity promotion 	<ul style="list-style-type: none"> • Incorporates handwashing messages into programming • Needs stronger evidence of impact of specific WASH interventions on STH infection
BRAC	<ul style="list-style-type: none"> • Broad coverage of country with health services including WASH • Implement many activities including for A&T (see FHI 360). • BRAC community volunteers sell deworming medication; encourage improved practice including handwashing 	<ul style="list-style-type: none"> • WASH key intervention in development of Bangladesh
World Vision	<ul style="list-style-type: none"> • Nutrition, WASH and early childhood development programming with target of improving health of children < 5 and pregnant/lactating mothers • Provide WASH hardware support based on need • Indicators include levels of stunting, wasting and malnutrition; handwashing behaviors 	<ul style="list-style-type: none"> • Provide community sensitization around national deworming campaign • Behavior change materials include messaging on handwashing and deworming

Discussion/Analysis & Recommendations

The analysis section describes the existing strengths and mechanisms that form the foundation of opportunities for sustained STH control that includes WASH as an essential component. This section also describes the overall barriers to integrating WASH and STH control in Bangladesh. The strengths and barriers were elaborated by analyzing repeating themes within stakeholder interviews and field observations. Scalability and sustainability of efforts were considered key factors in identifying successful mechanisms.

Based on the analysis below, specific opportunities for USAID investment in collaborative WASH and STH control are described in the *Recommendations* section, and framed within the context and assumptive framework of USAID funding.

Strengths

Increased household and school coverage of water, sanitation, and hygiene individually and together is necessary for sustained STH control. Stakeholders at national, district and community levels have a high level of awareness of STH as a public health problem. General prevention measures for STH are well understood at all levels—even by school children who know that sanitation and hygiene are essential components of prevention. The WASH sector’s current work contributes to STH control, and the NTD sector can contribute to increased advocacy for public investment in WASH in Bangladesh to help to ensure that WASH coverage is scaled up more efficiently and effectively.

As water and sanitation coverage have increased markedly in Bangladesh in the last decade, momentum towards achieving full WASH coverage is high, and a high level of awareness and

political will exists at the government level to achieve MGDs for water and sanitation. While funding for WASH is not at levels necessary for transformative change, the GOB has more than doubled WASH related funding in the past decade.²⁷

A multiplicity of stakeholders engage in hygiene promotion in communities and in schools, and these programs offer potential platforms to which STH control can be added at marginal cost.

The WASH sector approach tackles water and sanitation and hygiene promotion. Personal hygiene and handwashing with soap are common components of many nutrition, education, and health programs visited. In general, the assessment team witnessed **high knowledge of hygiene practices at the community level**, stemming from extensive efforts in hygiene education and promotion. Children and adults alike know when and how to wash their hands; however, supportive technology such as handwashing stations and soap are still needed to promote sustained adoption of these practices. Moreover, **behavior change efforts seem largely secondary** and this is reflected in the high discrepancy between knowledge and practice.

Momentum is growing around improving nutritional status of children: **numerous programs incorporating hygiene into nutrition are emerging** across the country and among many government and NGO stakeholders. All these programs incorporate WASH, though this engagement is limited primarily to promoting handwashing at critical times to decrease fecal exposure among children under two years of age. These programs may be strategic **operational platforms** on which to place STH control, as the desired outcome of reduced stunting is also impacted by STH infection.

The **primary school setting** is a natural point of confluence for WASH and STH. Government mechanisms exist among primary education, WASH (DPHE), and health (CDC) stakeholders to coordinate efforts to improve water access and sanitation coverage at primary schools and to support national deworming weeks. The high investment in primary education (8.5% of the GOB annual budget) services 63,000 schools and also covers WASH infrastructure needs particularly of the 19,000 schools serviced by the PEDP III program. Numerous school health and nutrition programs also offer a platform on which to build. A MOHFW approved health education curriculum, entitled *Better Health for Better Education*, exists for teachers and could be used as a building block to energize teachers and build a foundation for improved WASH practices. Finally, the *Little Doctors* program is being rolled out nationally in primary schools. The current roll out lacks adequate focus on teacher training and engagement, but with some fundamental changes, this program offers a mechanism for integrated WASH, vitamin A distribution, deworming and hygiene education that could potentially be strengthened.

DPHE is beginning to coordinate with other government entities and programs through its planning division; linking with DPHE on WASH activities is necessary from a sustainability perspective. Additional national coordination mechanisms managed by the government exist

²⁷ WaterAid Country Strategy Plan: 2011-2016 Bangladesh

and could be strengthened, including the National Task Force for NTD control and the MOHFW's IEC committee. At the district levels, district coordination meetings occur monthly, during which DPE, DPHE, the Civil Surgeon's office and other district departments share information. Among NGO stakeholders, WASH and nutrition cluster groups meet quarterly. These meetings would provide existing platforms for exchange of information and best practices and may be useful structures to introduce STH and WASH elements into existing programs.

Dr. Be-Nazir Ahmed, director of the CDC Division that includes the LF Elimination and STH Control Program, is a **potentially strong champion** for WASH integration into STH control efforts. He is an organized thinker and an outspoken advocate for coordination between sectors. He has successfully procured and mobilized funding for the NTD control program, both from the MOHFW and from external donors. As the LF Elimination Program winds down, he feels that his team can lend more attention to issues surrounding STH, and that encouraging an enabling environment for STH prevention is important. He has expressed willingness to take a leading role in convening a multi-sector stakeholder group related to WASH and STH control, or to hygiene education and promotion. His interest in engaging partners, assuming a leading role in the hygiene sector, and his convening power among key government stakeholders makes Dr. Be-Nazir and his group a potentially powerful ally.

