

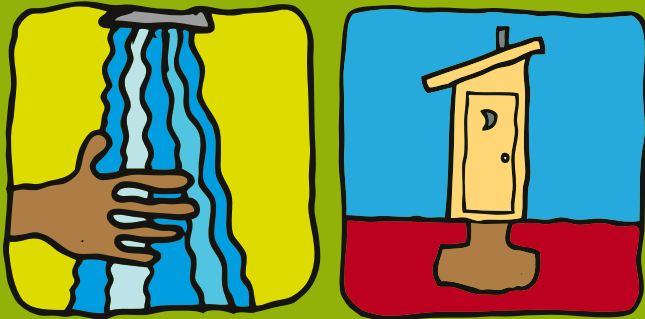
Tackling a global crisis: International Year of Sanitation 2008



IYS partner organizations

UNDESA	(United Nations Department of Economic and Social Affairs) www.un.org/esa/sustdev/sdissues/sanitation/sanitation.htm
UNDP	(United Nations Development Programme) www.undp.org/water/priorityareas/supply.html
UNEP	(United Nations Environment Programme) www.gpa.unep.org/content.html?id=246
UN-HABITAT	(United Nations Human Settlements Programme) www.unhabitat.org/categories.asp?catid=270
UNICEF	(United Nations Children's Fund) www.unicef.org/wes
WHO	(World Health Organization) www.who.int/water_sanitation_health/en
WSSCC	(Water Supply & Sanitation Collaborative Council) www.wsscc.org
UN Water	www.unwater.org
UNSGAB	(United Nations Secretary General's Advisory Board on Water & Sanitation) www.unsgab.org
UN-GWTF	(United Nations Interagency Gender and Water Task Force) www.un.org/esa/sustdev/inter_agency/inter_agency_2_genderwater.htm
UNESCO	IHE Institute for Water Education www.unesco-ihe.org
WTAA	(World Toilet Association General Assembly) http://en.wtaa.or.kr/site/index.htm
IRC	(International Water and Sanitation Centre) www.irc.nl
GWP	(Global Water Partnership) www.gwpforum.org
SuSanA	(Sustainable Sanitation Alliance) www.sustainable-sanitation-alliance.org
WaterAid	www.wateraid.org
WSP	(Water and Sanitation Programme) www.sustainable-sanitation-alliance.org
SIWI	(Stockholm International Water Institute) www.siwi.org
WTO	(World Toilet Organization) www.worldtoilet.org

INTERNATIONAL YEAR OF SANITATION



2008

'Why do we need an International Year of Sanitation?

Here is why: Because clean water and sanitation are not only about hygiene and disease, they're about dignity, too. Relieving yourself in hazardous places means risking everything from urological disease to harassment and rape. Many examples show that self-esteem begins with having a safe and proper toilet facility.

That is why we, as policymakers, opinion leaders and stakeholders, must make an effort to make proper sanitation accessible and available to everyone. Because everyone and that means ALL the people in the world, has the right to a healthy life and a life with dignity. In other words: everyone have the right to sanitation.'

*HRH Prince Willem-Alexander
of the Netherlands*

*Chair UN Secretary General's Advisory
Board on Water and Sanitation*

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Photo © UNICEF/HQ06-1442/Ninfa Bito

On 20th December 2006, the UN General assembly declared 2008 as the International Year of Sanitation (IYS). The proposal was brought into the General Assembly by 48 Countries at the recommendation of the UN Secretary General's Advisory Board on Water and Sanitation. The International Year of Sanitation provides the global community with an opportunity to raise awareness and accelerate actions for the achievement of the sanitation MDG through a variety of actions and interventions.

UN-Water welcomes and supports International Year of Sanitation as it provides an important opportunity to impact and improve the lives of children and their families throughout the world. IYS is expected to stimulate dialogue at all levels and create a context for political leadership, leading to the allocation of greater resources to sanitation for the poor. The UN-Water Task Force on sanitation have come together to produce this publication *Tackling*

a global crisis: International Year of Sanitation 2008 to contribute to this dialogue and help advocate and increase awareness of the importance of sanitation throughout the globe. The co-ordination of this work was jointly undertaken by UN-HABITAT and UNICEF on behalf of UN-Water.

The messages are clear: sanitation is vital for health; enhances social development; is a good economic investment; improves the environment and most importantly it is achievable. More resources and stronger commitments are needed to deliver on the promise made in the Millennium Development Goal (7c), to halve the number of those without access to basic sanitation by 2015.

Let us use 2008, the International Year of Sanitation, to expose this scandal of human indignity, unnecessary child death and lost economic opportunities by redoubling our efforts and bring this silent crisis to an end.



Dr. Pasquale Steduto
Chair UN-Water

Around the world, 2.6 billion people¹ do not have a clean and safe place to use for performing their bodily functions – they lack that basic necessity, a toilet. Among those who make up this shocking total, those who live in towns and crowded rural environments daily confront squalor all around them, including human faeces, flies, and other disease-carrying agents.

This hidden global scandal constitutes an affront to human dignity on a massive scale. The most important outcomes are:

- widespread damage to human health and child survival prospects;
- social misery especially for women, the elderly and infirm;
- depressed economic productivity and human development;
- pollution to the living environment and water resources.

In the industrialized world, the modern ‘sanitary revolution’ has long meant that everyone has access to a flush toilet in their home. Water for bathing, laundry and all domestic use is piped into the household, and once sullied, piped out again. At the touch of a handle, human wastes are removed into a sewer or septic tank. In the developing world, such facilities are denied to the vast majority. Neither do they enjoy storm water drainage or regular refuse collection to keep streets and communities clean. Ninety per cent of human excreta in such



Photo © UN-HABITAT

environments end up untreated in rivers, causing serious pollution².

