

Saving lives: sanitation and water for all would save 2.5 million lives

WaterAid April 2012

1. Invest now to save lives

On April 20, 2012, ministers from around the world will meet in Washington, DC to discuss how to address the crisis in safe water supply, sanitation and hygiene (WASH). This will be the second High Level Meeting of the Sanitation and Water for All (SWA) partnership. Launched in 2010, SWA brings together developing country governments, donors and civil society organizations committed to accelerating progress towards universal access to WASH through increased and more effective investment. The importance of this initiative cannot be underestimated. If the SWA achieves its long term vision of providing water and sanitation to those currently unserved, the lives of the 2.5 million people who die every vear as a result, would be saved.2

The global Millennium Development Goal (MDG) water target (to reduce by half the proportion of people living without safe water by 2015) has now been met. But the poorest countries and communities are being left far behind and many countries in Sub-Saharan Africa, Southern Asia and Oceania remain off-track.

However, it is the slow rate of progress on sanitation that should be the single greatest cause for concern, because of the brake it puts on progress, especially in public and child health. Promotion of sanitation and hygiene is among the most cost-effective of all public health interventions and as such it is imperative that we invest now for the benefit of future generations.

At current rates of progress the sanitation MDG target (to reduce by half the proportion of people living without access to an improved toilet by 2015) will be missed by a huge margin. There are more people in the world today without sanitation than there were in 1990. The majority of developing countries are seriously off-track and, unless urgent action is taken now, Sub-Saharan Africa will not meet the target for over 150 years. This lack of basic facilities to hygienically dispose of human feces is the primary cause of diarrheal diseases, which kill thousands of children around the world every day. But this need not be the case.

The 2012 SWA High Level Meeting is specifically calling on world leaders to keep their promises and to support the 57 countries currently most off-track to achieve their MDG targets for sanitation.³ WaterAid estimates that if these countries achieve their MDG targets for sanitation by 2015, at least 400,000 additional children's lives would be saved.⁴

This short paper highlights why the meeting is so important, sets out the case for investment in WASH, and summarizes what needs to be done to get countries back on track.

2. Importance of the SWA High Level Meeting

The 2012 High Level Meeting is a critical milestone in efforts to accelerate progress towards the ultimate goal of sanitation and water for all. The World Health Organization (WHO) estimates that if everyone had access to water and sanitation, 2.5 million lives would be saved every year due to the resulting reduction in deaths from diarrhea, undernutrition and other WASH-related diseases. The vast majority of lives saved (around two million) would be children under the age of five.

Across the world, countless people are working to solve the WASH crisis, but leadership and political priorities matter. Politicians, both in developing and donor countries, hold the key to kick-starting a response. Only they can push for investment at the highest level, and more importantly push for it to be spent where it is needed most. That is why the High Level Meeting is so important. It is about agreeing the coordinated action that needs to happen in order to increase and improve investment in WASH and to strengthen accountability for results achieved on the ground.

The overriding priority must be getting back on track for sanitation. The evidence shows that it is the element of WASH that brings the greatest health benefits and yet it currently ranks among the most off-track MDG targets.⁶

3. The case for investment in WASH

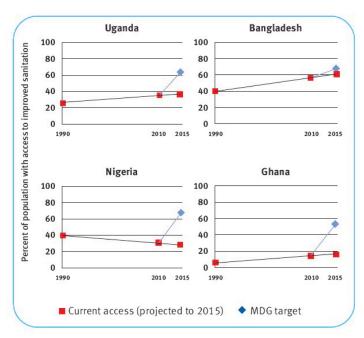
A safe toilet and clean water to drink are the keystones to human development and public health, not to mention fundamental human rights. There are numerous reasons why WASH is good for development: preventing illness and death, improving gender equity in educational enrolment and retention, reducing gender inequality, and more. But this meeting is about investment. Below is an overview of important reasons to **invest** in WASH now in order to save lives in future.

The importance of WASH, particularly sanitation, for improving health is well-established. Diarrhea and other diseases associated with inadequate sanitation are a major source of illness affecting the quality of life of millions of children and adults around the world. Lack of access to WASH has profound impacts not only on individual health and welfare but also on labor force productivity.