Challenges and Barriers

Within the landscape of current WASH and STH control activities and stakeholders described in the Findings section, the primary barriers to integrated WASH and STH control are the following:

Tremendous progress but insufficient WASH coverage, particularly of sanitation. Though Bangladesh has made tremendous strides in reducing open defecation and promoting fixed-point defecation (42.26 million people have access to improved sanitation; open defecation has been reduced from 33 percent to 4 percent and 28.8 million people have changed their habit from open defecation to the use of latrines),²⁸ latrines continue to remain in poor condition and very often discharge effluent into the surrounding environment (land and water bodies) perpetuating continued exposure to feces. Lack of low-cost supportive technologies for safe excreta disposal in wetland areas remain a particular challenge in the Bangladesh context. The government is investing in WASH in schools through the PEDP III program, but as many interviewees cited, this covers 19,000 primary schools not the full complement of 63,000 primary schools across the country. Though most schools have access to tube wells, many primary schools lack adequate access to sanitation and handwashing facilities, increasing the potential for exposure to fecal pathogens at school.²⁹

Knowledge vs. Practice. The GOB and NGO partners have invested heavily in hygiene education over the past decade, and the National Hygiene Strategy (2011) provides a framework for future stakeholder engagement. Hygiene, especially handwashing with soap, is a common

²⁸ Bangladesh Country Paper. SACOSAN V Conference, 2013

²⁹ Teacher interviews and discussions with education officials and other stakeholders

component of health, education, early childhood development, food security and nutrition programs. This has resulted in knowledge gain but very modest behavior change.³⁰ Hygiene promotion and behavior change are a comparatively weak component of the WASH approach. UNICEF is promoting improved behavior change and DPHE is being charged with carrying out the hygiene strategy, yet its workforce is largely comprised of engineers, not behavior change experts. A proper mechanism for sustained behavior change is still elusive as is the role of supportive technologies such as handwashing stations, soap, etc. with respect to encouraging improved hygiene practice.

Coherence. Despite the National Hygiene Strategy's coordination mandate, stakeholders do not seem to be coordinated; messages do not appear to be standardized across program approaches and may compete with each other. Many hygiene education and promotion efforts exist across Bangladesh—components of many NGO programs including nutrition, health education, and emergency response programs. To reduce redundancies, NGO stakeholders in particular appear to divide geographic areas of intervention, rather than harmonize messages or approaches. Behavior change to achieve best practices in hygiene and handwashing with soap appear to be shared among some implementers, particularly at the district level, but this appears largely ad hoc. It is unclear what role the IEC division of MOHFW has in harmonizing messages though it is reported to approve all health education materials. This lack of coherence diminishes the potential adoption and sustained practice of improved hygiene. Though hygiene and handwashing is a program component, behavior change in these realms appears largely unmeasured. Case in point, while handwashing is a strong component of Save the Children's nutrition and infant feeding program, handwashing outcomes are not measured.

Education practices. As observed in hygiene education sessions and curricula in primary schools, teaching practices are didactic and do not inspire a learning-by-doing atmosphere. While elements of hygiene education are incorporated into the core curriculum, the schools visited did not display strong hygiene implementation. Knowledge is high, but this knowledge is often hard to practice in schools with high student populations and insufficient infrastructure. Teachers interviewed mentioned that a new curriculum was enacted in January but they have not yet received training in this new curriculum that is purported to stimulate critical thinking, creativity and innovation. Until all teachers are exposed to and trained in the new curriculum, change will be slow.

Evidence base. While WASH interventions are understood to have an impact on STH, a rigorous evidence base does not exist to mobilize advocacy and coordination efforts, particularly toward cost effective WASH investments for STH control. Political awareness of and commitment to WASH is high, yet government budgetary allocation towards water and sanitation is insufficient.

³⁰ Huda, TM et. al. Interim evaluation of a large scale sanitatin, hygiene and water improvement programme on childhood diarrhea and respiratory disease in rural Bangladesh. *Soc Sci Med.* 2012 Aug;75(4):604-11. doi: 10.1016/j.socscimed.2011.10.042. Epub 2011 Dec 13.

It is not clear whether such an evidence base is necessary for Bangladesh to move forward in integrating WASH and STH control.

Hierarchical bureaucratic system: As seen at the district level and remarked on by several interviewees, government structures do not encourage innovation. Position roles, responsibilities, and established lines of authority are rigid, and individuals rarely deviate from established pathways. This hampers potential efforts to establish coordination mechanisms at lower levels if not mandated from above.

Recommendations

A roundtable discussion, hosted by the Bill and Melinda Gates Foundation in December 2012, convened 30 experts in WASH and NTD to identify practical next steps for collaboration between the WASH and NTD sectors. Opportunities for collaboration were identified around four general domains: capacity building; advocacy, policy, and communications; mapping and monitoring; and research. As the roundtable conclusions provide a useful framework, we have structured our recommendations within these domains.

Considering the current strengths and gaps related to WASH for STH control in Bangladesh, it appears that USAID's NTD program can most effectively support WASH for STH control through three of the domains: capacity building; research; and advocacy, policy, and communications realms.

The box to the right outlines the operating assumptions the team used to prioritize the opportunities listed above. In addition, the team developed three specific criteria to use when developing the recommendations. These criteria are:

- 1) potential for impact
- 2) cost reasonableness
- 3) feasibility

Operating Assumptions

- Limited funds for actual activity
- Activities will be sustainable
 - Involve government
 - Build on existing platforms
- Activities will be scalable (even if funds are not currently available)
- Activities will impact STH prevalence or improve hygiene behavior
- Intervention will contribute to the global conversation around WASH-NTD integration

Recommendation 1. Create and facilitate a national Hygiene Stakeholder Cluster Group

This recommendation falls into the Advocacy, policy and communication domain. Joint advocacy by the NTD and other sectors for increased investment in WASH is essential to ensure that WASH coverage is scaled up more efficiently and effectively in Bangladesh. The rationale for this recommendation is that it:

1. Assigns responsibility for tasks within hygiene behavior change
2. Helps to identify gaps in hygiene approaches among various stakeholders

3. Elevates hygiene among national government priorities as the foundation for health, nutrition, food security, and education programs
4. Increases investment in hygiene behavior change and the enabling infrastructure.
5. Provides a platform for collective advocacy, sharing best practices, and identifying meaningful research questions.

Justification: Highly-cost reasonable and effective, as informal coordinating mechanisms and communities of practice require only minimal costs to convene stakeholders, particularly during the planning and establishment phases. The potential for impact is high if stakeholders are willing to align hygiene programs and approaches, which would increase sector coherence and the strength of messaging and advocacy, and reduce program redundancies. However, as stakeholder groups are complicated, risk is also high. Feasibility of initial establishment is high, particularly because Dr. Be-Nazir has offered to convene and chair the group. However, it may be within the purview of DPHE so early attention is needed to assure all stakeholders are aligned and motivated to make it function successfully.