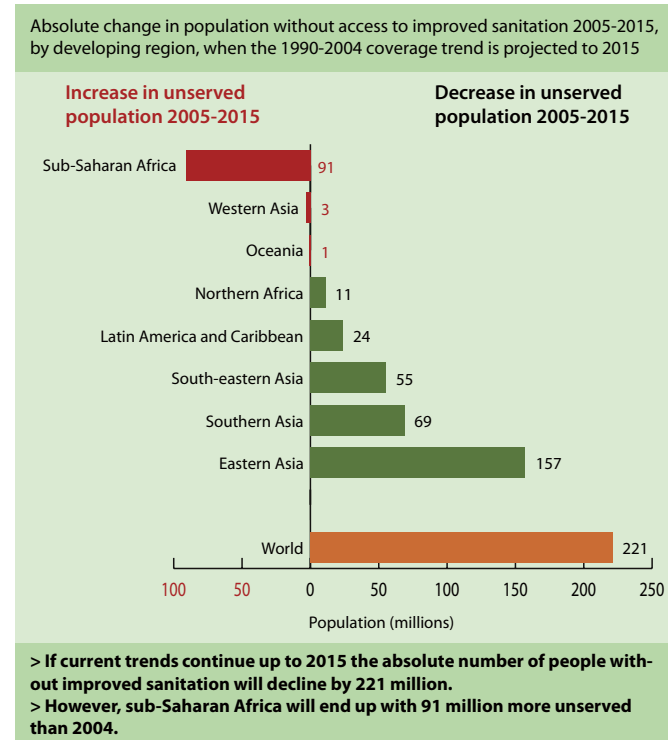
For too long, policy-makers have talked about ‘water and sanitation’ as if they were one and the same thing. Water, without which nothing on earth can survive, is popularly desired and its supply is politically backed above all life-supporting services. But sanitation remains the poor relation. Neither people nor politicians want to engage with sanitation, however necessary it may be. Dirt and its removal are distasteful topics. So the resources needed to tackle the global sanitation crisis have not been forthcoming.

Recognition of the sanitation crisis has prompted the United Nations to declare 2008 *The International Year of Sanitation (IYS)*, and invite its own member states and organizations, and well-wishers all over the world, to get involved. The IYS provides an opportunity to draw attention to the needs of over one-third of global citizens for the most basic of services by promoting *five key messages concerning sanitation*, and to generate new resources to address the crisis at international, national and community levels. The fact that the nations of the world have put this issue squarely on the international agenda is an indication that popular and official attitudes are changing. The time has come to take action to address the sanitation crisis.

Those organizations backing the IYS are using 2008 to bring this neglected subject out of the closet. The taboos surrounding sanitation are being broken, and its profile raised with policy makers, politicians, civil society and the general public. Action is being stimulated at every level from the household to the international to generate momentum behind sanitary transformation. Investments are increasing, in basic toilets, personal hygiene, laundry, solid waste management and drainage infrastructure that millions of ordinary people need, want and can afford.

In 2002, a Millennium Development Goal (MDG) was set, of halving by 2015 the numbers of those in 1990 obliged to manage without toilets. But progress towards the Sanitation Goal has been much too slow. With sufficient political will, financial invest-

ment, popular participation, and the most appropriate and affordable technological and hygiene education approaches, the 2015 Sanitation Goal can be reached.



Source: WHO/UNICEF, Joint Monitoring Programme, 2006

1. Sanitation is vital for health

Lack of toilets and the safe confinement of excreta away from hands, feet, drinking water and eating utensils, and lack of hygiene, especially failure to wash hands after defecation, lead to the transmission of diarrhoeal disease. Provision of sanitation is important for the prevention of illness of all kinds, and saves the huge costs of medical treatment.

2. Sanitation contributes to social development

Where sanitation facilities and hygienic behaviour are present, rates of illness drop, malnutrition in children is reduced, more children, especially girls, attend school and learn better, and women's safety and dignity are improved.

3. Sanitation is a good economic investment

Improved sanitation has positive economic benefits. Livelihoods and employment opportunities are enhanced, and the costs to the community and to the nation of illness and lost productivity is reduced.

4. Sanitation helps the environment

Improved disposal of human waste promotes environmental cleanliness and protects streams, rivers, lakes and underground aquifers from pollution. Safely composted, excreta can be used as fertilizer.

5. Sanitation is achievable

Tried and tested appropriate technologies, programme models and people-centred approaches can be rolled out where there is the will to do so. The cost of meeting the Sanitation Goal – US\$9.5 billion a year³ – is affordable.



How on earth have we managed to get into a sanitation crisis of such epic scale? How has it happened that the item regarded by health professionals as the most important medical advance in the last 140 years, according to a recent survey⁴, is absent from so many people's lives?

In the industrialized world, sanitary reform and the almost universal take-up of indoor toilets with their sewerage connections was the product of 19th century urbanization, and its appalling squalor and high disease rates. Although town and city populations are now growing at an unprecedented rate and the picture is rapidly changing, the vast majority of people in the developing world have up to now been living in rural areas without the benefit of modern infrastructure. The traditional system of sanitation used in villages from Lesotho to Bolivia, India to Senegal, Egypt to Vietnam, was to set aside common areas away from people's homes for men and women to use. Above all, people did not want excreta lingering near their houses, and they wanted privacy.

In times gone by and in places where population is scattered and remote, traditional systems which kept excreta away from people's living spaces may have been adequate. But in today's ever more crowded world, especially in teeming slums and shanty-towns now home to about 1 billion people⁵, the absence of functioning and decent-to-use toilets and systems of waste management and removal is nothing short of a disaster. This is also the case, in small rural towns and large villages in countries

such as Bangladesh, Ethiopia and Madagascar where populations are almost as densely-settled.

Where people are living in crowded communities, women going out to visit the 'bush', 'squatting-ground' or public toilet block – especially where custom dictates that they wait until darkness to protect their modesty – are fearful of attack. Diseases, notably diarrhoeal infections including cholera, can spread like wild-fire. The excreta of babies and toddlers is more pathogenic than that of adults⁶, which many mothers do not appreciate. Playing in the dust and dirt of the compound or on alleyways and paths, small children are especially vulnerable. Every year, 1.5 million children under five die from diarrhoeal diseases⁷, almost all of them living in poverty-stricken rural and urban communities. Thus human dignity and human health both suffer severely from this invisible global crisis.

Urban needs, rural needs

The 2.6 billion people without sanitation are mainly rural. It is important to recognize, however, that the more cramped and squalid the living environment, the more deeply felt is the absence of toilets as well as washing and drainage facilities. The urban population of the developing world is growing at a furious pace: over a million newborns and migrants are added every week⁸. The majority of these are living in settlements often regarded as 'illegal', on the fringe of towns and cities or on waste ground in their crevices, where even the most basic services are not provided. Because their presence

What is 'sanitation'?