WHO has calculated that poor quality sanitation and lack of access to safe drinking water causes 1.4 million child deaths every year due to diarrhea, and that these deaths are **preventable** through basic WASH interventions that separate human feces from human contact.⁸ The impact of diarrhea continues to outstrip that of many other diseases in developing countries – indeed, in sub-Saharan Africa, diarrhea is now the single biggest killer of children under five.⁹

Sanitation and water for all remains the long-term goal. But what difference would it make if the 57 countries currently most off-track for sanitation were successfully brought back on track to meet national MDG targets? Examples are given in the charts below for SWA focus countries of Bangladesh, Ghana, Nigeria and Uganda.¹⁰

Figure 1: Many countries' current progress falls behind what is needed to meet the sanitation MDG



The graphs show that if we assume 1990-2010 trends will continue to 2015 (projected coverage), all four countries will miss the sanitation MDG target (target coverage), a shortfall associated with thousands of child deaths and millions more children suffering preventable illness. However, many lives could be saved with a big push to close the 'MDG gap' and meet national MDG targetsfor sanitation.

The challenge of maintaining existing rates of progress should not be underestimated, particularly in countries where current levels of investment are low, but if governments were to step up their investment in WASH a significant number of additional lives could be saved. Bangladesh, for example, could save 4,000 additional lives, compared with 2,000 at current

rates of progress. Uganda could save 11,000 additional lives, but if current levels of investment continue then only 700 would be saved. The sanitation situation in Nigeria is currently getting worse year on year but if it got back on track 100,000 additional lives could be saved.

This is the case for all countries off-track for the sanitation MDG (see Annex). As the below table demonstrates, the majority of potential beneficiaries are in Sub-Saharan Africa, the region that is most off-track. If all 57 of the most off-track countries got back on track to meet their MDG targets for sanitation by 2015, at least 400,000 additional children's lives would be saved. This is why it is so important that world leaders keep their promises.

Table 1: Children's lives that would be saved by getting the most off-track countries back on track to meet their MDG targets for sanitation by 2015 (see appendix for full data)

	Lives saved assuming current trends continue	Additional lives saved by meeting national MDG targets for sanitation
Sub-Saharan Africa	15,542	280,203 ¹⁰
South Asia	21,335	84,39110
Latin America and Caribbean	725	3,492 ¹⁰
East Asia and Pacific	2,910	4,116 ¹⁰
Other	1,558	480 ¹¹
Total (off-track countries)	42,070	372,682 ¹²

If all 57 of the most off-track countries got back on track to meet their MDG targets for sanitation by 2015, at least 400,000 additional children's lives would be saved.

Accelerating economic development

Investing in WASH is not only a humanitarian imperative. The contribution of improved WASH to economic growth and poverty reduction is well-established. Improvements in sanitary health were instrumental in historical increases in economic productivity and growth in Europe and North America, and more recently in East Asia and Latin America. Investment in WASH is crucial to enable developing countries to lift themselves out of poverty.

A landmark WHO cost-benefit analysis found that for every \$1 invested in WASH, on average \$8 is returned in economic benefits. More recently, the World Bank has highlighted the economic costs associated with

inadequate sanitation. For example, poor sanitation alone costs Nigeria US\$3bn each year or 1.3% of GDP, mainly due to healthcare costs and premature death.

It is estimated that African and Asian countries lose up to 6% of their GDP each year due to lack of access to safe water and sanitation.

It is worth noting that many of these cost-benefit analyses actually **underestimate** the benefits of WASH as they typically focus on diarrhea alone and do not include potential impacts on nutrition or intestinal worms, not to mention the non-health benefits of WASH related to dignity, time and labor savings related to water-fetching and girls' education, which are more difficult to calculate.

But what is clear is that increased investment in WASH, and sanitation in particular, in developing countries could reduce economic losses and in turn increase economic growth, while at the same time help to reduce poverty.

Value for money and cost-effectiveness

More and better investment is needed, particularly in sanitation. Increased public investment is often a hard sell in times of economic stress and there is an increasing focus on value for money and cost-effectiveness among developing country governments and donors. But as a matter of fact WASH interventions offer extremely good value for money, particularly in off-track developing countries where the burden of diseases attributable to inadequate WASH is greatest.

