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Overview of the benefits of sanitation, hygiene and water supply

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Client:	Sanjay Wijesekera (DFID)	
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Contact and correspondence:	DEW Point, The Old Mill • Blisworth Hill Barns • Stoke Road • Blisworth • Northampton, • NN7 3DB • UK TEL: +44 (0)1604 858257 FAX: +44 (0)1604 858305 e-mail: helpdesk@dewpoint.org.uk www.dewpoint.org.uk	
Authors:	Jonathan Parkinson	
Organisations undertaking work:		
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Task Manager :	Ingrid Carlier	
Quality Assurance. DEW Point:	Jim Parker	Date: January 2010

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[1] Consortium comprises Harewelle International Limited, NR International, Practical Action Consulting, Cranfield University and AEA Energy and Environment

Description of enquiry

DEW Point is to produce a two-pager (approx) with short excerpts with key statements, statistics, quotes and references that would make the case for sanitation, hygiene and water supply in terms of health benefits and economic returns to a senior decision-maker.
The document will be used to communicate to a senior DFID staff (non-expert in water and sanitation) the economic and health benefits of sanitation, hygiene and water supply.

Standing Brief: Health and Economic Benefits of Sanitation, Hygiene Promotion and Water Supply

"Beyond the human waste and suffering, the global deficit in water and sanitation is undermining prosperity and retarding economic growth. Productivity losses linked to that deficit are blunting the efforts of millions of the world's poorest people to work their way out of poverty and holding back whole countries."

Human Development Report 2006, Beyond scarcity: Power, poverty and the global water crisis

"We shall not finally defeat AIDS, tuberculosis, malaria, or any of the other infectious diseases that plague the developing world until we have also won the battle for safe drinking water, sanitation and basic health care."

Kofi Annan, United Nations Secretary-General (1997 – 2006)

■ Progress towards achieving the water and sanitation MDGs is poor, particularly in sub-Saharan Africa. As a result, diarrhoea remains the second leading cause of death among children under five globally; killing more children than AIDS, malaria and measles combined.

■ Investments in improved sanitation, water supply facilities and promotion of improved hygiene behaviours are both cost-beneficial and cost-effective, comparing favourably with other primary health interventions.

■ Interventions reduce the heavy burden on poor families' finances, the health system and the economy as a whole, through lost productivity, and time spent fetching water or seeking a private place of defecation or caring for the sick.

■ The reduced health burden related to diarrhoeal diseases is of particular benefit to women and children.

■ Improved facilities in schools result in increased attendance and the linked improvement to nutritional status contributes towards cognitive development and livelihood opportunities.

■ The combination of the benefits contribute towards the national economy of developing nations that equates to 5% of the Gross Domestic Product (GDP) in Sub-Saharan Africa.

Progress towards achieving the MDGs is poor

More than 880 million people – almost 15% of the world's population[1] – lack access to safe drinking water[2]. Coverage in sub-Saharan Africa is considerably lower than in other regions[3] – little more than 40% – and, at the current rate of progress, the MDG water target will not be met until 2035[4]. **For sanitation, the situation is considerably worse. Almost 40%[5] of people in low-income countries – a total of 2.5 billion people – lack access to basic sanitation and 1.2 billion have no facilities at all[6].** If current trends continue, the MDG target related to sanitation will not be met until 2076 and in sub-Saharan Africa the MDG sanitation target will not be met until 2108[7].

Lack of adequate facilities manifest in a variety of health impacts

Inadequate sanitation and water supplies and poor hygiene are critical determinants for diarrhoeal diseases and infectious diseases transmitted by the faecal-oral route[8]. Even those facilities that exist are often poorly managed resulting in serious environmental health concerns. Poor maintenance combined with overuse frequently results in latrines that are degrading and a source of disease transmission. Poor sanitation limits the impact of drinking water quality improvements. The risks of water contamination during household storage and handling sharply increase in environments that lack toilets[9].

Acute epidemics of cholera grab the headlines but it is the impacts of repeated gastro-intestinal infections that cause prolonged bouts of diarrhoea that are of everyday concern. As a result, **around 4,000 people, mostly children, die every day as a result of diarrhoeal diseases**[10]**.** This accounts for more than 40% of the total number of deaths related to unsafe water, inadequate sanitation facilities and poor hygiene behaviour[11].

The total disease attributable to diarrhoea in all age groups equates to 73 million disability-adjusted life years (DALYs). Taking into account the additional health burden associated with malnutrition caused by diarrhoea (approximately 20 million DALYs), this is equivalent to the burden associated with Acute Respiratory Infections (95 million DALYs) [12]. In addition, other 'neglected' tropical water-, sanitation- and hygiene-related diseases such as trachoma, schistosomiasis and chronic infestations by intestinal parasites (nematode worms), affect over one billion people globally[13] and constitute a further health burden of 19 million DALYs [14].

Impacts on women are disproportionate

Women are affected disproportionately by lack of access to clean water and basic sanitation and are at higher risk of exposure to water- and sanitation-related diseases. In developing countries, 1.3 billion women and girls live without access to private, safe and sanitary toilets[15]. In addition, poor menstrual hygiene can lead to increased health problems such as infections and infertility and women may also suffer from other illnesses resulting from poor sanitation such as urine retention due to lack of access to latrines[16].

Women without toilets spend a great deal of time each day queuing for public toilets or seeking secluded spots to defecate, during which time they put themselves at risk from rape or other violence[17]. 18% of the population of sub-Saharan Africa relies on drinking water source that is more than 30 minutes away[18]. Collection of drinking water also has a very high economic burden related to the time taken to fetch water; a task that women and girls are twice as likely to do as men[19].