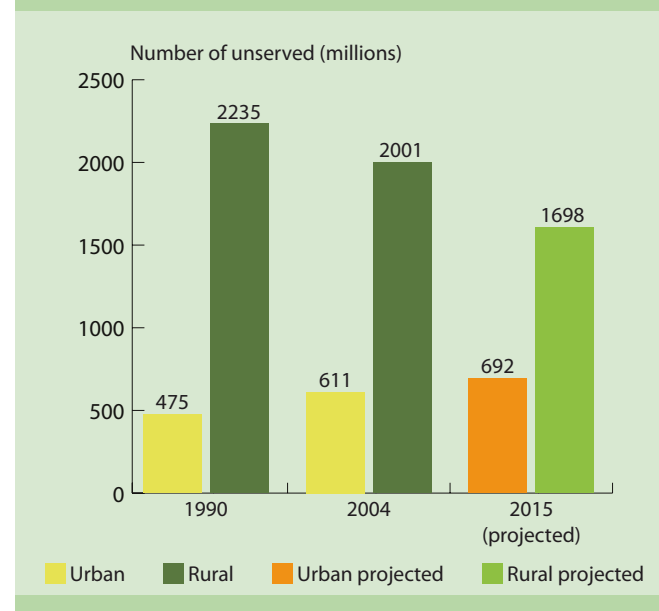
'Sanitation' means different things to different people, but its definition has to include 'the safe management of human excreta', usually by means of a toilet that confines faeces until they are composted and safe, or enables them to be flushed away into a sewer. In its fullest sense, as understood for the IYS, sanitation also includes environmental cleanliness; handwashing; garbage removal and wastewater disposal. The concept of sanitation as 'clean living, free from contact with excreta and other disease-carrying agents', now being actively promoted in Bangladesh, India and elsewhere, in which toilets are an important component, is a more attractive and saleable prospect in some settings than excreta management alone. This is captured by the concept of 'total sanitation'.

is unwanted, the authorities may disregard them altogether, omitting them in demographic statistics and town plans.

In such settings, known as *bustees, favelas, barrios, bidonvilles*, townships, or simply slums, where housing is made of flimsy materials and dwellings are cramped and huddled together, people yearn for a decent toilet and bathing place - which there is no room or money to build. *'The conditions are terrible. There is sewage everywhere. Most people use buckets and plastic bags for toilets, and our children suffer all the time from diarrhoea and other diseases because it is*

so filthy', reports a resident of Kibera, Nairobi, one of Africa's largest slums. Millions of poor urban residents all over the world resort to excreting into a plastic bag and throwing the package onto a dump - they have no choice. Where public or shared facilities exist, they are often foul and poorly maintained. Services to remove and dispose safely of sludge from toilet pits may be minimal or non-existent, so in low-lying areas pits overflow in the rains.

Global population without access to improved sanitation in urban and rural areas in 1990, 2004 and 2015 (projected based on 1990-2004 trends)



Source: WHO/UNICEF, Joint Monitoring Programme, 2006

WHEN PEOPLE IN POOR COMMUNITIES IN LA PAZI, BOLIVIA, WERE ASKED IF THEY WANTED CONNECTIONS TO A SIMPLIFIED SEWER, 96% SAID YES



Photo © UNICEF/HQ06-1846/Josh Estey

Voices of women in South Asia

In South Asian societies, where women do not move around freely outside the home, the humiliation associated with the lack of toilet facilities in poor neighbourhoods can be acute. One woman described her predicament to researchers from the Society for the Promotion of Area Resource Centres (SPARC), a local NGO: 'We used to go to the toilet near the river side. The insects used to climb up our legs. Or I went in the bungalow where I worked, or we went to defecate under the bushes. Then in the elections, Qazi Saheb [a local politician] came and arranged for taps. After this each house had a tap, but there was no provision for toilets. Even today the toilets are the same as they have always been. It takes one to one and a half hours to queue up and use the toilet, so we still defecate in the river. And even now, insects climb our legs.'

By contrast, in remote desert, highland or riverine villages of Africa or Asia where life is still lived in the traditional way, the idea of building a cabin for defecation in or near the house, to be shared by everyone, male, female including children, may still appear strange. Bathing and laundry is done in the stream or lake. Along with literacy, knowledge of how diseases spread is lowest in such environments. Cash income is often very low, and to invite expenditure on a household improvement such as

a toilet – especially one built of more solid materials than the dwelling itself – can seem unrealistic.

Although the absence of facilities in rural areas is more critical in terms of scale, in terms of human misery, loss of personal dignity and public health risk, the crisis in slums, shanty-towns and physically crowded areas is much more acute. It is also much more acutely felt, and demand for toilets much higher. And the way lack of sanitation is perceived by those without facilities or waste disposal services is a vital clue to how to proceed. In order to build momentum behind sanitation and hygienic behaviour, the mobilization of consumer demand in many different kinds of settings is essential, using a menu of different approaches.

Sewerage is not the only answer

An important difficulty in addressing the crisis is that the economies and settlement patterns of many slums and virtually all rural areas of the developing world cannot support the installation of sewerage. Neither governments nor communities have the necessary resources for installation or maintenance, and there is no incentive for the organized commercial sector to get involved. So the conventional waterborne industrialized world model for sanitation cannot be applied in a majority of settings for reasons of expense, as well as topographical and technological impracticality. By contrast, household taps – or at the minimum, community standpipes – for domestic water to facilitate personal hygiene are financially and tech-

nologically within reach almost everywhere. But a new problem then arises: once water is laid on to a community, there also has to be a means of taking volumes of dirtied or ‘grey’ water away. Without proper drainage, puddles and filthy ponds create new breeding-grounds for disease.

In some poor urban communities, where housing is permanent and livelihoods on the ‘up’, cheaper forms of sewerage – small diameter pipes, community-based management and maintenance – are practicable and can be connected to the main sewer system. Roads and paths can also be paved, and rubbish collection introduced. But for shantytowns and heavily-populated rural areas, even technologically scaled-down approaches can be impracticable. ‘On-site’ facilities – toilets in which excreta is dropped into a pit or chamber where it can decompose, safe from contact with hands, feet, local water supplies, and domestic utensils – are often promoted instead. As long as such toilets are able to be smell-free, easily cleaned, affordable and congenial to use, they find a satisfied clientele.

Active engagement by the authorities

Although the purchase and construction of on-site toilets will mostly be undertaken by households themselves, the active engagement of public health, local and municipal authorities in service delivery for waste disposal (sewage and solid waste) is essential. So too is financing at household level by loans or other means, and the development of a new toilet economy which offers a range of afford-

Voices from Nigeria

A Nigerian student reported in 1990 that, in some more isolated areas, the foolishness of glorifying excreta by building a house for it was greeted by the local inhabitants with mirth. So incensed were they that the authorities were trying to impose such a practice – an indication of strong taboos which no-one thought to inquire into – that they refused. The chief of one such a community was threatened with imprisonment because his village had failed to comply with the sanitation order. The villagers therefore built three communal-use latrines according to the prescribed design, with doors. They then attached locks to the doors and left the keys in the charge of the chief. When the sanitary inspector visited, he was delighted to find that the latrines were so clean.

able options to potential consumers. For too long, lack of resources and over-emphasis on conventional sewerage has provided a pretext for their relative inaction among unserved urban and rural populations. In many countries, of the resources allocated to domestic ‘water and sanitation’, less than five per cent is provided to sanitation – water supply absorbs the overwhelming share.