Possible Activities

1. Develop a Hygiene Task Force/Cluster/Stakeholder Group that brings together stakeholders from nutrition, education, early childhood development, WASH, NTDs, and food security to:
 - centralize responsibility for hygiene implementation,
 - share best practices in hygiene behavior change,
 - harmonize messages to ensure community level messages don't compete,
 - where possible, consolidate efforts and divide responsibilities according to program strengths (in addition to project areas) to reduce redundancies (particularly in reference to national programs such as *Little Doctors*).
2. Advocate collectively: create a WASH for Health (or Health, Growth, and Livelihoods) Advocacy network. Bring government stakeholders and NGOs together to advocate for WASH collectively as the foundation for health, growth, and livelihoods. Together this network could advocate for upfront investment in WASH to enable sustainable progress.
3. Discuss and assign responsibility for operationalizing the National Hygiene Promotion Strategy and reaching hygiene targets
 - Organize a workshop to divide responsibilities and harmonize hygiene messaging/behavior change approaches. Incorporate STH messaging into hygiene and nutrition education and promotion materials, with a focus on harmonizing messages across programs/initiatives
 - Monitor implementation of hygiene promotion and behavior change within Bangladesh's national hygiene strategy

4. Where programs are already engaged in mass media, partner with advertising companies and television stations, and/or private companies like Unilever/Lifebuoy to conduct a series of ads that popularize hygiene. This approach could build on the success of Alive and Thrive's mass media campaigns to reinforce community promotion and household level behaviors, promote hygiene as a lifestyle, and as an aspiration by appealing to parents who want their kids to be healthy, smart, fully nourished/fully grown. Messaging should include effective hygiene components that impact STH transmission, i.e., handwashing with soap, environmental sanitation, protected play spaces for toddlers, wearing shoes, etc.

Recommendation 2: Develop a teacher-training strategy/innovation workshop on water, sanitation and hygiene by adapting existing WASHplus' WASH-Friendly Schools materials that emphasize behavior change rather than knowledge creation.

This capacity building recommendation uses existing platforms and WASH as an entry point that a) supplies teachers with up-to-date and innovative teaching methods and b) serves as a platform for innovative school-based solutions. These trainings could use and expand existing teacher training mechanisms, such as cascade training within the *Little Doctors* program to reinforce WASH/health messages and improve teaching methods in health and hygiene education. Ensure that workshops and trainings pay particular attention to methods for monitoring School WASH and routinely reinforcing WASH behaviors at the school level. Such training may accomplish several goals at once:

1. Elevate the issue of WASH in schools as a foundation for health and educational outcomes, that includes reducing STH infection
2. Emphasize practical and effective behavior change approaches that would flow from school to home
3. Train teachers in and provide practice for innovative teaching methods that serve within the WASH, health, and hygiene realms, but also serve more generally to update and improve teaching methods
4. Source local ideas for innovative School WASH solutions, by incorporating challenges for teachers and students to supply WASH solutions for scale up

This approach could potentially be tested in the WASHplus implementation areas in Barisal division by adding the corresponding school component.

Justification: The approach is feasible and cost reasonable, as it would use existing mechanisms. Impact is multiplied, as increased teacher capacity to engage in effective and innovative teaching methods implies cross-cutting gains across sectors and would simultaneously improve the *Little Doctors* program. Finally, this approach encourages innovation and bottom-up approaches that address long standing WASH challenges in schools that can be scaled.

We have included the third recommendation because it would contribute significantly to the global WASH-NTD conversation and numerous existing programs could add this research component and thus contribute to potential outcomes. However, although the technology is currently being developed, it is not yet fully developed or available to make this recommendation feasible at this time.

Possible Activities

1. Harness teacher eagerness for new knowledge. Teachers are eager for more training, including training on implementing successful WASH solutions. Capacity of teachers could be strengthened in creative ways, such as by conducting teacher innovation workshops. In these workshops, teachers could be tasked with finding locally appropriate solutions to WASH and STH challenges. Community groups could also be formed or community members involved in the teacher workshops to innovate methods for community-wide behavior change and adoption of necessary technologies. Both the process and the outcomes of these workshops would be beneficial; teachers receive training and learn innovative methods; and potentially useful technologies for scale up may result from the workshops. These groups could also be a conduit for sharing best practices in WASH and successful hardware designs.
2. Train teachers on innovative teaching methods with a hygiene component. Teachers could receive training in up-to-date and innovative teaching methods, particularly related to behavior change involving hygiene and handwashing with soap, and could design their own lesson plans or appropriate technologies. These components could be tied in with teacher training being rolled out for the *Little Doctors* program. Using these teaching methods, students could be involved in WASH exploratory activities. For instance, teachers could organize students to design a handwashing station in the same way that we have them design ideal latrines (asking a child “What would make handwashing fun?” might be a starting point).
3. Incorporate WASH into teacher training/orientation conducted for STH control. Currently CDC initiates a cascade training to bring one teacher from every school to be oriented on the deworming week program. The intent is to help teachers understand the rationale for the program and to be informed enough to reassure parents/guardians who may be concerned about deworming activities. If one or two activities related to hygiene practice could be incorporated into this orientation, it would be a good step for integration with relatively little additional financial outlay. Some ideas include: competitions to develop a handwashing station for multiple use, role plays with students, a checklist for children to use in their homes to promote improved practice.
4. Strengthen and scale up the hygiene behavior change approach within the primary education system. Build on and enhance existing programs such as *Better Health for Better Education* and *Little Doctors*, and use competitive advantages of government stakeholders within the National Hygiene Strategy framework. As mentioned above, use the training CDC gives teachers before deworming week as another entry point to

develop and promote feasible approaches to hygiene practice (not just messages and materials) that teachers could use to promote improved hygiene practices. For example (and mentioned elsewhere), teachers could sponsor competitions to develop a creative solution to a WASH problem (e.g., handwashing station for multiple pupils, flood-proofing the path to the latrine), lead student role plays about sanitation and hygiene behavior, or develop a checklist for kids to use in their homes to promote improved WASH practices with their families.