WASH interventions perform very well when comparing the cost-effectiveness of interventions on their health impacts. There is strong evidence that WASH compares favorably to most other interventions using standard measures such as US\$ per DALY (Disability Adjusted Life Year) averted. For example, a large World Bank study found that hygiene promotion was **the most** cost effective of the hundreds of health interventions it reviewed at \$3 per DALY averted. Sanitation promotion is also in the top five, performing as well as better-publicized interventions like vaccines, mosquito bed-nets and vitamin A supplements.

The evidence is clear: not only would a big push towards meeting the MDGs have a big impact on reducing child mortality and morbidity, it would also represent excellent value for money.

4. What needs to happen at the 2012 SWA High Level Meeting?

If off-track countries are to have any chance of getting back on track to meet the MDG targets for water and sanitation then it is imperative that national governments and donors demonstrate stronger leadership in translating political commitments into reforms, reforms into actions, and actions into results on the ground. In those countries where sector capacity to develop and implement effective plans and strategies is weak, targeted support* will be

required in order to help establish clear, actionable and accountable investment plans. National governments and donors will then need to substantially increase existing levels of investment and ensure that it is effectively coordinated and targeted where it is needed most.

The Sanitation and Water for All partnership is a huge opportunity to reverse the political and financial neglect of a crisis that is undermining progress towards the MDGs and human rights more broadly. Governments at the High Level Meeting must commit to:

- 1. Increasing the human, political and financial resources dedicated to sanitation and water to achieve the MDGs.
- 2. Investing resources in the countries and populations that have the least access to sanitation and water.
- 3. Improving the effectiveness of investments by strengthening coordination between governments and donors, providing targeted support to fragile and conflict affected states, and promoting transparency and accountability for results achieved.

5. Conclusion – last chance for a big push on sanitation

World leaders committed to the sanitation MDG target in 2002, and it remains achievable in many countries. Ten years later, many developing countries are seriously off-track and this makes it doubly important that we do not give up. WaterAid estimates that if world leaders keep their promises and support off-track countries to achieve their national MDG targets for sanitation by 2015, at least 400,000 additional children's lives would be saved. Furthermore if the SWA achieves its long term vision of providing water and sanitation to those currently unserved, 2.5 million lives would be saved every year. Not only is this a moral imperative, it is sound economics the benefits of meeting the MDGs on WASH vastly outweigh their costs. The path forward is clear – the SWA High Level Meeting can and must deliver clear political commitment to get back on track for sanitation and to accelerate progress towards sanitation and water for all.

^{*}Such as through the National Planning for Results Initiative (NPRI), a structured partnership mechanism which responds to country-led demand for technical and financial support in establishing and strengthening nationally-owned sector planning processes.

Appendix: Lives that would be saved by getting the most off-track countries back on track. 16