Political leadership is also lacking. Too often, sanitation is a political and institutional orphan, with no voice at the policy or service delivery ‘high table’. This needs to change. Properly mandated

Voices from Senegal

The on-site toilet preferred in the peripheral areas of Dakar is the twin-pit pour-flush, a toilet whose alternating pits can be used in sequence, to allow time for excreta to decompose and become safe and odorless before removal. In the rural area of Djourbel, twin pits are also used, but this is a semi-desert area where water is scarce so these are 'dry' toilets. The slab over the pit with its keyhole opening, and the vent-pipe that expels foul air from the pit into the sky, are removed to the new site when the first pit is full. These toilets are spacious, roofless (it rarely rains), and surrounded by brush fences. Women and children much prefer them to the cramped brick boxes of the past, which they have turned over to the menfolk in their compounds, and to visitors.

and resourced authorities need to invest in, and promote, affordable on-site sanitation and spread the doctrine of hygienic behaviour. It needs to be made easy for lower-income families to build and maintain toilets, washrooms and wastewater disposal systems whose benefits they understand, and whose domestic convenience they actively seek.

Without sanitation, disease control and poverty eradication are impossible. Without accelerated progress towards meeting the 2015 Sanitation Goal, none of the other MDGs will be achievable either.

Role of the public sector

The marketing approach does not mean that government should relieve itself of the responsibility for sanitation and leave it to the local building trade. There is an important role for government – especially local government – in this approach, but it is very different from the commonly expected one of providing facilities and services.

The public sector must:

- *Understand existing demand for sanitation, and what limits it;*
- *Overcome those limits, and promote additional demand;*
- *Stimulate development of the right products to meet that demand;*
- *Facilitate the development of a thriving sanitation industry; and*
- *Regulate and coordinate the transport and final disposal of wastes.*

Source: The Case for Marketing Sanitation. Water & Sanitation Programme Field Note. Cairncross, S, (2004). Nairobi: The World Bank

1.8 MILLION PEOPLE DIE EVERY YEAR FROM DIARRHEAL DISEASES;
90% OF ALL DEATHS CAUSED BY DIARRHEAL DISEASES ARE CHILDREN
UNDER 5 YEARS OF AGE, MOSTLY IN DEVELOPING COUNTRIES

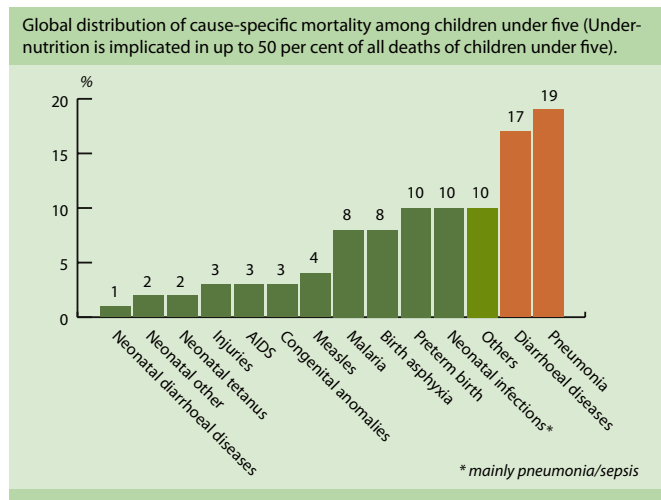


OF THE 120 MILLION CHILDREN BORN IN THE DEVELOPING WORLD EACH YEAR, HALF LIVE IN HOUSEHOLDS WITHOUT A PROPER TOILET



Sanitation and health: the connections

Diarrhoeal diseases are often described as water-related, but more accurately should be known as excreta-related since the pathogens derive from faecal matter. This may enter the mouth via contaminated drinking water, but can equally come from dirty hands, unwashed raw food, utensils, or smears on clothes. Diarrhoeal diseases are the second most common cause of death in children under five, and of these deaths, 88 per cent were caused by lack of sanitation, poor hygiene practices and contaminated drinking water⁹.



Source: WHO/UNICEF, *State of the World's Children*, 2008

Intestinal worms (helminths) which enter feet from faecal matter lying around on the ground, or in filthy or 'unimproved' toilet facilities, are less life-

threatening than diarrhoeal disease, but seriously undermine children's health. There are around 133 million annual cases worldwide of ascaris (round-worm), trichuris (whipworm) and hookworm infestation¹⁰. A typical ascaris load diverts around one-third of the food a child consumes¹¹, and malnutrition is at the root of 50 per cent of childhood illness¹².

Hookworm is a frequent cause of anaemia. Trichuris leads to chronic colitis in toddlers, a condition which often persists for so long that mothers may think it normal and fail to seek medical help. Children in poor environments often carry 1,000 parasitic worms in their bodies at a time¹³. When at school, such children may be listless, sleepy and unable to concentrate.

There are also links between poor sanitation and acute respiratory infections (ARIs) such as pneumonia. ARIs are the largest cause of mortality in the world, with 4 million deaths of which half are in under 5 children. Evidence suggests that better hygiene practices – washing hands with soap after defecation and before eating – could halve the infection rate¹⁴. There is also a link between roundworm infection and asthma¹⁵.

Although the physical disease toll is worst for children, there are other important health implications of lack of sanitation. When someone is ill with diarrhoea, especially if he or she is elderly or is highly debilitated as in the case of AIDS, it is very difficult to nurse the patient when there is no toilet in the vicinity of the household. Disabled people



Photo © UNICEF/HQ04-1269/Giacomo Pirozzi

The organizations acting together to promote the International Year of Sanitation have designated five key messages for concentrated activity during the Year. These are:

- Sanitation is vital for health
- Sanitation contributes to social development
- Sanitation is a good economic investment
- Sanitation helps the environment
- Sanitation is achievable

If people in decision-making positions at all levels play their part, progress towards the ultimate goal of 'sanitation for all' can be rapidly accelerated. To involve these audiences, IYS partners invite their friends in governments, NGOs and civil society to reach out to their existing constituencies and encourage them to carry the messages to all possible audiences.

