THE CASE FOR SANITATION

A LITERATURE REVIEW OF THE NON- HEALTH AND SOCIAL IMPACTS OF SANITATION

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"Great is sanitation; the greatest work, except discovery, I think, that one can do … What is the use of preaching high moralities, philosophies, policies and arts to people who dwell in appalling slums? You must wipe away those slums, that filth, these diseases … We must begin by being cleansers." Sir Ronald Ross (100 years ago)

INTRODUCTION

This literature review draws on published and 'grey' literature on the impacts of sanitation. There is very little published, peer reviewed literature available on the non-health impacts of sanitation so the majority reviewed is anecdotal grey literature from existing work in the field. The review attempts to extract the 'non health benefits' from the 'health benefits', and the 'sanitation' aspects from the 'water and sanitation' aspects. Search terms were put into a number of databases (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 International, IRC Delft, WSP as well as documents held at the WEDC Resource Centre at Loughborough University and the WELL Room at the London School of Hygiene and Tropical Medicine. The most useful reports are provided on CD Rom.

DEFINITIONS

Before the benefits of sanitation can be fully understood, it is important to first define a number of relevant terms. In order to be effective **sanitation** should go beyond the installation of latrines, consequently for the purposes of this literature review sanitation will be defined as a process whereby people demand, effect and sustain a hygienic and healthy environment for themselves, their family and their community (Burgers, 2000) resulting in a total absence of open defecation or open latrine use (VERC, 2002).

An excreta disposal system is only considered to be effective if it is private or shared (for instance in a house or a school), but not public (WSSCC, 2000). **School sanitation** will be covered in this review, the basic principles of which are similar to those that underlie successful water and sanitation projects in communities. It is important to take into consideration that the main users will be children and thus sanitation must be child friendly and also aim to provide life skills-based hygiene education which will translate into habit and behaviour after the child has left school (World Bank, 2005). Millennium development goal number 7 describes the need for environmental sustainability and as a result this review will also assess the benefits of **ecological sanitation** (EcoSan) which is defined as "*a concept which aims to maximise the sustainability of sanitation systems taking into account all aspects of sustainability*" (IWA, 2003).

CONTEXT OF THE RESEARCH

This research work was commissioned by WaterAid and is meant to provide inputs into a Sanitation campaign report that Water Aid will be producing in time for the launch of their Sanitation campaign in November 2007. The sanitation campaign will be pursued throughout the International Year of Sanitation 2008 and is part of the global 'End Water Poverty' campaign.

The health benefits of household sanitation have been reasonably well-documented. However, the important social benefits, such as the protection of women, have been mentioned only occasionally and anecdotally, and the social benefits of school sanitation still less. This report hopes to draw out some of the social evidence and pull it together. This report does not attempt to look at the economic benefits associated with sanitation improvements in great detail nor the impact of improved sanitation on the HIV positive and the impacts on peoples' sexual and reproductive health as these fall under the 'health' umbrella.

A number of authors stress that the installation of a latrine, in conjunction with hygienic behaviour, is one of the major interventions for the prevention of excreta-related diseases (Cairncross, 1999; WELL, 1998). The impacts and risks of a lack of sanitation are more acute in urban communities as these tend to be much more densely populated and there is less space to dispose of excreta and wastewater (UNICEF, 2000)

Although the health implications of inadequate sanitation are often considered the most crucial factor, sanitation is also important for other reasons. Sanitation has gender, education, disability, economic and environmental implications to those it serves. These include the necessity of privacy for women when defecating, the dangers of walking to open defecation sites at night for women and the disabled, and the lack of school sanitation facilities which often prevents girls from attending school (Cairncross, 1999). UNICEF (2000) suggests that sanitation is a human rights issue from the perspective of the dignity of having access to a latrine.

