

A literature review of the non-health impacts of sanitation

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The health benefits are usually considered to be the most significant impacts of sanitation, but other factors are also important. This literature review examines both published and grey literature on the non-health impacts of sanitation. The main sections of this report summarize the social impacts of sanitation on women, adolescent girls, children, the disabled and the environment. Safe, private sanitation facilities can help women and girls to be secure and healthy, can encourage girls' attendance in school past puberty, can help preserve the dignity of disabled people and can improve the environment.

Keywords: sanitation impact, gender, school sanitation, disability, environmental impact

Sanitation has gender, education, disability, economic and environmental implications to those it serves

THE HEALTH BENEFITS of household sanitation have been well documented and are often considered to be the most crucial impacts, but sanitation is also important for other reasons. Sanitation has gender, education, disability, economic and environmental implications to those it serves.

It is important to note that often it is these non-health issues that act as drivers for the usage and installation of sanitation facilities, particularly at household level. It is therefore essential to look at the non-health benefits of sanitation in order to successfully implement sanitation programmes, particularly in the social marketing of sanitation to a community.

There is very little published, peer-reviewed literature available on the non-health impacts of sanitation so the majority of the research reviewed here is grey literature from work in the field. The review attempts to extract the non-health benefits from the health benefits, and the sanitation aspects from the water aspects. A number of databases were used (including IDS, ELDIS, Web of Science, Gender and Health Equity Network, Google Scholar, PenLib), and the following websites: Water Aid, School Sanitation, World Bank, Oxfam, UNICEF, Gender & Water Alliance, WELL, WEDC, Plan Inter-

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national, IRC Delft, WSP, WEDC Resource Centre at Loughborough University and the WELL Room at LSHTM.

Gender

Until sanitation is addressed as a developmental policy it is likely that progress in sanitation coverage will be slow

The third Millennium Development Goal (MDG) is to promote gender equality and empower women and there are a number of ways in which sanitation can have an impact on women's lives. Currently there is a need to increase the inclusion of sanitation in gender policies, for instance in African countries such as Zambia, South Africa and Zimbabwe (Mulenga et al., 2001) and also in Nigeria (Ofong, 2001). Until sanitation is addressed as a developmental policy it is likely that progress in sanitation coverage will be slow.

Research in Kenya (Maili Saba Research Report, 2005) revealed the opinions of poor urban men and women on sanitation. Men reported that women will defecate into a plastic bag and throw it out onto the street so that they are not seen to be using latrines too regularly. Men also reported that women fear using shared latrines and will often only use one when they have sole access. Personal testimonies from men and women slum inhabitants from Mumbai and Pune, India, were reported in Bapat and Agarwal (2003). It was described how women squat on the road and railway lines to defecate after dark due to the lack of toilets and privacy; however there have been a number of deaths from trains associated with this practice. In South Africa nearly 500,000 women are raped every year (Bannister, 2004), a fact which must be considered when designing sanitary facilities.

The WASH collaborative council report 'For her it's the big issue' makes a strong case for the role of women in sanitation and the non-health benefits that household sanitation can make to the lives of women (WSSCC, 2006). For instance, in the Swayamsiddha project in Chitrakut district, India, women in the community follow 'purdah' which requires them to live in some degree of social exclusion. Open defecation was a common practice prior to the project interventions, which meant that women would risk violence and sexual abuse and would be obliged to wait until nightfall. During the project 779 women were involved in self-help groups throughout the district, a component of which included financial assistance for the cost of building a toilet. The impact was significant: women's perception of their own bodies changed as defecation, menstruation and pregnancy could now be dealt with discreetly (WSSCC, 2006).

Women defecating in the open risk violence and sexual abuse

The potential for women's income generation through the significant time savings that sanitation can bring is also described in the literature (WSSCC, 2006). Time and energy savings can have numerous benefits for women, including more time spent on ensuring children

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are given sufficient care, domestic hygiene, increased rest time and community development work, all of which will carry their own benefits to the individual and surrounding community and its economy (Casella, 2004). Hutton et al. (2006) report the likely economic benefit of sanitation, and state that better sanitation access is likely to increase the time saved by an individual, though they acknowledge that there is no accurate data available in the literature.