Potential Recommendation 3. Conduct operations research that addresses identified knowledge gaps at the WASH/STH intersection.

This recommendation would be feasible if it could take advantage of operational research opportunities to better illustrate which WASH interventions, in concert with MDA, have the greatest impact on STH infection. Incorporating STH baseline into existing WASH and nutrition programs is a relatively low-cost way to test the impact of specific WASH interventions on STH control. Though the impact of WASH on STH control is both presumed and demonstrated, the impact of specific interventions for controlling helminthiasis has not been well documented.

Justification: Because Bangladesh has many programs currently conducting WASH work, including nutrition programs that are already measuring the impact of WASH on variables such as stunting, the opportunity to attach additional research would be cost effective. As knowledge gaps persist, the potential for impact by filling those gaps is high. Utilizing existing programs and common study designs increases feasibility.

Possible Activities

1. Conduct STH baseline and endline prevalence surveys to assess impact of ongoing WASH implementations. This may include a sample of WASH/nutrition projects, such as WASHplus, SPRING, SHIKHA, SHOUHARDO as well as WASH/food security and livelihoods projects, etc. Another potential option is adding STH prevalence surveys into the transmission assessment surveys (TAS) conducted for lymphatic filariasis. This represents cost savings by taking advantage of existing WASH implementation, sampling procedures/or impact assessment for nutrition, and other outcomes. Adding STH baseline and follow-up presents the additional cost of stool samples (1.50 – 2.85 USD/child), and potential logistical challenges, as stool samples should be taken just prior to MDA.
2. Conduct an assessment of hygiene practice vs knowledge: Use MPH or anthropology students to conduct “rural home stays and cultural/language exchanges” while conducting structured observation of hygiene practices and knowledge/attitude assessments via mini ethnographies. The costs could be low, as students could be required to pay their own airfares, and would require institutional support only for

logistical and on the ground support such as training host families in housing and cooking practices to keep visitors safe, in-country transport to rural sites, and small stipends for families.

3. Conduct an environmental scan to establish where STH are in the environment (at schools/at homes) to enable targeted WASH interventions at critical points of infection. Several new STH diagnostic techniques in development do not rely on the standard stool sample, thereby eliminating some logistical difficulties typical of STH prevalence testing (collecting stool samples, transporting microscopes into the field, training microscopists, etc.) These new techniques use environmental sampling such as soil tests, surface swabs, and child hand rinses in combination with more advanced detection methods. Sampling can be restricted to specific areas suspected to have high levels of fecal contamination that might include surfaces and grounds around homes, schools and latrines. Identifying where STH occur most heavily in the environment will enable more targeted WASH implementation. Progress in refining these techniques and their methodology will be made in the coming 12-24 months. Bangladesh may be an ideal testing ground for some of these new techniques, given its progress in bringing down STH prevalence levels through treatment and the need to further improve WASH conditions at critical locations such as homes and schools to further reduce infection levels.
4. Develop and test school handwashing station designs to incorporate into the School WASH Block Design. The tube well pump or single-basin handwashing stations do not allow multiple children to practice handwashing simultaneously, and children having to wait to wash their hands means they are less likely to do so. This problem is especially significant in schools with large populations. Creating a multi-person, child-friendly handwashing station with local materials would promote an enabling environment for handwashing.

Conclusions and Next Steps

Summary of Country Debrief/Response

The team organized two debrief meetings: one with Drs. Be-Nazir and Haq from CDC to present the assessment findings and to discuss the potential opportunities, and one with USAID/Bangladesh.

Dr. Be-Nazir welcomed the assessment and the presentation of findings. As Bangladesh is close to eliminating LF, the program will be left tackling STH control, and Dr. Be-Nazir believes this will require expanding the program scope to include other opportunities to decrease prevalence. He believes WASH to be a key activity with which the STH control program needs to engage and has pledged support and leadership in moving activities forward. He clearly articulated his vision of the steps for moving forward:

1. Design a concept paper for integrating WASH into STH control
2. Convene a multi-stakeholder task force that would start with a meeting to brief different parties on WASH and STH, elicit input on what needs to be done and how, and build ownership for a WASH-STH platform
3. Develop a strategy for WASH-STH integration with members of the multi-stakeholder task force and elaborate a phased action approach for implementing on a national scale.
4. Key stakeholders would elaborate a budgeted action plan for rolling out over a longer timeframe.

Members of the assessment team briefed USAID/Bangladesh on the visit and the potential opportunities but had not yet solidified its results into recommendations. As such, the Mission team was hesitant to support any recommendations without clear next steps and demonstrated buy-in/support from communities. Mission staff was concerned that any centrally-funded activity must support the wider country operational framework and engage country mission staff in any ongoing activity plans.

Next Steps

This is the first of two country assessments. The WASHplus team will engage with the USAID/NTD program to schedule the second country assessment. Simultaneously, we will discuss the recommendations presented in this report and discuss a plan of action for ongoing WASH-NTD integration activities.

Annex 1

Schedule of Meetings and Visits

Meeting Date	Meetings / Visits
Sep 1, Sunday	<ul style="list-style-type: none"> Ministry of Health and Family Welfare – Communicable Disease Control Division WaterAID
Sep 2, Monday	<ul style="list-style-type: none"> FHI 360 DFID USAID
Sep 3, Tuesday	<ul style="list-style-type: none"> <i>Little Doctors</i> program (2 schools) SHIKHA/Alive and Thrive, FHI 360
Sep 4, Wednesday	<ul style="list-style-type: none"> Department of Public Health Engineering CARE
Sep 5, Thursday	<ul style="list-style-type: none"> BRAC Save the Children – Health Division UNICEF/WASH Section
Sep 6–7, Weekend	Village Education Resource Center
Sept 8, Sunday	<ul style="list-style-type: none"> Travel to Barisal Local Education Department - Barisal
Sep 9, Monday	<ul style="list-style-type: none"> Civil Surgeon - Barisal World Vision – Barisal Department of Public Health Engineering - Barisal
Sep 10, Tuesday	<ul style="list-style-type: none"> SPRING site visits <ul style="list-style-type: none"> Clinic health education session Home visit Farmer field school courtyard session Travel to Borguna
Sep 11, Wednesday	<ul style="list-style-type: none"> BRAC – Borguna office Alive & Thrive project site visits <ul style="list-style-type: none"> Four homes Return to Barisal
Sep 12, Thursday	<ul style="list-style-type: none"> PROTEEVA office Community school supported by PROTEEVA Government school Return to Dhaka
Sep 13-14, Weekend	
Sep 15, Sunday	<ul style="list-style-type: none"> Debrief with Ministry of Health and Family Welfare – CDC Helen Keller – SPRING team
Sep 16, Monday	<ul style="list-style-type: none"> USAID Mission debrief
Sep 17, Tuesday	<ul style="list-style-type: none"> Save the Children – School Health and Nutrition division World Vision FHI 360 debrief