It is important to note that more often than not it is these non-health issues that act as drivers for the usage and installation of sanitation facilities, particularly at household level. For example, work carried out by both Jenkins et al (2007) and by Cairncross (1999) independently showed that it is the non health issues that usually drive the desire for a household latrine. Cairncross (1999) cited research in the Philippines which showed that the reasons people wish to install a latrine are (in descending order of priority);

1. To avoid smells and flies
2. To have cleaner surroundings
3. For privacy
4. To avoid embarrassment when friends visited
5. To reduce gastro- intestinal diseases

Jenkins et al (2007) stated that people's decision to improve their household sanitation can be a complicated process and in order to contemplate this step, a household must be aware of the personal benefits. Some may have considered a change whilst others will have little awareness of meaningful benefits of having a latrine. In Jenkins' research, carried out in Rural Benin, motivators for facility construction included;

1. For sick or old relatives
2. To offer safety at night
3. For convenience
4. Easier to keep facility clean.

74.4% of households in Jenkins research did not have a household latrine installed and on questioning they found that people disliked their current defecation place (1/3 could think of no positive attribute for their place of defecation).

"*In Ghana, cleanliness and neatness are particularly salient motivations for a wide range of hygiene behaviours. Neatness is culturally tied to notions of moral and social purity…"* (Jenkins 2007)

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 the community. In addition, sanitation is a cultural issue and views of sanitation and drivers for installation may be very different not just between continents and countries but also between ethnic and religious groups.

GENDER

The third Millennium Development Goal (MDG) is to promote gender equality and empower women and there are a number of ways that the presence or absence of sanitation can impact on women's lives. Better hygiene practices are gender specific, it is men who decide on major investments and yet they do not attach the same importance to hygiene and sanitation as women. Gender mainstreaming refers to the process of assessing the distinct implications for women and men of any planned interventions (Casella, 2004). Currently there is a need to increase the inclusion of sanitation in gender policies, for instance in southern African countries such as Zambia, South Africa and Zimbabwe (Mulenga, *et al.,* 2001) and also in Nigeria (Ofong, 2001). Currently sanitation in these countries is not linked to poverty alleviation and thus the gender needs are seen as a community and household issue and are not addressed by policy makers. Until sanitation and gender is addressed as a developmental issue at the highest level it is likely that progress in sanitation coverage will be slow.

A focus group conducted in Kenya (Maili Saba research report, 2005) revealed the opinions of poor urban men and women on the subject of 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 have also reported that women fear using latrines shared with men and will often only use a latrine when they have sole access. Women in the focus group reported that they often bathe after dark in their homes when they felt safer due to the lack of privacy and reported fear of rape when using the shared bathroom. 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 to defecate after dark due to the lack of toilets and privacy, and how many people defecate on the railway tracks between midnight and 4am to get privacy; however there have been a number of deaths from trains associated with this practice. In some places the toilets are half an hour away by foot and consequently have long queues, in one area there were 8000 families and just twelve latrines and an open defecation site (Bapat and Agarwal, 2003). In South Africa

nearly 500,000 women are raped every year (Bannister, 2004), a fact which must be considered when designing sanitary facilities which can be built into separate male and female facilities "*for little or no extra cost, it simply requires good planning, forward thinking and consultation with the end users"* (Bannister, 2004). The point is also raised (Maili Saba research report, 2005) that it is not always clear where the responsibility lies for cleaning and maintaining public and non-gender specific toilet facilities, and also will often have a long queue in the mornings presumably as women have been too afraid to use them during the night, meaning that time is wasted queuing.

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). The report lists a number of impacts on women, for instance, adequate sanitation can increase privacy and dignity associated with safety, personal hygiene and menstruation. Evidence of this is given from the Swayamsiddha project in Chitrakut district, India; women in the community follow "purdah" which requires them to live in some degree of social exclusion and any women representatives on the village council are seen merely as proxies for men. Open defecation was a common practice prior to the project interventions, which meant that women would risk violence and sexual abuse to wait until nightfall. During the project 779 women were involved in Self-Help groups throughout the district, a component of which was offering financial assistance for the cost of building a toilet. Community drama activities also spread the message about the benefits. The impact was significant as women's perception of their own bodies changed as defecation, menstruation and pregnancy could now be dealt with discretely. In addition to this there was an increase in women's technical knowledge (WSSCC, 2006).