The level to which women can be empowered is often limited by cultural and religious factors

Another important impact that sanitation can have on women is empowerment and improving status. One report (WSSCC, 2006) gives the account of Shanti Bhut from Nepal who became vice chair of a Water and Sanitation User Committee and trained as a paid maintenance caretaker. Her progression to better roles and her skills have enabled her to generate an independent income and consequently she has become a positive role model within the community; women involved directly in technical and management roles can challenge traditional perceptions about women. The level to which women can be empowered is often limited by cultural and religious factors; for instance Ogbodo (2003) reports that in Nigeria men agreed that women could play a leadership role in sanitation projects as long as their male counterparts were not present.

In 2001, Ofong identified a problem in Nigeria of low water and sanitation coverage that was affecting the urban poor communities to the largest extent. Gender inequalities in Nigeria make it almost impossible for women to sit on sanitation committees where water and sanitation are discussed, as men believe it to be too technical for women. In 2003, Suwaiba discussed problems of seclusion of women in Nigeria and a programme which was aiming to improve the lives of rural and urban women by improving their living conditions and community status. The report draws attention to the fact that special considerations are needed for women in seclusion in the form of development projects in the community to ensure that all members of society are reached.

Women's involvement in sanitation improves the success of interventions, improves design and assists in project transparency and accountability. Women can encourage other women and promote positive change in traditional gender roles. Empowering women increases their power to assist in relieving poverty and gives them freedom from the constraints of the lack of good sanitation facilities (WSSCC, 2006).

School sanitation

The school environment has a huge impact on children, and nowhere is this more apparent than in less developed countries. The

Table 1. Summary: the impacts of sanitation on gender issues

<i>Reference</i>	<i>Country</i>	<i>Region</i>	<i>Problem</i>	<i>Intervention</i>	<i>Outcome</i>
Mulenga, <i>et al.</i> , 2001	Zambia, South Africa, Zimbabwe	Southern Africa	Policy makers failing to address sanitation as a gender issue.	None	Lack of sanitation-related policies. Regarded as a community and household issue.
Ofong <i>et al.</i> 2001	Nigeria	N/A	Policy makers failing to address sanitation as a gender issue.	None	Lack of sanitation-related policies.
			Gender inequalities	None	Women cannot sit on sanitation committees.
Maili Saba research report, 2005	Kenya	Maili Saba	Women fear sharing latrines with men	None	Women take risks to maintain privacy
Bapat and Agarwal, 2003	India	Mumbai and Pune	8000 families to 12 latrines, forced to use open defecation sites	None	People take risks defecating at night, for instance on a train line resulting in a number of rail deaths.
WSSCC, 2006	India	Chittrakut district	Open defecation	Self help groups; latrine subsidies; community drama groups conveying the benefits	Improved body perception; increase in women's technical knowledge
	Tanzania	N/A	Time spent seeking water	Improved WatSan	More time devoted to economic activities
	Nepal	Baitandi	Lack of empowerment	Young woman joined committee and trained as a maintenance caretaker	Positive community role model
	South Africa	N/A	Low coverage of urban sanitation	Aqua Privy toilets – must fetch water to empty them, and the bowl requires periodic emptying.	Toilets do not take into consideration the needs of women and as a result are a source of embarrassment and harassment for women
Bharadwaj and Patkar, 2004	Bangladesh	Rural areas	No privacy during menstruation	None	Women seek privacy in remote hills in order to wash and dry sanitary cloths – time and energy consuming
Ogbodo, 2003	Nigeria	N/A	Cultural limitations	None	Men only agreed for women to take part on sanitation committees so long as male counterparts were absent
Suwaiba, 2003	Nigeria	N/A	Low urban and sanitation coverage; women in seclusion	Workshops for women designed to raise self-esteem	Development of hygiene and sanitation clubs
Adolescent Girls Program, 2000	Bangladesh	N/A	Lack of empowerment	Train adolescent girls to act as 'social agents to bring about change'	Some girls go on to become leaders of gender sessions and conventions and motivate other girls
Brewster <i>et al.</i> , 2006	India	Slums	Lack of appropriate slum sanitation	Toilets subsidized and women incorporated as students and educators	None given but it is hoped women will go on to pass the message on to other women.

number of children excluded from primary education ranges somewhere between 105 and 120 million worldwide of which it is estimated 60 per cent are girls. The rise in the enrolment of children attending primary school since the 'Universal Primary Education for All' Campaign has helped to address this and the campaign has provided greater opportunities for hygiene education; however, it has also put additional pressure on already limited school infrastructures, including sanitary facilities.