Annex 2

Contacts

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Annex 3 – Findings

Water, sanitation and hygiene (WASH)

Bangladesh has made enormous strides in the past 25 years in water and sanitation. Safe water availability according to JMP criteria is relatively high in Bangladesh (85%) because of easily accessible groundwater and efforts by the government to prioritize increased access.³¹ Wells contaminated with arsenic, manganese, and iron are largely identified and labeled to prohibit use as a drinking water source.³² Efforts at shifting communities away from drinking arsenic contaminated water have been very successful. Saline intrusion into groundwater has been a problem of increasing significance.³³ Community-led total sanitation (CLTS) efforts have yielded a country that is 94% open defecation free, though challenges still exist in depositing fecal waste in a sanitary manner; many latrines fall short of standards for improvement. Mortality from diarrhea has declined and morbidity is reduced.³⁴

The Department of Public Health Engineering (DPHE), under the Ministry of Local Government, is the government entity responsible for ensuring the presence of water supply and sanitation infrastructure in communities and schools. Within the last few years and with assistance from UNICEF, all primary schools have been tasked with completing an annual inventory of their water and sanitation infrastructure, which is collected at the upazilla (or subdistrict) level. This information is then conveyed directly to the national DPE, although sometimes this information does not appear to reach the district level primary education office.³⁵ Recent inventories have included water quality testing for all primary and secondary schools. Using the education management information system at the national level, DPE has identified and prioritized those schools most in need of water and sanitation infrastructure or repair. The new PEDP III program will target 18,000 schools for WASH repair and infrastructure, and the DPHE will be responsible for tube well and latrine repair and construction in the schools identified by the DPE. UNICEF has supplied the design for an ideal school WASH block, which includes separate flush latrines for boys and girls, latrines for disabled children, separate handwashing stations, and installations for menstrual hygiene management. This WASH block design is still being discussed because the ideal is priced at Tk1,100,000 (\$13,750), which is prohibitively expensive. An alternate design being discussed reportedly is priced at Tk400,000 (\$5,000), which would also be beyond the reach of most school budgets. Fortunately, schools within the PEDP III program will receive 30,000 taka per year—a discretionary fund to support operation and maintenance of WASH infrastructure. Schools currently receive 1,500 taka per month to purchase all school materials, including soap. Interviews with district primary education officials suggest that this amount is insufficient to ensure the continued provision of soap at schools, in addition to other necessary materials such as chalk.

³¹ Joint Monitoring Programme for Water and Sanitation. 2012. UNICEF; WHO

³² Interviews with DPE staff

³³ Interviews with CDC, DPE and DPHE staff.

³⁴ Joint Monitoring Programme for Water and Sanitation. 2012. UNICEF; WHO

³⁵ Interviews with DPE and DPHE staff

In 2011, Bangladesh developed a comprehensive National Hygiene Strategy that outlines all the key aspects of hygiene promotion including strengthening stakeholder coordination, mobilizing mass media, defining roles and responsibilities of government stakeholders, determining domains of behavior change, and allocating specific funds to raise awareness on sanitation and hygiene. The responsibility for implementing this strategy was given to the Department of Public Health Engineering—an institution filled with engineers. Although the strategy states that DPHE staff has gained experience in behavior change and hygiene promotion, staff indicate that this experience is still inadequate and lacking within the agency. Still, DPHE is taking its mandate to promote hygiene seriously and has begun to ask critical questions about how they can implement this strategy. It is unclear which components of the strategy have been operationalized since the completion of the document in 2011. It is also unclear how or if the strategy has informed the development and implementation of hygiene promotion activities currently being undertaken by various organizations.

Although DPHE is responsible for the hygiene strategy, stakeholders report that the IEC Division of the MOHFW has a committee that approves all health education materials. It was not clear whether these two groups collaborate at the national level.

Neglected Tropical Diseases (NTDs)

The GOB's NTD program through the MOHFW LF Elimination and STH Control Program is well established. The program is nearing elimination of LF from the country through administration of albendazole in combination with diethylcarbamazine citrate (DEC) in endemic districts. Johnson & Johnson donates mebendazole for treating primary school-aged children via the WHO, with support from Children Without Worms. Primary school-aged children in districts endemic for LF receive treatment once a year with albendazole/DEC, and a second round of treatment specifically for STH using mebendazole; in non-LF districts, two rounds of treatment with mebendazole are given to all primary school-aged children during vitamin A and national immunization weeks. The NTD program is scaling up the mebendazole distribution in districts where LF treatment has stopped when elimination goals are met, so a second round of mebendazole treatment is given in these districts.

The NTD program is required to apply for the mebendazole donation annually from WHO and report drug coverage among school-aged children. The STH control program has examined the success of their drug coverage (i.e., how many children are actually ingesting the deworming tablet during each MDA round) with the support of the US Centers for Disease Control and Prevention. This survey, conducted in 2011, found that coverage fell short of national targets, especially among non-attending school-aged children, and efforts were undertaken to improve coverage levels.³⁶

The STH control program reaches children under 5 through deworming during vitamin A distribution on national immunization days. Despite good coverage, STH reinfection rates are high and people over 12 years of age are not reached with a deworming program. Deworming

³⁶ (Data from CDC/CWW, publication forthcoming.)

medicine, however, is available in the market place and people do purchase it, though coverage via purchase is not well understood.