In India, the Sulabh Sanitation project provides sanitation services throughout the country and has recently entered into agreements to supply pay toilets and subsidised in slums (Brewster *et al.,* 2006). The needs of women are taken into consideration, particularly those belonging to scavenger families in impoverished areas. They are incorporated as both students and educators and trained as sanitation volunteers, with the expectation that they will pass the message on to other women, leading to increased use and maintenance of the community toilet complexes.

An example is given of when a project fails to take into account the needs of women (WSSCC, 2006); in South Africa the "Aqua Privy" requires water to be poured into the bowl after use and needs to be emptied periodically. The collection of water is an obvious and humiliating sign that a woman wants to use the facilities, the toilets face the street which causes further embarrassment and harassment. Finally, it is the task of women to empty the bowl when it becomes full and women who perform this task can be seen to be unmarriageable (WSSCC, 2006).

The report (WSSCC, 2006) also describes the potential for women's income generation that sanitation can bring through significant time savings. In Tanzania, women devoted their saved time from improved sanitation to economic activities such as working in shops and tea rooms, and selling their produce. Time

and energy savings can have a number of other benefits for women, including more time spent on ensuring children 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). In rural parts of Bangladesh evidence has shown (Bharadwaj and Patkar, 2004) that women who use cloths for menstruation have to search rural areas to find secluded spots to wash the cloths, this is both time and energy consuming. Drying the cloths then becomes an issue and often insufficient drying time is available and so the cloths are reused when they are still damp, leading to discomfort. Bannister (2004) also points out the need for provision of a private place to wash and dry sanitary cloths. Hutton, Haller and Bartram (2006) report the likely economic benefit for sanitation, and state that better sanitation access is likely to increase the time saved by an individual though they acknowledge that there is no data available in the literature for an estimate of time saved per day due to less distant sanitation facilities and less waiting time.

Another important impact that sanitation can have on women is empowerment and improvement of their status. One report (WSSCC, 2006) gives the account of Shanti Bhut from Baitandi, 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 is a source of pride to her in-laws and is held up as a positive role model within the community. Women involved directly in technical and management roles can challenge traditional perceptions about women. In El Salvador, the Agua project promotes leadership in women and allows them the opportunity to acquire knowledge and skills previously only thought to be suitable for men. The report aims to demonstrate how sanitation that is appropriate for women will be beneficial to the wider community and highlights some of the benefits of placing women at the centre of decision-making (WELL Briefing Note 25). 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. A valid point is raised in the Women, Water Supply and Sanitation Training Seminar (1994) that although women are likely to be key to the success of sanitation programmes, their involvement in such schemes may increase their workloads through their having to install, maintain and repair sanitation facilities.

GENDER SUMMARY TABLE

Reference	Country	Region	Problem	Intervention	Outcome
Mulenga, *et al.,*2001	Southern Africa	Zambia, South Africa, Zimbabwe	Policy makers failing to address sanitation as a gender issue.	None	Lack of sanitation related policies. Regarded as a community and household issue.
Ofong *et al.* 2001	Nigeria	N/A	Policy makers failing to address sanitation as a gender issue.	None	Lack of sanitation related policies. Regarded as a community and household issue.
			Gender inequalities	None	Impossible for women to 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 trainline resulting in a number of rail deaths.
WSSCC, 2006	India	Chitrakut district	Open defecation	Self help groups; latrine subsidees; 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	Source of pride to in-laws; 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 harrassment 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 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 as well as motivating and assisting other girls
Brewster *et al.,* 2006	India	Slums	Lack of appropriate slum sanitation	Toilets subsidised and women incorporated as students and educators	None stated but it is hoped that these women will go on to pass the message on to other women.

In 2001, at the 27th WEDC conference, 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. Two years later in 2003 at the 29th WEDC conference, Suwaiba spoke of the 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. Due to their seclusion, the females are often illiterate and uneducated which consequently affects their hygiene behaviour. There is a need therefore to build the self-confidence and self-esteem of the women in seclusion so that they can make a collective decision on issues that affect them. Workshops have been designed to develop group formation and leadership skills in order to raise self esteem. This has led to the formation of sanitation and hygiene clubs which are managed by women. 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. Empowerment does not just have to target adult women, adolescent girls can also experience a number of benefits from a sanitation program (Adolescent Girls Programme, 2000). The adolescent girls program in Bangladesh shows how such a programme can train girls to act as "*social agents to bring about changes, particularly among other girls like themselves".* Girls who were particularly successful during the program went on to lead Gender Sessions and Solidarity Conventions as well as motivating and assisting in the empowerment of other adolescent girls.