The international community

Those in representative positions at the United Nations and in leadership positions within the international community can support the IYS by emphasizing sanitation messages in diplomatic encounters, donor groups, conferences and meetings, UN system-wide country programme discussions, and in programmes and projects in the field. Donors of official development assistance (ODA) have a special responsibility to promote sanitation in their discussions with counterparts in the developing world.

Members of Parliament and those in government office

Ministers with responsibility for health, water and sanitation, environmental protection, municipal infrastructure, housing, finance, gender equality and social affairs and those in their departments can work to ensure that sanitation and hygiene receive their fair share of attention and investment. MPs can be enlisted to assist this process, to educate constituent groups about sanitation, and seek and support initiatives that deliver those benefits.

Business leaders

The improvement of sanitation should be embraced in the concept of 'corporate social responsibility'. This can be proposed to business associations such as Rotary International. Workers and staff members can take the lead in insisting that decent facilities should be provided at all workplaces for all types of employees: this and the spread of sanitation messages throughout the world-wide workforce can be made a target for 2008.

Religious leaders

The concept of a clean life and a clean environment are values held high in all religions. Priests, imams, sheikhs, and all those involved in spiritual leadership roles can be invited to reinforce the importance of sanitation and hygiene among their followers and congregations.

Teachers and educators

All those who conduct educational classes in school or non-formal settings, including preschools and nurseries, and those in leadership or official positions in relation to education, are front-line workers in the drive for sanitary change. They should be facilitated and empowered to take up sanitation as part of healthy learning.

NGO Supporter groups

Individuals can join, or lend support to, environmental organizations and other NGOs oriented towards poverty and development issues so as to ensure that, during IYS, they take up sanitation as an important focus. In some cases, activity may consist of fund-raising; others engage in advocacy directed towards media, governments, politicians, and opinion-formers.

Householders and community members

Demand creation is critical to change by consumer demand and insistence from those forced to endure life in squalid neighbourhoods that they need and want something better, and that government and authorities must respond. Their own drive and willingness to enter partnerships with NGOs, local councils, and civil society generally to upgrade their housing with toilets and washrooms is critical. Thus reaching out to these constituencies, with and through government and NGOs, is the most critical target.

Effects of urban sanitation on childhood diarrhoea

In Salvador, Brazil, a recent city-wide sanitation drive has raised sewerage coverage rates from 26% to 80%. A study on diarrhoeal morbidity in children under three was conducted in high and low-risk areas of the city at an interval of seven years, allowing for a pre-project baseline survey and a post-construction evaluation in the same neighbourhoods. The overall prevalence of diarrhoea fell by 22%, but in the poorer areas where sanitation coverage was lowest to start with, the prevalence fell by 43%¹⁶.

suffer great difficulty and discomfort in dealing with their excretory need. Women acting as carers of the sick, disabled, and of small children, lose time to other domestic activities and to income-earning.

Although better health and child survival is a vital *public* motivation for installing a household toilet, it is important to note that it is not usually an important *private* motivation – although its great advantages when there are sick, elderly or disabled people in the household are often cited by women. For men, prestige and a fine house for welcoming important visitors or relatives from town, is the more usual motivation for such an improvement. For women, modesty, dignity, and personal safety for themselves and their adolescent daughters weigh heavily.

However, when people are familiarized with the risks posed to their health by excreta in the environment, they become more interested in installing toilets – if they can afford to: bathroom facilities are never cheap. The desire for a clean, well-drained and refuse-free community is also a driver for change.

Sanitation and social development

Filth on paths, in the fields, and on river banks is not the only social problem associated with lack of sanitation. Where villages are without proper household facilities, the crowdedness of settlements and loss of vegetative cover means that women have to walk ever further to reach a place of ‘convenience’. In the Indian sub-continent, modesty demands that they wait until after dark, exposing them to risks from snakes and wild animals, and possible sexual attack. The violence common in many cities and towns makes it similarly difficult for women and girls to use public toilet facilities during the night-time.

Most schools in the developing world are built without sanitation and hand-washing facilities. Where there is no toilet block set aside for girls, parents are often unwilling to allow their daughters to attend school, especially once they have started menstruating and need somewhere discreet to change and dispose of used cloths. This is one reason for the discrepancy in primary school completion rates: one in four girls do not complete primary school, compared to one in seven boys. A

survey in Bangladesh showed that the provision of their own sanitation facilities led to an 11% increase in girls' enrolment¹⁷.

Any context where people or children sit together in close proximity for hours at a time is a potential breeding-ground for epidemic disease, and schools are no exception. WHO estimates that if both sanitation and water supply are provided, more than 270 million school days per year currently lost to diarrhoeal infections, would be gained every year if the MDG targets are met¹⁸. This puts an extra onus on teachers and students to keep the learning environment, school yard, and toilet facilities clean. Some schools have become cheer-leaders for sanitation in the surrounding community as well.

Where families and influential local figures begin to appreciate the value of toilet facilities and hygienic behaviour, the condition of the whole community can be transformed. Pride in keeping paths, streets and market places well-swept and free of refuse, and the draining away of stagnant water where disease-carrying insects may breed, can help build and maintain community morale. The need for sanitation services and pride in a well-ordered environment have provided incentives for a transformation of local governance: sanitary reform has historically been the starting point for civic improvement. Once new standards are the norm, social attitudes change and families may not be willing to marry their daughter into a household or village where there are no toilets.

The 'total sanitation' approach

Efforts to introduce low-cost, hygienic sanitation into crowded Bangladesh have a long history. In recent years, an approach known as 'community-led total sanitation' has enjoyed growing success. Instead of exhorting villagers to build and use toilets, public health promoters substituted the idea of 'freedom from open defecation'. Communities were invited to map their 'defecation zones', calculating their output of excreta and the environmental health threat it posed, and taking collective action. The appeal was to self-respect and community ownership of the problem; action included naming and shaming promiscuous defecators. Better-off villagers were invited to pay for poorer to install their own facilities. In 2003 the government declared the target of universal sanitation by 2010, with this approach at the centre of their strategy. By early 2006, around 5,000 villages and 19 sub-districts had been officially declared free of open defecation, with 90 per cent of the costs borne by the communities.