There is a great deal of repetition of data within the literature, such as the widely quoted 11 per cent increase in girls' school attendance following improvements to the school sanitation facilities. The source of this statistic was an evaluation of an intervention carried out by UNICEF Bangladesh in 1994. It was found that the number of girls increased by 11 per cent in the last three classes of 228 schools by Consulting Services and primary schools that were surveyed.

Schools with water and sanitation facilities attract and retain more students

The Case for Water & Sanitation Report (WSP 2004) stated that 1 in 10 girls still do not complete primary education and that schools with water and sanitation facilities attract and retain more students. In addition, parents are reluctant to send girls to school during menstruation, sometimes for cultural reasons, but often due to the lack of school facilities: for example in Nigeria parents would withdraw their daughters from school because they had to use an open defecation site (IRC, 2004; Snel and Shordt, 2005; WSP, 2004).

In some cases school sanitation and hygiene education (SSHE) has been successfully incorporated into HIV/AIDS awareness and sexual health programmes in schools as there are clear links between sexual health, menstruation and water and sanitation provision. SSHE (now WASH) can help empower girls and make them 'social agents to bring about change' (Adolescent Girls Programme, 2000). It is recommended that both boys and girls get involved in SSHE; in Mexico it was found that only girls were cleaning the installed sanitary facilities (Snel and Shordt, 2005).

If sanitary facilities are available then particularly female teachers are more easily retained

Training of teachers and having at least one female teacher in each school would improve intervention programmes, as gender sensitivity is essential when implementing SSHE. Teaching girls the facts about menstruation and educating boys as well as providing more facilities in schools, are important messages of successful SSHE (WSP, 2004; IRC, 2006; Burgers, 2000). The absence of female teachers perpetuates girls' and women's low status and self-esteem and conveys negative signals to girls about the ability of women to achieve (Water Aid/UNICEF Bangladesh, 2005). If sanitary facilities are available then teachers, particularly female, are more easily recruited and retained.

Table 2. School sanitation summary

<i>Reference</i>	<i>Country</i>	<i>Problem</i>	<i>Intervention</i>	<i>Outcome</i>
Bolt, Shordt Krukkert, 2006	5 of the 6 countries evaluated	Lack of adequate school sanitation	Installation of latrines (the quality of sanitation varied in each country)	Zambia: reduction in absenteeism, particularly girls Nepal: 14 year old girl who felt ashamed at the lack of sanitation in her house joined the school club and persuaded her family to build a latrine One school reported that girls still seemed to be absent during menstruation Household sanitation coverage reported to improve during the SSHE programmes.
Bharadwaj and Patkar, 2004	Iran Uganda Kenya Bangladesh India	Absence of menstrual hygiene needs in policy	Formative Research	Iran: 15% of surveyed people reported that dysmenorrhoea (painful periods) caused them to be absent from school between 1 and 7 days a month Uganda: Reported that most absenteeism in girls is due to their menstrual cycle Kenya: sanitation improvements and hygiene education of both sexes reduced the number of girls dropping out at puberty Bangladesh: considerable time spent searching for a secluded spot to wash menstrual cloth India: Girls cannot afford sanitary napkins and often improvise with other materials, they often skip school on these days
Abrahams, Matthews and Ramela, 2006	South Africa	Dangers encountered by girls in schools	Qualitative research on the effect of sanitation on risks	No incidents of sexual harassment associated with the poor sanitary facilities although sexual harassment was encountered elsewhere by the girls and other research has stated to the contrary (Griggs 2002, Leach et al 2001, Matthews 1999, Human Rights Watch 2001). Privacy was compromised in poor school facilities and toilets a long way from the school were considered unsafe as intruders used to hide in them. Focus groups confirmed that girls often do stay at home during the first 2 days of menstruation
Lionde, 2004	Senegal	Drop in girls' attendance during menstruation due to lack of facilities	Formative Research	A survey of 5000 schools; 53% had no water supply and 46% had no sanitation Girls avoided drinking during the day to prevent having to use the school facilities
Foondun, 1998	Mauritius	Inadequate sanitation facilities in private tuition settings	Formative Research	Where sanitation and water are poor, there are negative effects on growth, education and cleanliness. Adolescent girls are vulnerable as they are unable to change sanitary napkins – highly likely to affect concentration levels
IRC, 2004	Numerous	Poor school sanitation facilities	Case Studies	Alwar, India: over 5 years girls' enrolment increased by 78% and boys' by 38% following an SSHE intervention