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

SCHOOL SANITATION

'In one promising initiative, in early 2000, the School Sanitation and Hygiene Education (SSHE) programme was launched in 6 countries; Burkina Faso, Colombia, Nepal, Nicaragua, Vietnam and Zambia. By 2015, the programme aims to educate 80% of primary schoolchildren about hygiene and to have all schools equipped with sanitation and hand washing facilities. Students are targeted both as direct beneficiaries and as agents of behavioural and attitudinal change within their families and their communities. The programme recognises the importance of providing hygienic in-school sanitation facilities, taking into account the specific needs of female students.'

(Kofi Annan in the Report of the Secretary- General of the United Nations on Sanitation to the Commission on Sustainable Development, 12th Session in New York 14-30th April 2004)

The school environment, both physical and mental, has a huge impact on children across the globe and nowhere is this more apparent than in less developed countries. Sadly, the AIDS epidemic and other infectious diseases, particularly in Africa, has left children orphaned and often leading their households and bringing up their siblings; thus the reliance on the education system to help these children to learn not just academic but life skills is essential to them as a family but also to the alleviation of poverty at a national level.

The number of children excluded from primary education ranges somewhere between 105 and 120 million worldwide, of which 44 million are in Africa and of which it is estimated 60% are girls. Thus the move to provide free Universal Primary Education at the turn of the century was hugely welcomed by the international community. So where does school sanitation fit in? The rise in the enrolment of children attending primary school since the 'Universal Primary Education for All' Campaign has been apparent and the campaign will provide greater opportunities for hygiene education, however, it has also put additional pressure on already limited school infrastructures, including sanitary facilities, in some cases a ratio of 700 pupils to 1 latrine (Sidibe, 1999). For example Kenya where there has been a 7.2 million rise in pupil numbers across the country (Rukunga & Mutethia, 2006). School facilities and teacher recruitment need to keep up with this enrolment rise and also to address the needs of girls who are often kept at home or are deterred from attending school.

Our brief for this review was to look at sanitation in general, however, we found a substantial body of the literature on the non health benefits of school sanitation, which we were surprised to find outweighed the corresponding documentation for household sanitation. The literature on school sanitation is summarised in the table overleaf.

The research largely focuses on the sanitary needs of girls and the negative impact that lack of sanitation can play on their attendance levels. Most of the evidence in the literature is anecdotal but the key message is that school girls need to be catered for within the school environment and sanitation certainly plays a part in the provision of good school facilities.

'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 and religious reasons, but often due to the lack of school facilities, for example in Nigeria where parents would withdraw their daughters from school because they had to use an open defecation site (SSHE Symposium Report 2004; Snel & Shordt 2005; WSP 2004).

From the literature read and the case studies documented in the table a number of important aspects need to be considered to assist future SSHE interventions and research;

SCHOOL SANITATION SUMMARY TABLE (2 PAGES)

Reference	Country	Problem	Intervention	Outcome
Bolt, Shordt and 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 previously had 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. May be due to external factors
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 had interfered with their daily lives and caused them to be absent from school between 1 and 7 days a month Uganda: Reported that most absenteeism in girls is due to inconvenience of their menstrual cycle Kenya: sanitation improvements and hygiene education of both sexes reduced the number of girls dropping out at puberty Bangladesh: Women use cloths to control their menstrual flow - considerable time spent searching for a secluded spot. 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 to determine the risks and the effect of sanitation on them	No incidents of sexual harassment were 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 in poor school facilities was compromised and toilets a long way from the school were considered unsafe as intruders used to hid 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
SSHE 'The Way Forward, Construction is not enough', 2004	Numerous	Poor school sanitation facilities	Case Studies	In the Noakhali District of Bangladesh, the provision of water and sanitation facilities in a school increased girls' attendance by 11%. Teachers recruitment and retention also improved In Alwars, India over 5 years girls enrolment increased by 78% and boys by 38% following an SSHE intervention In Swaziland communities increased their responsibility for improving and maintaining the school environment following an SSHE intervention In PNG and Uganda, most toilets surveyed were considered a health risk, though students thought this was the "norm" resulting in a negative on their understanding of health and hygiene standards