Voices of school children in Malawi

A UNICEF initiative in Malawi is developing and instituting national standards for sanitation facilities and hygiene promotion in primary schools in collaboration with school children and their families. National review teams interviewed children on what they liked and disliked about their sanitation facilities, and their insights are being used to modify the technical designs. The children proved keen advocates for better sanitation in both their schools and families. Their feedback is also guiding the development of hygiene education materials. Comic books have already been designed for grades five to eight on the importance of school toilets. There are also links to improved nutrition from school gardens using compost from the toilets, de-worming activities, retention of adolescent girls in schools and improving the quality of educational services.

Sanitation and economic productivity

The diarrhoeal and other illnesses people experience due to lack of sanitation are costly to families and the economy as a whole. The toll is experienced both as a loss of productive working days, and as a drain on household and public resources for nursing care and medical attention. WHO estimates that meeting the Sanitation Goal would save US\$66 billion in time, productivity, averted illness, and expenditures on medicines, health care and funerals. Economists also calculate for 'off track' countries, the benefits in achieving the MDG target on sanitation could yield around US\$9 for every dollar spent¹⁹.

Children who miss out on schooling lose valuable educational inputs, and divert the energies of mothers and other family members responsible for their care. Where girls are kept back from school because of lack of dedicated sanitation facilities,

Asked to prioritize reasons for satisfaction with their new latrines, rural householders in Philippines and Benin cited the following:

Rank	Philippines	Benin
1	Lack of smell and flies	Avoid discomfort of the bush
2	Cleaner surroundings	Gain prestige from visitors
3	Privacy	Avoid dangers at night
4	Less embarrassment when friends visit	Avoid snakes
5	Less gastrointestinal infections	Reduce flies in compound

Note that health considerations are at the bottom of the Philippines list and even further down on the Benin list (13th place).

Source: *The Case for Marketing Sanitation. Water & Sanitation Programme. Cairncross, S. (2004). Nairobi: The World Bank*

CHILDREN IN POOR ENVIRONMENTS OFTEN CARRY 1000
PARASITIC WORMS IN THEIR BODIES AT ANY TIME



Voices from Bangladesh

In 1996, at the instigation of UN-HABITAT in Nairobi, a small pit-emptying machine was developed able to negotiate the narrow lanes of the sprawling slum settlement of Kibera. Up to this point, the only way to empty pits full of excreta was by manual removal – a foul job which has always carried social stigma. The ‘vacutug’, a cart-mounted vacuum pump with a 500 litre capacity tank, could empty eight toilets a day. Although it has proved difficult to develop entrepreneurship around the vacutug, whose capital costs are still too high for small-time operators to afford, there has been some success in Dhaka, Bangladesh. A vacutug imported there in 2000 has been operated by a local NGO, and charges US\$3.50 for every 500 litres removed. Local sweepers who earn a living from pit-emptying are offered a commission for every customer they introduce. Research and development investment to make small-scale pit-emptying technology and services into a going concern would relieve millions of ‘sweepers’ of their degrading occupation, and build the potential of a useful service industry. Only because sanitation among the poor is so woefully neglected has this not occurred up till now.

progress towards female literacy is retarded. This in turn affects the quality of care in the home, and reproductive and child care behaviour. It has been estimated that a 1 per cent increase in female secondary schooling results in a 0.3 per cent increase in economic growth²⁰.

Serious epidemics of sanitation-related disease have other negative effects. In 1991, Peru suffered an epidemic of cholera, a disease thought to have been banished from Latin America. This cost the national economy an estimated US\$1 billion in health costs and production losses²¹. The 1994 outbreak of pneumonic plague caused by failure to clear away rotting waste in the Indian city of Surat lost the country US\$2 billion due to import restrictions alone. To these costs were added treatment and public health expenses, and a heavy reduction of tourism revenues as a result of visitor cancellations²².

Another gain from investments in sanitary service provision is from the creation of livelihoods. Since time immemorial, urban societies have had their cadres of sweepers and scavengers, night-soil carters, ‘rakers’, and others who earned a living from the informal provision of sanitary services and waste removal. The advent of sewerage drove such workers out of their insalubrious business in the industrialized world. Today, when hygienic pit toilets are promoted as mainstream sanitary solutions, the informal occupations surrounding sanitation need similarly to be upgraded. Instead of being treated as members of a stigmatized un-

derclass, improved skills and better equipment for plumbing and pit-emptying can help such workers become members of a respectable and well-paid profession.

To reach the Sanitation Goal and aim beyond it to 'sanitation for all', a new political economy around on-site sanitation is needed. In such an economy, conventional sewerage with universal household connections will be only one of the models available. More attention will be given to the kinds of toilets, bathroom ware, and washing products which those living in more modest neighbourhoods with far lower disposable incomes can afford, and at the services necessary to market, construct, maintain, and equip such facilities in households, schools, markets and other appropriate settings. Entrepreneurship around low-cost sanitation and garbage removal needs to be encouraged.

Sanitation and the environment

In impoverished city suburbs, small market towns and the large and densely-settled villages which are barely distinguishable from peri-urban settlements in the developing world, the public environment is often full of dirt. Roads are unpaved, full of mud, puddles, piles of garbage and debris, not to mention disease-carrying insects, microbes and rodents. Municipal authorities have an uphill struggle to resource and manage basic services for water supply, sewerage, storm water drainage and garbage removal. Environmental cleanliness is seriously compromised by poor sanitation.

The contents of bucket-latrines and pits, even of sewers, are often emptied into the streets and find their way into local rivers and streams. In the developing world as a whole, around 90 per cent of sewage is discharged untreated into rivers, polluting them and affecting plant and aquatic life²³. Apart from the risks to health for those whose water supply is unprotected and still depends on open streams and wells, this represents a major loss in agricultural nutrients contained in excreta.

'Ecological sanitation' – notably on-site sanitation which facilitates composting of excreta by using an alternative pit or chamber for faecal matter on a prescribed cycle – has many environmental advantages. Hazardous material is confined until it is safe; and it can then either be disposed of without risk to health, or can be used as a fertilizer or soil filler. In this way, the nutrients contained in human and animal wastes can be re-utilized to promote agricultural productivity. In China today, 90 per cent of human excreta is still used in agriculture; the problem is to make sure that this is done safely and that raw sewage is not put on the fields.

The important components recovered for agricultural use from excreta are nitrogen, phosphorus, and potassium. The phosphorous is particularly significant, given that it is essential for food production and that naturally-occurring phosphate rock is being mined for use in artificial fertilizers at a rate which will exhaust irreplaceable deposits within the next 60 years or so. Urine contains 50 per cent of excreted phosphorus, and its diversion

TOP PERSONAL AND CONSUMER REASONS FOR WANTING A TOILET: INCREASED COMFORT, PRIVACY AND CONVENIENCE, NOT BETTER HEALTH



at source, by toilets that separate liquid and solid excreta, is the least costly and most efficient way of recycling this nutrient and making it available for plant fertilization. Source separation of urine also reduces the costs and complications of sewage treatment.