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				Swaziland: communities increased their responsibility for improving and maintaining the school environment following an SSHE intervention
UNICEF, 1994	Bangladesh	Poor school sanitation facilities	Evaluation Study	PNG and Uganda: most toilets surveyed were a health risk, though students thought this was the 'norm' resulting in a negative on their understanding of health and hygiene standards Noakhali District of Bangladesh: the provision of water and sanitation facilities in a school increased girls' attendance by 11%
UNICEF, 2003	Iraq	Conflict destroying school infrastructures	Survey of school building conditions	It is thought that poverty and cultural attitudes towards females contributes to the poor enrolment of girls in education. However, the poor facilities due to conflict play a part in deterring both sexes from attending school.
Bituture and Barabwoha, 2005	Uganda		SSHE Girls Education Movement Clubs and improvement of sanitation facilities	Empowerment of girls, improved facilities. Involvement of boys aided the intervention. Improvements in household sanitation witnessed
Bannister, 2004	South Africa	Poor sanitation and absenteeism	Improved sanitation and hygiene education	Reduction in absenteeism from six children every week to one child every two weeks
WaterAid/ UNICEF, 2005; Also Ngales, 2007	Ethiopia	Poor school sanitation facilities; High drop-out rates due to distance, finance, death in the family and poor health.	SSHE and infrastructural improvements – Evaluation	Ethiopian Gov. announced that primary school enrolment had increased from 35% to 59%
UNICEF, 2004	India	Poor water and sanitation facilities in schools	Installation of a pipeline to bring water to school sanitation facilities	Children were able to flush and clean the toilets more easily
Ahmad, Malik and Shrestha, 2001	Pakistan	Lack of school sanitation facilities, absenteeism. More than 50% drop-out rate of girls in grade 2–3	UNICEF intervention of installing hand pumps, latrines and hygiene kits	Increased enrolment of girls
Rukanga and Mutethia, 2006	Kenya	Poor sanitation, girls dropping out in upper primary due to lack of facilities	Improved policy – SSHE incorporated into Environmental Health Interventions	Ongoing initiative – not yet evaluated

Menstruation causes girls to miss classes

'Improving the attendance of girls in school probably requires more than just the construction of facilities' (IRC, 2006). In Uganda 94 per cent of girls reported problems at school during menstruation and 61 per cent reported staying away from school (IRC, 2006). Burgers (2000) states that boys often discussed the problems faced by girls and why they drop out as due to the 'lack of soap'; without soap boys tease the girls by saying they smell and recycled sanitary towels cannot be washed properly. 'We have only one toilet in our school for everyone. When my time of the month would come I would pretend to be sick so that I did not have to go to school...It was awful to have to use the toilet quickly, without water and so no one would know' (IRC, 2006).

Menstruation impacts on bodily discomfort in class, causes anxiety, affects concentration in class and causes girls to miss classes. Cultural and religious constraints in Muslim cultures particularly make menstruation a taboo. If menstruation lasts over a week there is a tendency for girls to skip the entire school year (Water Aid/ UNICEF, 2005; Bharadwaj and Patkar, 2004). Embarrassment when blood stains their clothing during their period contributes to girls' low self-esteem.

Disability

There is a lack of diversity in the sanitation and disability literature; the majority has been written by one group of individuals and the subject may therefore benefit from more varied research. In addition to this, a study of more than 165 US-based relief and development NGOs found that organizational objectives make no reference to disabled people in their programmes and so do not monitor and assess the extent of their participation (Jones and Reed, 2003). As stated in WELL Briefing Note number 12 (2005) 'Disability is a poverty issue. The Millennium Development targets will not be met unless disabled people's needs are met, including in water and sanitation'. It is important to note that disabled people are not a homogeneous group, so one size does not fit all (Jones et al., 2003).