	Sanitation		MDG Scenarios			Lives saved calculation				
	1990 %	2010 %	2015 target %	2015 trajec- tory %	Date on current trends	People without san in 2010	WASH- related u5 deaths	MDG gap %	u5 lives saved with cur- rent levels of invest- ment	Additional u5 lives saved by meeting MDG
							Additional lives saved by meeting MDG Lives saved at current rate of pro- gress			372,681
										42,070
Bangladesh	39	56	70	60	2026	65,425,000	17,736	9%	1,713	3,729
Benin	5	13	53	15	2109	7,699,000	4,501	38%	103	1,940
Bolivia	18	27	59	29	2081	7,249,000	1,899	30%	59	774
Botswana	38	62	69	68	2016	763,000	89	1%	14	2
Brazil	68	79	84	82	2019	40,939,000	3,118	2%	408	334
Burkina Faso	8	17	54	19	2092	13,669,000	19,422	35%	527	8,132
Burundi	44	46	72	47	2270	4,527,000	9,299	26%	86	4,391
Cambodia	9	31	55	37	2031	9,755,000	2,029	18%	162	529
Cameroon	48	49	74	49	2510	9,995,000	12,746	25%	62	6,186
CAR	11	34	56	40	2029	2,905,000	3,946	16%	344	942
Chad	8	13	54	14	2174	9,768,000	18,966	40%	272	8,665
Colombia	67	77	84	80	2023	10,648,000	660	4%	72	115
Comoros	17	36	59	41	2034	470,000	401	18%	30	111
Côte d'Ivoire	20	24	60	25	2190	15,001,000	9,173	35%	121	4,224
DRC	9	24	55	28	2051	50,134,000	90,358	27%	4,458	31,803
Djibouti	66	50	83	46	reversal ¹⁷	444,000	368	37%	n/a	272
Dominican Rep.	73	83	87	86	2017	1,688,000	596	1%	88	35
Ethiopia	3	21	52	26	2044	65,530,000	64,539	26%	3,676	21,241
Ghana	7	14	54	16	2123	20,977,000	4,571	38%	93	2,006
Guinea	10	18	55	20	2103	8,185,000	6,621	35%	161	2,826
Haiti	26	17	63	15	reversal	8,294,000	3,421	48%	n/a	1,988
India	18	34	59	38	2041	808,245,000	208,984	21%	12,666	66,495
Indonesia	32	54	66	60	2021	110,341,000	22,986	7%	2,748	3,248
Jamaica	80	80	90	80	same	548,000	204	10%	n/a	102
Kenya	25	32	63	34	2097	27,549,000	33,382	29%	859	14,114
Madagascar	9	15	55	17	2142	17,607,000	14,049	38%	248	6,281
Malawi	39	51	70	54	2041	7,301,000	5,429	16%	332	1,717
Mali	15	22	58	24	2111	11,988,000	16,950	34%	380	7,334
Marshall Islands	64	75	82	78	2023	14,000	4	4%	0	1
Mauritania	16	26	58	29	2074	2,560,000	1,704	30%	58	679
Mauritius	89	89	95	89	same	143,000	4	6%	n/a	2
Morocco	53	70	77	74	2018	9,585,000	2,567	2%	364	193
Mozambique	11	18	56	20	2117	19,180,000	11,532	36%	246	5,028
Namibia	24	32	62	34	2085	1,553,000	135	28%	4	55
Nauru	66	65	83	65	reversal	4,000	0	18%	n/a	0
Nepal	10	31	55	36	2033	20,672,000	4,766	19%	363	1,295
Nicaragua	43	52	72	54	2053	2,778,000	302	17%	14	108
Niger	5	9	53	10	2228	14,116,000	21,626	43%	238	10,100
Nigeria	37	31	69	30	reversal	109,312,000	177,204	39%	n/a	100,159
Pakistan	27	48	64		2025	90,269,000	65,305	10%	6,593	12,873
Papua New Guinea				53	reversal		641	29%	0,593 n/a	
Peru	47 54	45 71	74 77	45 75	2017	3,772,000 8,432,000	579	29%	11/a 85	338 35

	Sani	Sanitation		MDG Scenarios			Lives saved calculation				
	1990 %	2010 %	2015 target %	2015 trajec- tory %	Date on current trends	People without san in 2010	WASH- related u5 deaths	MDG gap %	u5 lives saved with current levels of investment	Additional u5 lives saved by meeting MDG	
Russia	74	70	87	69	reversal	42,887,000	172	18%	n/a	103	
Rwanda	36	55	68	60	2024	4,781,000	8,188	8%	864	1,501	
Saint Lucia	58	65	79	67	2050	61,000	0	12%	0	0	
Senegal	38	52	69	56	2034	5,968,000	6,371	14%	465	1,792	
Sierra Leone	11	13	56	14	2435	5,105,000	7,836	42%	45	3,783	
South Africa	71	79	86	81	2026	10,528,000	5,538	5%	527	1,187	
Sudan	27	26	64	26	reversal	32,228,000	12,960	38%	n/a	6,611	
Swaziland	48	57	74	59	2048	510,000	211	15%	11	72	
Tanzania	7	10	54	11	2300	40,357,000	17,786	43%	148	8,448	
Togo	13	13	57	13	same	5,244,000	2,045	44%	n/a	1,023	
Tuvalu	80	85	90	86	2030	1,000	0	4%	0	0	
Uganda	27	34	64	36	2094	22,060,000	26,744	28%	709	11,245	
Yemen	24	53	62	60	2016	11,305,000	10,102	2%	1,558	376	
Zambia	46	48	73	49	2260	6,806,000	9,875	25%	95	4,653	
Zimbabwe	41	40	71	40	reversal	7,543,000	2,896	31%	n/a	1,484	