The environmental gains from composting excreta, even where there is no current potential for horticultural or agricultural usage, are considerable. Anaerobic digestion of sewage produces biogas for energy, which can be done in small units installed at the household or village level, up to industrial scale. On the downside, sewage dumped at sea or carried from upstream by rivers discharging into the ocean, increases the level of nitrogen in coastal seawater, leading to the loss of fish and other species, and destroying coral reefs by blooms of algae which close off their source of sunlight.

Sanitation is achievable

During recent years, a great deal of international and national-level effort has gone into sanitation. There is today a far better understanding of the links between sanitation and retarded development, and what needs to happen to move the total sanitation agenda forward at an accelerated pace. A large menu of ‘hard ware’ and ‘soft ware’ approaches have been applied, with lessons learned about what works in different settings, and what does not. The world is now at lift-off point: if the knowledge and experience harvested can be put to good use, the 2015 Sanitation Goal, and beyond it

Voices from Yongning county, China

Chinese villagers have proved open to the idea of a ‘dry’ toilet that facilitates the re-use of excreta as fertilizer. China suffers from acute water stress, and the development of sanitation systems requiring large volumes of water under pressure and liable to cause heavy pollution is not practicable for much of the country. In 1998, a trial ‘ecological sanitation’ programme was introduced in Yongning, Guanxi province. Participating villages undertook road paving, tree-planting, corralling of livestock, and installation of bio-gas plants, and every household had to install a urine-diverting (UD) toilet. This meant building a tiled bathroom inside the house, next to an exterior wall. Urine was led to a bottle; diluted, this was used directly as fertilizer. Faeces (and a handful of ash or soil) went into one of two alternating chambers for decomposition. Clean, compact, and cheap (US\$35), the UD toilet was seen by villagers as a vast improvement on previous arrangements, which no-one would have dreamed of situating within the house. By 2003, the approach had spread to 17 provinces, and 685,000 households were involved.

AROUND 800,000 PEOPLE IN INDIA STILL LIVE BY PERSONALLY HANDLING HUMAN
FAECES AND REMOVING IT FROM LATRINES BY BASKETS ON THEIR HEADS



Photo © UNICEF/HQ/6-0875/Eddy Purnomo

the goal of ‘Sanitation for All’ could come within reach.

What is needed above all is political commitment, and with it new resources and engagement from metropolitan, municipal and local authorities. For that to happen, governments and civil society have to be mobilized, and both the world of officialdom and the world of ordinary people have to be willing to speak out and break the taboos surrounding this delicate subject. What could be done for HIV/AIDS can surely be done for an issue that affects on a daily basis every single person in the world.

If substantial new resources can be found, and their application is wise and judicious, taking account of what today’s front-line sanitary practitioners know about how best to proceed, the International Year of Sanitation could be the starting-point of a new sanitary revolution. Nothing less is needed. And this is what all the partners in IYS, and their extended network in poor communities all over the developing world, are striving to bring about.

Progress towards the 2015 Sanitation Goal can easily be stepped up. Suitable technologies and models exist for adaptation in virtually all urban and rural environments, along with approaches for hygiene education and community mobilization. The costs of reaching the goal are not exorbitant: an annual input of US\$9.5 billion would be sufficient, and the equivalent expenditure over another decade or two could bring sanitation within reach of everyone in the world.

Each of the five key IYS messages needs to be projected to audiences at international, national and local levels, by every means available. These will include media campaigns, social mobilization, workshops for sector and key non-sector professionals such as those in education and health, and awareness-building with political leaders and those in positions of authority – such as celebrities and business leaders – whose voice and actions carry weight. To do this effectively, the messages will have to be sensitively adapted to suit the cultural context.

Advocacy at international level is a means of raising funds and policy-making attention from donors, and thereby leveraging and promoting the work that has to happen on the ground. The most important advocacy targets are those at national and local levels in environments where sanitation is sorely lacking. The following represent the major audiences, and activities in which they need to be engaged:

- **Targeting government and local officials**
Awareness at national and local levels is needed to generate the necessary momentum for sanitary transformation. Sensitization campaigns should be aimed at officials, district and community leaders, sanitary engineering professionals, and health and education personnel. Governments should put in place an appropriate leadership framework so that sanitation can be spoken for at the highest policy-making level and the necessary resources allocated. The IYS should be used to open up discussion of institutional obstacles and find ways to overcome them.
- **Targeting the business community**
Special efforts need to be addressed to those involved in household construction and small-scale entrepreneurs associated with sanitation services. Low-cost toilets, showers and wastewater disposal facilities need to be made available to all those who need and want sanitation, but at present are unable to access a facility that meets their consumer preferences and pocket-books. Strategies for training and loans to establish sanitation production centres can help reinforce the building and satisfaction of consumer sanitary demand.

Voices of girls in India

A school girl on the difficulties of talking about intimate bodily functions:

'The taps in the school all ran dry, and I needed to change [pads] every four to five hours for three or four days and hence I had to remain at home. One or two of my teachers were concerned about the gaps in my attendance and I was asked why I remained absent so often. Unfortunately, I did not have the courage to broach the subject, and I remained guiltily silent and accepted the blame.'

- **Targeting schools and community groups**

Schools can become 'centres of excellence' for sanitation, acting as an example to the whole community in matters of environmental cleanliness. Mobilization of teachers, parent associations, school councils and local leaders behind the goal of 'sanitation for all' can motivate the construction and use of toilets at school and at home. Women's groups, and access to micro-credit for household improvements, can also act as community drivers for change.

- **Targeting the media**

To help overcome the taboos surrounding discussion of sanitation, the media need to be brought on side. Politicians, NGOs, civil society leaders, celebrities and other figures in role model positions should be encouraged to raise awareness of the virtues of sanitation, and speak out on a subject over which silence has too long prevailed. IYS events can provide vehicles for spreading the five key sanitation messages.

- **Breaking the taboo**

Above all, the subject of sanitation must be made respectable so that demand, especially by women, can be aired. IYS provides an opportunity to explore people's sanitary attitudes, behaviours and desires as a prelude to improving their lives. Too long, the reality that many people, especially women and girls, suffer acute discomfort and indignity has been obscured because they fear derision if they express their views. Not only women and girls are included in this group, but those who are elderly, disabled, infirm, and sick.