Africa and South Asia account for over half the cases of childhood diarrhoea[20]

The public health consequences of poor water and sanitation are notably severe for young children[21], especially infants less than two years old. Diarrhoea remains the second leading cause of death among children under five globally; killing more children than AIDS, malaria and measles combined. Nearly one in five child deaths **–** about 1.5 million each year **–** is due to diarrhoea[22].

Repeated diarrhoea exacerbates malnutrition which stunt children's growth and, although intestinal worms are unlikely to cause mortality directly, they are responsible for substantial disability. **Up to two thirds of all schoolchildren in some African countries are infected with parasitic worms**[23]. Malnutrition has been estimated as an underlying cause of between 35% and 53% of child deaths globally[24]. Over half of this malnutrition-associated mortality is related to diarrhoea and nematode infections caused by poor sanitation[25].

Interventions contribute towards poverty alleviation

Ill-health is the single-most common trigger for the downward slide into poverty[26] and the perpetuation of a vicious cycle of poverty due to the loss of productivity and increased expenditure on health care[27]. Many of these illnesses are related to poor water, sanitation and hygiene. Illnesses have a direct impact on household finances in terms of loss of working days and also for financial outlay to pay for treatment and medical care[28].

At any one time in Sub-Saharan Africa, half the hospital beds are estimated to be occupied by people afflicted with faecal-borne disease[29]. The ill-health of one-member of the family also has repercussions on the others and, in the longer term, illnesses drain household savings, lower learning ability, reducing productivity and impacting upon development objectives. Improved water and sanitation reduces the costs of treating preventable diarrhoeal diseases which collectively consume as much as 12 percent of the total health budget in Sub-Saharan Africa [30].

Malnutrition and poor state of health amplified by diarrhoea is particularly a problem for those who depend on their physical strength to earn a livelihood. Thus, a greater share of the socio-economic burden falls on poor communities, who rely upon income from labour, making worse inequalities in

society[31]. Improved access to water and sanitation would reverse the loss of income when workers are sick or when a child is ill and requires care.

Chronic infections have long-term impact in terms of future educational performance[32]. Diseases sap nutrients and calories and lead to listlessness and trouble concentrating in the classroom. Girls are also reluctant to attend schools, and parents are disinclined to send them, if there are no safe, private toilets for them to use. This is particularly true once menstruation has begun. The installation of sanitation facilities in schools would therefore enable girls greater opportunities to attend classes and support their opportunities to gain qualifications and enter into paid employment[33, 34]. The lack of adequate, separate sanitary facilities in schools is one of the main factors preventing girls from attending school, particularly when menstruating.

In Bangladesh, a school sanitation program increased girls' enrolment by 11%[35]. Research shows that for every 10 percent increase in female literacy, a country's economy can grow by 0.3 percent[36]. One additional year of primary school for a girl means a 10-20 percent increase in her future wages[37]. Each extra year of maternal education reduces the rate of mortality for children under the age of 5 by between 5% and 10%[38]. Women who have been to school are less likely to die during childbirth: World Bank estimates that for every 1,000 women, every additional year of education will prevent 2 maternal deaths[39]. In Africa, children of mothers who have 5 years of primary education are 40 per cent more likely to live beyond age 5[40]. Educated girls are more likely to raise healthy, well-nourished, educated children, to protect themselves from exploitation and AIDS.

Interventions are cost effective

Cost-effectiveness analysis makes a powerful supporting case for investments in water and sanitation[41]. In areas with little access to water and sanitation facilities, improving access can be highly cost effective (US$94 per DALY averted for installation of hand pumps and US$270 per DALY averted for provision and promotion of basic sanitation facilities). These interventions are more cost-effective than many types of oral rehydration therapy and considerably more cost-effective than breast feeding promotion, immunization against cholera or rotavirus (ranging from US$527 to as high as US$8,357 per DALY averted). They are comparable to the cost-effectiveness of HIV/AIDS interventions via social marketing, promotion, and distribution of condoms (US$19 to US$205 per DALY averted) and much more cost effective than the treatment of latent TB in patients uninfected with HIV (US$4,000 to US$25,000 per DALY averted) [42].

Hygiene promotion is the most effective intervention for controlling endemic diarrhoea and is the most cost-effective public health intervention (approximately US$5 per DALY averted) ranking higher in terms than all other forms of health intervention combating malaria, tuberculosis and HIV Aids[43]. From a health perspective washing hands at critical times, such as after defecation or the handling of children's faeces, is seen to be a priority over water supply[44] and current evidence shows that washing hands with soap can reduce the risk of diarrhoeal diseases by 42 - 47%[45].

Net economic benefits to society

Although economic benefits related to health, income and education are vitally important, the time benefits associated with improved water and sanitation facilities result in the main economic benefit for society – especially for urban communities. According to UN figures, meeting the sanitation MDG target would add 3.2 billion annual working days worldwide. Universal coverage would add more than four times as many working days. Annual time savings from more convenient water supplies would amount to another 20 billion working days – most of them gained by women[46].

The World Health Organization and UNDP estimate that achieving the sanitation MDG target is robustly cost-beneficial, with a global return of US$9.1 per US$1 invested. Similarly, meeting the MDG water target would lead to benefits of US$4.4 per US$1 invested[47]. For universal coverage, these rations increase to 11.2 for sanitation and 5.8 for water.

Improved water and sanitation facilities and better hygiene practices result in significant health gains and economic benefits for individuals and their families. These benefits contribute towards national economic growth. In the UK and elsewhere, a major political commitment supported by a significant investment resulted in massive public health gains that supported the industrial revolution and enabled

significant economic growth. Similar growth is envisaged in the developing world where improvements to water and sanitation are estimated to increase the Gross Domestic Product (GDP) in Sub-Saharan Africa by 5%[48].

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