Reference	Country	Problem	Intervention	Outcome
UNICEF, 1994 Evaluation	Bangladesh	Poor school sanitation facilities	Evaluation Study	In the Noakhali District of Bangladesh the provision of water and sanitation facilities in a school increased girls attendance by 11%
UNICEF, 2003 Children in Iraq	Iraq	Issues of conflict destroying school infrastructures	Survey of school building conditions	In general it is thought that poverty and cultural attitudes towards girls/ women contributes to the poor enrolment of girls in education. However, the poor facilities due to war damage including sanitation 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, Primary and Secondary Schools involved particularly because of the decline in the age of onset of menstruation, 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
UNICEF, 2005; Also Ngales, 2007	Ethiopia	Poor school sanitation facilities; High drop out rates due to distance, finance, death in the family and poor heath.	SSHE and infrastructural improvements - Evaluation	Ethiopian Gov. announced that primary school enrolment had increased from 35% to 59%; A clear impact on menstruation identified through focus groups in schools
UNICEF, 2004; UNICEF Gov. of India Report, 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; there was no longer a need to walk a long distance to collect water for cleaning the sanitary facilities
Bharadwaj and Patkar, 2004	Iran West Kenya India	The problems faced by girls at school when sanitation facilities are poor	Case Studies	15% of girls in Iran said they were absent from school for between 1 and 7 days a month due to menstruation Improved sanitation increased the number of both boys and girls cleaning the facilities. Girls said the intervention helped them manage menstruation and thus stay at school In Tamil Nadu the installation of incinerators for sanitary napkins and the provision of gender segregated latrines proved successful
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 to 184 schools	Increased enrolment of girls
Rukanga and Mutethia, 2006	Kenya	Poor sanitation, girls dropping out in upper primary due to lack of sanitary napkins, separate facilities and accessible water in schools	Improved policy - incorporation of SSHE into Environmental Health Interventions	Ongoing initiative - not yet evaluated

- 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 can help empower girls and make them 'social agents to bring about change' (Adolescent Girls Programme, 2000). It is recommended in Snel and Shordt's article that both boys and girls get involved in SSHE; in Mexico it was found that only girls were cleaning the installed sanitary facilities, SSHE should be incorporated into education and used to address sensitive issues such as HIV, STIs, menstruation and local cultures and traditions (Snel and Shordt, 2005).

- A common theme throughout the literature is that sanitation and hygiene promotion should not be linked to health benefits alone. Most recognise the aspiration that there is a need to promote values of self esteem, recognition and acceptance in society.

- Training of teachers and having at least one female teacher in each school to provide pastoral care and support to the girls would improve intervention programmes as gender sensitivity is essential when implementing SSHE. Teaching girls the facts about menstruation, educating boys as well as providing more facilities in schools, are important messages of successful SSHE (WSP 2004; IRC 2006; Burgers 2003). The absence of female teachers perpetuates girls and women's low status and self esteem. The absence of female role models in education conveys negative signals to girls about the ability of women to achieve (Water Aid/ UNICEF Bangladesh, 2005). It is ironic that in the more developed countries, such as the UK, this situation is the reverse and there is a distinct lack of male teachers and male role models, within the education system, particularly at primary level. If sanitary facilities are available then teachers, particularly female, are more easily recruited and retained, and they can therefore be role models to their pupils. Childhood is the best time to learn hygienic practice, what children learn early on is likely to be applied to the rest of their lives, they are after all tomorrows' parents. Reasons for poor sanitation are often cited as due to the inadequate training of teachers, the absence of hygiene education preventing children from learning what they should be putting into practice, poor access to teaching materials and that health and hygiene are not well addressed on the school curriculum. SSHE can be hard to maintain as was noted following an intervention in Vietnam (IRC/UNICEF, 1998).