Notes

- 1. www.sanitationandwaterforall.org. The 77 partners of SWA are developing countries, donors, multi-lateral agencies, civil society and other development organizations. The partnership is based on mutual trust, support, and commitment to principles of aid effectiveness, including national ownership of plans, donor harmonization and mutual accountability.
- 2. WHO. *Global Burden of Disease 2004 Update*. Geneva: WHO, 2008. www.who.int/entity/quantifying_ehimpacts/

national/wshbod2004_webexcel.xls

- 3. Countries most off-track are defined as any that are predicted to meet the sanitation MDG target after 2015 and have less than 90% coverage in 2010. Calculations cannot be done for countries without sanitation data in 1990 or 2010, so these were removed from the analysis.
- 1990 or 2010, so these were removed from the analysis.
 4. The calculation is based on achieving target coverage in 2015. If rates of progress remain unchanged then based on projected coverage only 50,000 lives would be saved in 2015. At least 400,000 additional lives could be saved because the 372,681 calculated in this report relate only to diarrhea. Numerous deaths caused by diseases other than diarrhea could be prevented by sanitation (see WHO (2008) in the next footnote), but calculating them is beyond the scope of this report.
- 5. WHO (2008) Safer Water, Better Health.
- 6. UN General Assembly 65th Session (September 17, 2010) 1990. *Keeping the promise: united to achieve the MDGs*.
- 7. 64th General Assembly, Access to water by 2025, Plenary 108th Meeting (AM), General Assembly adopts resolution recognizing access to clean water and sanitation.

- 8. WHO (2008) Safer Water, Better Health.
- 9. Black et al. (2010) 'Global, regional, and national causes of child mortality in 2008: a systematic analysis' *Lancet*; 375: 1969–87.
- 10. Sierra Leone is also a focus country but WHO/UNICEF have no 1990 data for sanitation.
- 11. Russia and Yemen are the only countries fitting into the 'other' category, so these numbers are comparatively small. The figure for current trends are larger because Yemen is nearly on track for its MDG target, whereas in Russia, progress has gone backwards.
- 12. Data is not available for all off-track countries (including Afghanistan, Liberia and Myanmar) so in reality the actual number of lives saved is likely to be higher. The global total has therefore been rounded up to 400,000.
- 13. WHO (2006) Economic and Health Effects of Increasing Coverage of Low Cost Water and Sanitation Interventions. 14. WSP (2011) Economic impacts of poor sanitation in
- Africa.
 15. World Bank (2006) Disease Control Priorities in Developing Countries, 2nd edition.
- 16. As noted in the text, this contains only countries which are:
- (i) off-track for the sanitation MDG,
- (ii) which have both 1990 and 2010 data,
- (iii) have less than 90% access in 2010.
- 17. Reversal indicates % coverage has worsened since 1990.

Methodological note on lives saved

The WHO report, *Safer Water*, *Better Health*, estimates that around 10% of the total burden of disease worldwide could be prevented by improvements in WASH. The latest WHO data on the global burden of disease shows that if everyone had access to clean water and sanitation (i.e. universal access), 2.5 million lives would be saved every year due to the resulting reduction in deaths from diarrhea and under nutrition. This note outlines the methodology used in this paper to estimate the number of lives that would be saved by getting off-track countries back on track to achieve national MDG targets for sanitation in 2015.

This method is based on two data sources, the WHO/UNICEF Joint Monitoring Programme (JMP) Report 2012 data¹⁸ on sanitation access and the Black et al (2010) data¹⁹ for child mortality by cause. Both sources are generally acknowledged to be the best available at this time. The focus is on sanitation because there is no easy way to combine the access data for sanitation and water (taking an average would be misleading). Furthermore, sanitation is the element of WASH that brings most of the reduction in diarrhea.

Conceptual framework

The research question implies a conceptual link between sanitation outcomes (getting on track for the MDG target) and health outcomes (specifically number of lives saved). There is a well-understood link between improvements in sanitation and reduction in child morbidity (and therefore mortality), as found by numerous systemic reviews of randomized controlled trials.²⁰

It is impossible to know for sure the marginal effect of increasing sanitation access by 1% in a community, let alone a country – there are so many confounding and context-specific factors. The method below attempts to overcome this problem. The solution is not perfect, and by no means a rigorous epidemiological approach. However, it suits the purposes of a broad-brush understanding of the **scale** of what could be achieved by meeting the MDG. It is the order of magnitude that is important – by making the big push rather than continuing with the current low levels of investment, nine times as many lives could be saved.