Bannister *et al.* (2005) demonstrated the benefits that adapting school facilities can have for disabled Kenyan children. Improvements in a Kenyan school, for instance handrail installation and path improvement, resulted in a 113 per cent increase in school enrolment of disabled children over a three-year period (Bannister et al., 2005).

Something as simple as installing a handrail can provide an opportunity for disabled individuals to exercise their legs and can help to improve strength (Jones et al., 2003). It can also lead to greater inde-

pendence, dignity and privacy as individuals no longer have to rely on their carer for assistance when using the facilities (Jones and Reed, 2003). It has been stated that given a choice many disabled and elderly individuals would prefer a seat to sit on as squatting is uncomfortable (Sugden, personal communication). A commode seat is a portable latrine and so its position can be changed according to convenience, leading to time and energy savings for both the individual and his or her carer (Jones *et al.*, 2003).

Dignity is an important benefit and an adapted facility may enable the user to avoid the soiling of clothes. Such an occurrence would be embarrassing, with a negative impact on dignity and self-esteem; the carer would have to spend extra time washing clothes and the loo and bathing the individual (Jones and Reed, 2005).

Making sanitation accessible to the disabled benefits the entire community and will often incorporate the needs of pregnant women, the elderly and young children. It is cheaper to be inclusive of the disabled at the outset of a sanitation intervention but engineers need to work with the end users in order to understand and cater for their needs (WELL Briefing Note 12, 2005).

Making sanitation accessible to the disabled benefits the entire community

Environmental benefits

One of the key drivers for sanitation adoption among end users is the improvement in their local environment (Cairncross, 1999). For instance the absence of open defecation can greatly enhance the local environment of a village. In urban areas, sanitation management at both household and city-wide level improves the environment, be it through pit latrines or a piped waste disposal to a sewage treatment plant. This in turn can attract business to the region and benefit the local economy. In Cuttack, India, civic pride increased when sanitation improved as there was no longer stagnant water pooling, polluted water and poor drainage and consequently this reduced the number of rats, flies and mosquitoes in the area (Fisher, 2004).

The limited literature tends to focus on the benefits of ecological sanitation (EcoSan) to crop yields in certain rural communities: for example in China well-digested excreta from sanitary latrines was reported to have increased crop yields and thus generated income (UNICEF, 1998). This was also noted in Malawi, particularly as soil fertility had declined and the cost of fertilizer was high, thus EcoSan was well received in this particular rural community (Sugden, 2003). EcoSan, through its use as a fertilizer and soil conditioner, is stated to improve both personal hygiene and environmental pollution.

Improvements to the environment can attract business to the region and benefit the local economy

There is always a need to consult the community before any sanitary intervention and with EcoSan it is particularly important as there may be cultural considerations about the use and handling of human faeces (Manandhar and Shiawakoti, 2004). In the case of Nepal where Mandandhar's work was carried out, the technology was well received and appropriate. As yet EcoSan designs do not consider the needs of the elderly and infirm, although in Malawi mothers were particularly keen on using EcoSan toilets as the slabs were designed for children's use (D'Souza, 2005; Sugden, 2003). Men are particularly interested in EcoSan as they can see an agricultural and potentially economic benefit from installation.

Conclusion

There is a great deal of literature available regarding the non-health benefits of sanitation, far more than was originally anticipated, particularly for the larger topics of gender and school sanitation.

However, very little of this is published and often publications do not distinguish between water and sanitation impacts in their titles, making literature searching difficult. There is a need for more published research in these areas. In addition, there is a great deal of repetition of data within the literature: for example, the widely quoted statistic of 11 per cent increase in girls' school attendance following improvements to the school sanitation facilities.

Poor referencing within the grey literature was another problem encountered, with a tendency to quote statistics without citation. It also became apparent that there are key players who are producing this literature, namely UNICEF, WaterAid, WEDC and IRC and also key countries such as Bangladesh and Ethiopia and it is also important to address whether there are gaps in our literature review that might have excluded material produced by other organizations or countries.

When making the case for sanitation it is therefore important to consider the source of the evidence and who you are targeting – the end user, the donor or governments – as your case may change accordingly.

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