- Better involvement between sanitation and education policy-makers and better monitoring by District School Health Coordinators or equivalent was also regarded as important. Guidelines for Head Teachers, better sustainability through funding and assistance given to schools to sustain maintenance and cleaning of sanitary facilities after they have been installed and improve implementation (Trend, 2006).

- ‘Improving the attendance of girls in school probably requires more than just the construction of facilities’ (IRC, 2006). 50% of 13 year old girls and 12.5% of 11year old girls will have reached puberty and be menstruating, therefore catering for menstruating girls at school requires both a primary and secondary school focus. In Uganda 94% of girls reported problems at school during menstruation and 61% reported staying away from school. (IRC, 2006). Burgers (2003) 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. This is complicated by the lack of sanitary facilities at school where there is no water, soap or privacy. When set in this context it seems absurd to even ask ‘why do girls drop out of school’?

  ‘My menstruation started very early, at 10 years old, at school one day. I went to my teacher and asked if she could help me because it seemed like I had sat on something very sharp which must have cut me on the bottom. Teacher said no, this happens to all women and I could go home. It was difficult walking home so no one could see me. At home my mother gave me some cloth to wear but did not say what menstruation was about. 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 low self esteem. Some of the girls interviewed in Ethiopia were 15/16 years old and were still in grade 1, by the time they finish grade 6 (assuming there is no further disruption to their education) they will be 22. Continual absenteeism therefore contributes to many girls repeating the academic year. It is worth noting that in some cultures many girls in school were married and suffered the additional burden of birth control and pregnancy whilst still in school; this was found to be the case in Ethiopia (Ngales, 2007).

- Even research in more developed countries by Jewkes & O’Connor (1990) (cited in Abrahams *et al.,* 2006) showed that frequently the menstrual needs of girls and gender issues in general are omitted from sanitation construction and maintenance. This is not just an issue of developing countries.

- The School Sanitation Campaign Report (1999) lists some of the more generic benefits of SSHE interventions. These include community participation, improved privacy and acceptance, comfort, cleanliness, friendship, cooperation, team spirit, enhanced ability for teachers to mobilise resources

and improve organisation within the school. (The School Sanitation Campaign Report 1999). It is essential that evaluations of SSHE interventions look at these aspects as well as the better documented health benefits.

DISABILITY

There is a lack of diversity in the sanitation and disability literature, with the vast majority all being written by one group of individuals, the subject may therefore benefit from more varied and extensive research. In addition to this, a study of more than 165 US-based relief and development NGO's found that organisational 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 peoples' needs are met, including in water and sanitation".* Appropriate and accessible sanitation will not only be a benefit to the disabled user but also to his or her carer, however it is important to note that disabled people are not a homogenous group, so one size does not fit all (Jones, Reed and House, 2003).

Bannister *et al.*, 2005 demonstrated the benefits that adapting school facilities can have for disabled Kenyan children. Children with disabilities in Kenya have little or no education, poor school sanitation results in a low likelihood of their attendance. Sanitation is part of the bigger picture in improving access for children with disabilities, through the improvement of paths, latrine floors and installation of handrails. These improvements in Kenya resulted in a 113% increase in school enrolment of disabled children over a 3 year period (Bannister *et al.*, 2005) however in this case sanitation was part of a wider intervention to improve the school environment so the improvements in enrolment may not all be due to sanitation adaptation.

Something as simple as installing a handrail can bring numerous benefits. For example it can provide an opportunity for the disabled individual to exercise their legs and help improve strength, which is particularly important for children (Jones, Reed and House, 2003). A handrail can also lead to greater independence, dignity and privacy as individuals no longer have to rely on their carer for assistance when using the facilities (Jones and Reed, 2003).

There is a general feeling that "African people like to squat" and so a form of seat above the latrine hole would not be used if it were provided. In fact it has been demonstrated 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 and perhaps seasonal changes leading to time and energy savings for both the individual and their carer (Jones, Reed and House, 2003) and avoids the problem of distance for the user (Jones and Reed, 2003).