NGO Programs

WASH programs and integrated community programming

UNICEF and **WaterAid** are the most active WASH stakeholders that the team met in Bangladesh. UNICEF's program is largely being implemented through the government PEDP III program described above. Working through local NGOs, WaterAid has focused primarily on providing infrastructure as part of its community programming. Recently, however, WaterAid has been exploring how to frame its WASH activities within a health focus. In 2014, WaterAid intends to reevaluate how health indicators are incorporated into their program monitoring frameworks. As the key implementer of the WASHplus activity in Bangladesh, WaterAid is exploring best practices for integrating nutrition into WASH programming. BRAC's WASH program focuses on software and hardware components, and to some extent, hygiene promotion. BRAC's WASH program has not traditionally used health indicators, and only recently has incorporated child mortality as a targeting criteria and an impact indicator. The program will include nutritional outcomes and other maternal and child health indicators soon.

BRAC is a large, local NGO that started to help refugees returning to Bangladesh after the war for Independence. It currently has 5,000 offices, 50,000 staff, and 50,000 teachers. Initially it placed expatriate doctors in villages but then began to train a cadre of frontline health workers/volunteers. The health, population and nutrition department focuses on maternal, newborn and child health and operates a community health volunteer (CHV) program. Though a parallel system to that of the government, BRAC's community health workers and volunteers (*Shasta Shabika* and *Shasta Kurmi* respectively) work closely with the government conducting community health promotion and education activities. They also sell basic pharmaceuticals and health items from a health kit. This kit includes micronutrients (Sprinkles), vitamins, folic acid, sanitary napkins, scabies treatments, and deworming tablets, among others. Selling these items incentivizes CHV's work in community health promotion and supplements their income. BRAC trains all CHVs in basic health techniques and they refer any complicated cases to the upazilla (subdistrict) level health clinics. (The BRAC WASH program, distinct from the health program, is described below.)

Multiple programs targeting community and households seek improvements to nutrition and WASH practices. The **Alive and Thrive** and **SHIKHA projects**, managed by FHI 360, are implemented in different areas using a similar model. These programs counsel pregnant women and new mothers about exclusive breastfeeding, complementary child feeding, and proper child nutrition, and emphasize handwashing before preparing food and feeding a child. Households receive a handwashing station (i.e., plastic bucket and a pour jar) and stickers for the food preparation areas to remind mothers to wash their own and their child's hands. The USAID-funded **SPRING** project managed by HKI in Bangladesh, supports improved household food production, i.e., poultry, fish and vegetable production for households with children under

two years of age and/or a pregnant woman. Direct beneficiaries are counseled on exclusive breastfeeding, complementary child feeding, and proper child nutrition. Indirect beneficiaries are reached through health and agriculture extension workers who convey hygiene and nutrition messages through “farmer field school” sessions and community health education sessions at clinics. Making a tippy-tap has captivated beneficiaries and their neighbors. SPRING is monitoring uptake of tippy-taps, but is not measuring handwashing behaviors. **CARE Bangladesh’s Shouhardo II project** supports integrated programs incorporating health, hygiene and WASH elements with nutrition, livelihood, and equity promotion in communities. **World Vision** engages communities in extensive conversations prior to implementation to assess motivation and needs, including for WASH hardware. In Barisal, World Vision is just starting a community-based program focused on early childhood development, nutrition and WASH, targeting children under 5 and pregnant and lactating mothers. This program will also sensitize the community about national deworming efforts.

Primary Education System

Bangladesh provides universal primary education for all. The education sector overall receives 19% of the total annual budget of which 45% is dedicated to primary education (8.5% of the entire budget). The government has registered over 63,000 primary schools, which includes approximately 23,000 community schools that have recently come under the government system. To accommodate the numbers of students, most primary schools (91%) have two shifts: a morning shift for classes 1-2 and an afternoon shift for classes 3-5.

This system requires over 250,000 teachers who take a diploma course, which includes hygiene education. A new curriculum was introduced in 2012 that was developed by BRAC, Save the Children, and UNICEF. A recent article in the New Age newspaper ([September 14, 2013](#)) indicated that the new school curriculum emphasizes critical thinking, creativity and innovation. This emerging interest in inductive learning provides an opportunity that could be harnessed. Textbooks were just delivered in January and most teachers have not yet been trained. Lessons on hygiene are included in all grades, and knowledge of handwashing was high in the schools visited. In addition, DPE shared a manual for teachers called *Better Health for Better Education* that has concrete lessons covering many areas of health including water, sanitation, hygiene, nutrition, and deworming. The teaching approaches in this manual seem less didactic than is typical. It is unclear to what extent this manual has been rolled out to teachers; school personnel and officials in Barisal were not familiar with it.

The approved standard for water and sanitation in schools is one functional tube well for the school and separate toilets for girls and boys: one toilet for every 50 girls and one toilet and one urinal for every 70 boys. Most schools have at least one functional toilet. The UNICEF-funded school health program mentioned above, PEDP III, has been operational for several years. DPE officials, and the teachers with whom the team met, indicated that water access and sanitation are considered top priority by teachers in schools, but that behavior change is the most challenging aspect. DPE officials and teachers also noted that teachers are interested in learning new techniques and value training opportunities.

DPE provides logistics support for the MDA of deworming and teachers receive a one-day training before the MDA. Approximately 3,000,000 children receive high protein biscuits on a daily basis and a few schools have school feeding programs where children receive a hot meal.

Integrated school-based programming

Many stakeholders are saying, “If children are healthy, they will learn better.” Multiple stakeholders bring different integration components to Bangladesh primary schools, including early childhood development, reducing malnutrition, and promoting hygiene and latrine use to reduce illness. The government’s *Little Doctors* program, designed and rolled out by the CDC, uses a child-to-child learning approach to convey information on health, nutrition and personal hygiene topics. With this approach, 15 students from grades 4 and 5 assist teachers with administering deworming tablets during deworming weeks share information on health and hygiene from a flip chart, and measure height, weight, and vision acuity of their classmates. While most schools have selected students to serve as *Little Doctors*, DPE officials estimate that the program has only been introduced to 12,000 schools as CDC is still seeking funding to print materials and train teachers to scale up to all 63,000 government primary schools. Though the program organizers understand the need to focus more efforts on training teachers, limited human resources are available. Program training is currently rolled out via a cascade model where the program managers from the CDC train district health workers who train upazilla (subdistrict) level health workers who train teachers.