The key relationship in the method

The link between sanitation and mortality is expressed through the ratio between the number of people without sanitation and the number of diarrheal deaths caused by poor WASH, therefore providing a figure for the number of diarrheal deaths per person without sanitation. For the most off-track countries, the average ratio is around 0.001 or 1 diarrheal death per 1,000 people without access to improved sanitation. Accordingly, if 1,000 people gain sanitation access there would be 1 fewer diarrheal death and if 100,000 people gain sanitation access, there would be 100 fewer deaths. Importantly, the model calculates each country's ratio and applies it only to that country's data, endogenizing at least **some** of the factors intrinsic to that country.

While it is clear that health systems, nutrition and numerous other factors beyond sanitation will also influence how many children die from diarrhea, this ratio of 1:1000 is sufficient for the purposes of meta analysis. Moreover, it is borne out by 'least squares' regression analysis. When logarithms are taken of the variables to account for big differences in country size, at least half of the variation in diarrheal deaths is explained by variation in access to sanitation. This is obviously correlation, not causation, and it would not be good enough for setting policy at a micro level. However, it is good enough evidence to draw broad conclusions about the order of magnitude of lives which could be saved.

Explanation of the method step-by-step

Below are the five steps used to get from the initial data to the figure for 'lives saved' for each country. This is not meant to be exhaustive and further information is available on request.

- 1. WHO notes that 88% of diarrheal deaths are caused by poor water and sanitation.²¹ So, for each country, we take the 88% of the number of diarrheal deaths given by Black et al (2010), in order to get 'WASH-related diarrheal deaths' (WRDDs).
- 2. Using JMP data, we work out the number of people without sanitation in 2010 (PWS).
- 3. We work out the ratio of the two mentioned above, i.e. divide WRDDs by PWS. The average is 0.001, but the model only applies each country's own ratio to its own data.

$$\frac{WRDDs}{PWS}$$
 = the ratio

4. Using a standard method for working out MDG trajectories, we work out the year in which the country is predicted to meet the sanitation MDG. This is done by a linear extrapolation of the 1990-2010 trend forwards to 2015. For example, if they achieved a 1% year-on-year increase over 1990-2010 and currently have 50% access, we would predict a 5% increase and therefore 55% access in 2015.

5. Having worked out the country's MDG target figure (reduce by half the proportion of people without access to sanitation), we can work out the 'MDG gap'. This is done by subtracting their predicted figure from the target figure. The average MDG gap for off-track countries is about 25%.

6. We multiply the MDG gap by the total 2010 population, to get the number of additional people that will need to gain access in order to close the gap. The idea of additionality is important here because in most countries the trend is already upward and some lives will be saved with current low levels of investment.

We are talking about the additional effort needed to meet the MDG.

7. This is the crucial part. For each country, we multiply 'the ratio' specific to that country and the additional people needing to gain access, giving us lives saved in 2015 if the MDG was met. This is essentially doing the calculation in point 3 in reverse.

The data

The table in the appendix shows 'lives saved' data for the most off-track countries which have enough data available. Countries without either 1990 or 2010 sanitation data cannot be used, which excludes high-mortality countries likely to be off-track, like Liberia, Afghanistan and Myanmar. Furthermore, countries with sanitation coverage about 90% have been excluded. For most countries, the 'lives saved' represent about a third of current WASH-related diarrheal deaths. This shows that even if the MDG target is achieved, there is a lot more work to be done.

Notes

18 JMP (2010) Progress on Sanitation and Drinking-water: 2010 Update.

19 Black et al. (2010) op. cit.

20 Cairncross et al. (2010) 'Water, sanitation and hygiene for the prevention of diarrhoea'.

International Journal of Epidemiology 39(1): 193-205.

21 WHO (2004) Comparative Quantification of Health Risks.



WaterAid transforms lives by improving access to safe water, hygiene and sanitation in the world's poorest communities. We work with partners and influence decision-makers to maximize our impact.

WaterAid in America (Head office) 315 Madison Avenue Suite 2301 New York, NY 10017 Telephone: + 1 212 683 0430 inquiries@wateraidamerica.org

WaterAid in America (Policy office) 1400 16th Street NW Suite 210 Washington, DC 20036 Telephone: + 1 202 729 6797

www.wateraidamerica.org

www.facebook.com/wateraidamerica www.twitter.com/wateraidamerica WaterAid America Inc. is a 501(c)(3) non-profit organization.