Jones and Reed (2005) provide a comprehensive list of the benefits of water and sanitation to disabled people and other vulnerable groups:
Increased dignity and self reliance, independence, improved health and nutrition, reduced poverty, time and energy savings, more time for other activities, elderly users are able to retain independence until later in life, often an accessible facility will also benefit pregnant women and children, help avoid injury by using an appropriate facility.

Another important point that this paper raises is that of hygiene; an adapted facility will enable the user to go to the loo and avoids the soiling of clothes. Such an occurrence would be embarrassing for the individual and will negatively impact on their dignity and self esteem and the carer would have to spend extra time washing clothes and the loo and bathing the individual (Jones and Reed, 2005). As stated in Hanan (2005), Mr Raizuddin in Bangladesh was unable to use the toilet independently, once his latrine was adapted, his wife's workload decreased and his personal dignity and self esteem increase as did the family income.

Water and sanitation programmes can reduce the infrastructural barriers in the environment to disabled individuals (WELL Briefing Note 12, 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 disabled end user in order to understand and cater for their needs (WELL Briefing Note 12, 2005).

ENVIRONMENTAL BENEFITS

One of the key drivers for sanitation adoption among end users is the improvement in their local environment (Cairncross, 1999). It is fairly obvious that the absence of open defecation can greatly enhance the local environment of a village. In urban areas, sanitation management at both a household and city-wide level improve 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 Faisalabad in Pakistan, children could play more safely in the streets once sewage was no longer running down them. 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 local area (Fisher, 2004).

A lot of the rather limited literature focuses on the benefits of Ecological Sanitation (EcoSan) to crop yields in certain rural communities, for example in China where 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 fertiliser was high, thus EcoSan was well received in this particular rural community (Sugden, 2003). EcoSan, through its use as a fertiliser and soil

conditioner, is stated to improve both personal and environmental pollution. EcoSan can sometimes save water and can potentially increase crop yields (Manandhar *et al*., 2004), as was the case in China and Malawi.

It is important to note that further clarification and research is required in this area of Ecological Sanitation benefits and it is worth noting at this point that Ecological Sanitation (EcoSan) is often difficult to scale up and is not always an appropriate option.

There is always a need to consult the community before any sanitary intervention, and preferably through the use of social marketing techniques. However, with EcoSan it is particularly important as there may be cultural considerations about the use and handling of human faeces (Manandhar *et al.,* 2004).There may also be investment cost considerations as they are often more expensive to install (Smet, 2007). 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 child use and prevented small children from falling in (D'Souza, 2005; Sugden, 2003). Men are particularly interested in EcoSan as they can see an agricultural and potentially economic benefit from installation. In Malawi it was found that both men and women saw the benefits of installation (D'Souza, 2005).

CONCLUSION

There is a great deal of literature available regarding the non-health benefits of sanitation, far more than was originally anticipated. This was particularly apparent for the larger topics of Gender and School Sanitation. However, it is important to note that very little of this is published and that often publications do not distinguish between water and sanitation impacts in their titles; this makes literature searching difficult. There is a need for more published research in all areas discussed in this report. The databases searched often identified the same reports and it is difficult to predict what further literature is available.

Poor referencing within the grey literature was a common problem encountered. There is 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, which begs the questions – is there a need for more independent evaluation? Is there scope for bias within this literature? Is more academic research required? Are a proportion of sanitation interventions lacking documentation? It is also important to address whether there are gaps in our literature review that might have excluded material produced by other organisations or countries.

There is a great deal of repetition of data within the literature, such as the widely quoted 11% increase in girls' school attendance following improvements to the school sanitation facilities. After much searching this statistic was identified as being reported in an evaluation of an intervention carried out by UNICEF Bangladesh in the mid 1990's and published in a report entitled 'Evaluation of the Use and Maintenance of Water Supply and Sanitation System in Primary Schools' by Consulting Services and Associates of Dhaka in 1994. Sadly, the full report was not available for review at the time of writing.

When Making the Case for Sanitation it is therefore important to consider the source of the evidence and who you are targeting; be it the end user, the donor or Governments and resultantly your case may change accordingly.

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