Save the Children has multiple projects that target school health and nutrition, including **PROTEEVA** project (Promoting Talent through Early Education), **SHIKHON**, and **Shishuder Jonno**. These programs provide nutrition and hygiene messages to students and their parents; support the administration of deworming, vitamin A and iron tablets to children; and provide pre-school education through cost-sharing teacher salaries. In addition, the programs repair tube wells and toilets in schools when possible, in collaboration with DPHE to avoid duplication. In areas with arsenic problems, the programs have also dug deep tube wells. At the community level, the program has provided water treatment plants for arsenic-contaminated areas as well as low-cost latrines. Save the Children started a Student Brigade: a child-to-child education program that was renamed *Little Doctors* in 2012 to match the government’s program. Save has its own handbook, but the messages that are delivered are the same. This program trains and engages teachers more deeply than the government program.

Interest in integration/working on an integrated program

Political will for WASH and STH is high and a degree of coordination exists, particularly at the central level. The GOB has prioritized water and sanitation and stakeholders throughout the government see WASH as a critical component to national development. Engaging DPHE in the PEDP III program process, and defining its responsibility for ensuring access to safe drinking water and improved sanitation in schools, has spurred closer **coordination** between DPE and DPHE. Primary schools fill out a form at the beginning of each school year that goes to the national DPE office. DPE and DPHE together decide how to prioritize need since need usually outstrips available funds. While this action goes a long way, funding falls short for many of the 63,000 government schools that need services.

Coordination also exists between DPE and the MOHFW's CDC program for the twice annual deworming campaigns that reach 103,000 primary schools in Bangladesh— government schools, madrassas and other private institutions. Indeed, funding also exists to support coordination. CDC funds district level activities and DPE funds upazilla activities. So while CDC provides the deworming medicines and training to district level officials, DPE assures that the schools deliver it to children. They have record books to ensure that children absent the first day of the campaign receive the drug the next day they return to school. As this is the 11th round of deworming, the delivery mechanism is tested and functional, although coverage surveys indicate that improvements could increase coverage numbers particularly among non-enrolled school-aged children.

Examining coordination at lower levels brings new insights and challenges. Although coordination was genuinely visible at the national level, district representatives from DPHE, the Civil Surgeon's office, and DPE were much less informed about the other's activities. The District Commissioner holds a monthly meeting for heads of all departments, but this seems relatively perfunctory and not focused on how to work more closely together. DPE representatives indicated they did not know which schools were receiving WASH infrastructure as these decisions are made at the national level. However, as most representatives interviewed were new to the district, this finding may be tempered. DPHE indicated that it does inform DPE which schools the department is tasked with assisting. Because deworming drugs are shipped from the central stores, coordination with the civil surgeon's office may be less important.

The MOHFW indicates that the *Little Doctors* program is coordinated with the DPE although interviews with the district level DPE in Barisal suggested that coordination, at least in the Barisal district, is very limited, and that the DPE plays an insubstantial role in the program. Likewise, the district DPE in Barisal suggested that, though they were aware of the upcoming deworming campaign, the district officials may not have a role in the campaign outside of sanctioning teacher participation.

Donor climate

Donor engagement in Bangladesh is high with many contributing to the government and NGO sectors. DFID, UNICEF and World Bank all provide a large proportion of their funds directly to the government through sector program approaches. DFID for example is investing £120M in the government's health population and nutrition program: £90M is programmed directly by government and £10M is a technical assistance fund that the government and NGOs can access. DFID also contributes £200M into the project cycle management fund operated by the World Bank. This fund is available to government programs that show need and a coherent plan for using the funds. UNICEF's program works through the government also, though some stakeholders feel expertise and strong technical knowledge is lacking among government partners. While UNICEF has funded the construction of tube wells, management and monitoring of these water points are weak, if they exist at all. Further, this government-led program has not garnered community engagement, thus any gains are limited.

USAID is “supporting the GOB’s long term development goals while focusing on improving the lives of the poor.”³⁷ USAID’s program has four components of which two are related to this assessment—Improved Food Security and Improved Health Status. Potential activities proposed by the assessment team could fall under two IRs in particular: IR2.3 - Improved Nutrition and Dietary Diversity and IR 3.2 Increased Use of Integrated Essential Family Planning, Health & Nutrition Services. Both IRs have a geographic focus in south-central Bangladesh.

³⁷ USAID. 2011. Bangladesh Country Development Cooperation Strategy FY2011- FY2016.

Annex 4 – Case Studies

Field Visits – Barisal, Patuakhali, Borguna

A Tale of Two Schools (Barisal)

Sitting in the shadow of a long bridge at the edge of a river sits a four-room primary school. Two ten-year old girls in their red and white school uniforms quickly fill their plastic bottles from the tube well in front, waiting for the afternoon session to start. Started by the community 11 years ago, the school derives support from the PROTEEVA program (Promoting Talent through Early Education) that focuses on early childhood education and educational outcomes. The school of 191 students operates in two shifts, morning and afternoon, and approximately half of the students are present at the school during each shift. The school has two latrines designated for students, but only one is functioning. The functioning latrine is clean; the head teacher reports paying a cleaner with her own money.

The largest room is the head teacher's office, now shared by a class of pre-primary children who are sitting on a mat playing with blocks and crayons while their teacher leads them in lessons. Parents and PROTEEVA share the cost of the pre-primary teacher's salary. In addition to early childhood education, PROTEEVA provides handwashing stations (plastic buckets with pour jars, and a bar of soap per month), and nutritional supplementation and deworming (iron supplementation is provided once a week for 13 weeks, and deworming takes place twice a year at school.) PROTEEVA also trains teachers in hygiene education and provides flip charts and posters. The school keeps meticulous records of child attendance at hygiene education sessions with guardians, and nutrition supplementation and deworming. The students are excited to have visitors and eager to share their knowledge about handwashing. When prompted, they recite in unison the five critical times they have been taught to wash their hands: in the morning, before eating, after eating, after using the toilet, and in the night. They all say they use a latrine at home.

After more than a decade operating as a community school, it has recently become government registered, fueling hopes for greater resources and support including repair of the non-functioning latrine and overall improvements to the classroom facilities, which are becoming dilapidated. The school management committee is very engaged and conducts bi-monthly meetings. Teachers also make home visits to the community to reinforce knowledge and to promote monthly parent education on various topics such as handwashing with soap, proper nutrition, using a latrine, and sensitization about government-sponsored nutrition supplementation, and deworming of children in school.

A scant two kilometers away, at the intersection of two roads, sits another school. This government school has operated for decades. It too has four classrooms and a teacher's office that is filled with posters documenting the schools performance and highlighting government educational programs. The tube well in front of the school lies idle since a pump part has broken; the head teacher reports that if children wash their hands they use water collected from the pond; they bring water from home to eat with the high-protein biscuits they get at

school. The latrine is said to be non-functional, though a new pan seems to have been fitted recently. The path to the latrine is often submerged making it impossible to traverse. Instead, children use the neighbor's latrine if necessary. The head teacher states that deworming takes place quarterly, but may be confused with other programs since deworming is done twice annually through the national program. The curious students are fascinated by the visitors and talk about the three critical times they know to wash their hands—morning, afternoon, evening. Handwashing facilities are non-existent, so no scope exists for practice. The teachers are seasoned, but talk about the difficulty in achieving high levels of community involvement with the school despite repeated attempts to engage parents.

The contrast of the knowledge and practice within the walls of these schools, as well as community support each receives, was telling. At the first school, engaged parents support education and the school's operation: the premises are not fancy, but functional including a latrine and water point. The involvement of an outside program further motivates teachers and the community and spurs them to do more. The first school has hygiene education aids, and the children are more knowledgeable about proper hygiene. The teachers at the second school are obviously committed to their work and do their best to engage their community in the school's operation, but clearly have not successfully advocated for the additional resources needed. Both schools clearly need additional support for latrines, and in the case of the second school, hand pump repair. The second school reports that despite regular visits from DPE officers and requests for improved latrines, the current one remains inoperable. Clearly, maintaining WASH hardware is a major challenge for schools, whether supported by NGOs, communities, government, or a combination of the three.

Community development projects with a WASH and nutrition component (Patuakhali + Borguna)

The team identified two nutrition promotion projects that incorporated messaging around WASH, particularly hygiene. SPRING, a USAID-funded project managed by HKI in Bangladesh, aims to reduce stunting by implementing essential nutrition and essential hygiene actions to the community through different direct and indirect vehicles. This includes promoting a tippy tap in two household sites: at the food preparation area and outside the latrine. Alive and Thrive, an FHI 360-led Gates-funded project implemented by local partners, also uses a community delivery approach to reach mothers. The assessment team conducted field visits to SPRING and Alive and Thrive in Patuakhali and Borguna districts respectively.

SPRING provides education and support for household food production, early childhood development, child feeding, and hygiene behavior change. The project reaches new and pregnant mothers and men/"in-laws" through courtyard 'farmer field school' sessions, led by agricultural extension workers; mothers are also reached by community health volunteers conducting educational sessions at government-run health clinics. Messages about child health and nutrition, exclusive breastfeeding, complementary feeding, and hygiene are shared. The project teaches communities how to make tippy-taps—low-cost handwashing stations—using locally available resources, i.e., one-liter bottles and string, and place them at the latrine and food preparation areas. The SPRING project helps to sensitize the community about deworming

children in support of the national school-based deworming campaign and the deworming treatment that is available at community clinics. SPRING supports improved household food production through home visits, where families receive support for improved household vegetable gardening, poultry and fish production. During these visits, hygiene and sanitation messaging is also shared.

The Alive and Thrive project in Borguna is implemented by BRAC. Community health volunteers (CHVs) conduct monthly home visits to new and pregnant mothers; at these visits, CHVs counsel on exclusive breastfeeding, complementary feeding, and handwashing behaviors. The project provides plastic buckets and pour jugs for handwashing to households to place at the site of food preparation and eating; stickers remind mothers to wash their hands (and their child's hands) before food preparation and feeding. Mothers learn about STH infection, and can purchase deworming medication from the CHVs.

Both SPRING and Alive and Thrive emphasize handwashing as a critical component for child health. Both programs have condensed the 'five critical times' for handwashing down to 2 or 3 messages—wash hands before preparing food and feeding a child, and after using the latrine. The approach to enabling improved handwashing behavior varies, with SPRING encouraging households to create their own tippy-tap handwashing stations using spare materials, and Alive and Thrive providing high-quality plastic containers. The assessment team heard feedback at the national level that the latter, more expensive type of hardware is sometimes reserved by families for use by guests or for other uses, rather than for the intended use of regular household handwashing. While the SPRING project has seen high uptake of the tippy-tap concept, it is unclear if handwashing behaviors have actually changed as a result. Both projects are faced with the issue of maintaining soap provision near handwashing stations. The Alive and Thrive project is experimenting with the use of soapy water containers, rather than bar soap, hung near handwashing stations.

Accurately judging behavior change is difficult when a group of foreigners visit a project. The households had prepared for the visit—handwashing stations were full of water and had soap. It is not clear how often they were used. One household had a new bar of soap, one household had a sliver of used soap. All households had the stickers in different places. Mothers were willing to talk and answer questions, but were also heavily prompted by the accompanying health workers. All households had latrines and they were used. One household had two latrines – one for the family and one for visitors.

While STH infection and prevention is not a core component of either project, worms are occasionally discussed, especially during health talks. Mothers recognized that deworming children was important, either through the school program or by purchasing deworming medication from the CHVs. One mother *knew* her children did not have worms because they didn't grind their teeth at night—incorrectly considered a symptom of infection. A school-aged child in the same household reported that she receives deworming medicine at school, confirmed by other mothers. Neither SPRING nor Alive and Thrive directly support improved sanitation. SPRING's CHVs may facilitate the sale of improved latrine rings and slabs, and

community distribution centers exist to provide hardware to poor families. However, uptake and use is unclear and a scan of latrines throughout the field visit found many latrines that hung over water bodies or had pits that emptied into the fields.