IN PARTS OF DAKAR, SENEGAL, WITH NO DOMESTIC DRAINAGE, WOMEN
CHARGE US\$0.50 TO TAKE AWAY ONE BASINFULL OF DIRTY WATER



Photo © UNICEF/HQ06-1845/Josh Estey

IN MADAGASCAR, 3.5 MILLION SCHOOL-CHILD-DAYS ARE LOST EVERY YEAR DUE TO EXCRETA-RELATED ILLNESS

NUMBER OF 'VENTILATED IMPROVED PIT' (VIP) TOILETS INSTALLED BY FAMILIES IN ZIMBABWE: 422,400, SERVING 2.1 MILLION PEOPLE (2004)

OF THE 60 MILLION PEOPLE ADDED TO THE WORLD'S TOWNS AND CITIES EVERY YEAR, MOST OCCUPY IMPOVERISHED SLUMS AND SHANTY-TOWNS WITH NO FACILITIES.

BETWEEN 14 AND 26% OF INDIA'S URBAN INHABITANTS HAVE NO TOILET

NUMBER OF PEOPLE USING SULASH INTERNATIONAL PUBLIC TOILET BLOCKS IN INDIA (POUR-FLUSH, ALTERNATING PITS) EVERY DAY: 10 MILLION

RECYCLABLE NUTRIENTS: URINE CONTAINS 80% OF THE NITROGEN, AND AROUND 50% OF THE PHOSPHORUS AND POTASSIUM, PRESENT IN HUMAN EXCRETA

1.2 BILLION PEOPLE GAINED ACCESS TO SANITATION BETWEEN 1990 AND 2004

TOTAL ECONOMIC BENEFITS OF MEETING THE WATER AND SANITATION MDGS BY 2015 AMOUNT TO US\$66 BILLION (DAYS OF PRODUCTIVITY GAINED AND REDUCED HEALTH COSTS)

EVERY YEAR, THE AVERAGE PERSON PRODUCES 35 KILOS OF FAECES AND 500 LITRES OF URINE. AROUND 15,000 LITRES OF FRESH WATER IS USED TO FLUSH THESE AWAY.

- HIGH-PROTEIN DIET IN A TEMPERATE CLIMATE: FAECES 120G, URINE 1.21L, PER PERSON PER DAY.
- VEGETARIAN DIET IN A TROPICAL CLIMATE: FAECES 400G, URINE 1.01L, PER PERSON PER DAY.

IF FLUSHING TOILETS WERE THE ONLY TYPE REGARDED AS 'IMPROVED', THE NUMBER OF PEOPLE WITHOUT 'IMPROVED' SANITATION WOULD BE OVER 4 BILLION

OF THE 0.3% OF MADAGASCAN GOVERNMENT EXPENDITURE DEVOTED TO 'WATER AND SANITATION', 90-95% IS SPENT ON WATER

A BASIC PIT TOILET COSTS US\$10-40; A WATER CLOSET CONNECTED TO A SEWER OR SEPTIC TANK PLUS PIPED WATER FOR FLUSHING AND BATHING, US\$400-1500

IN BANGLADESH, VILLAGES WHICH BECAME 'OPEN DEFECATION FREE' REDUCED FROM 38% TO 7% THE NUMBER OF HOUSEHOLDS WITH A RECENT BOUT OF DIARRHOEA

- 1 JMP (2006). *Meeting the MDG drinking water and sanitation target: the urban and rural challenge of the decade*. WHO/UNICEF Joint Monitoring Programme for Water Supply and Sanitation. WHO and UNICEF 2006
- 2 UNDP (2002). *Fact sheet on the United Nations International Year of Water 2003*. Published by the United Nations Department of Public Information— DPI/2293B—December 2002. <http://www.un.org/events/water/factsheet.pdf>
- 3 Hutton, Guy. and Laurance Haller. (2004). *Evaluation of the costs and Benefits of Water and Sanitation Improvements at the global level*. Water, Sanitation and Health Protection of the Human Environment World Health Organization Geneva 2004
- 4 British Medical Journal (2007). *Medical Milestones 2007. The BMJ's poll to find the greatest medical breakthrough since 1840*. 6 January 2007 (Vol 334, Supplement 1)
- 5 UNFPA (2007). *State of World Population 2007, Unleashing the Potential of Urban Growth*.
- 6 WHO (1992). *Improving water and sanitation hygiene behaviours for the reduction of diarrhoeal disease : the report of an informal consultation*, Geneva, 18-20 May 1992
- 7 UNICEF (2006). *Progress for Children. A report card on water and sanitation*. Number 5, September 2006. UNICEF.
- 8 UNFPA (2007). *State of World Population 2007, Unleashing the Potential of Urban Growth*.
- 9 WHO (2004). *Water, Sanitation and Hygiene Links to Health FACTS AND FIGURES*. *updated November 2004. http://www.who.int/water_sanitation_health/factsfigures2005.pdf
- 10 WHO (2004). *Water, Sanitation and Hygiene Links to Health FACTS AND FIGURES*. *updated November 2004. http://www.who.int/water_sanitation_health/factsfigures2005.pdf
- 11 Cairncross, S. (1998). *The impact of sanitation and hygiene on health and nutrition*. In Water Front. A newsletter for information exchange on Water, Environment, Sanitation, and Hygiene Education UNICEF Programme Division Water, Environment and Sanitation Section. Issue 12, December 1998
- 12 WHO/UNICEF (2008) *State of the World's Children 2008*
- 13 UNICEF (2000) *Sanitation for All: Promoting Dignity and Human Rights*, UNICEF, New York, 2000
- 14 Luby, Stephen P., Mubina Agboatwalla, Daniel R Feikin, John Painter, Ward Billhimer MS, Arshad Altaf, Robert M Hoekstra. (2005). *Effect of handwashing on child health: a randomized controlled trial*. The Lancet. Vol 366, July 16, 2005
- 15 Cairncross, S. (1998). *The impact of sanitation and hygiene on health and nutrition*. In Water Front. A newsletter for information exchange on Water, Environment, Sanitation, and Hygiene Education UNICEF Programme Division Water, Environment and Sanitation Section. Issue 12, December 1998
- 16 Barreto, M.L, Bernd Genser, Agostino Strina, Maria Gloria Teixeira, Ana MarluCIA O Assis, Rita F Rego, Carlos A Teles, Matildes S Prado, Sheila M A Matos, Darci N Santos, Lenaldo A dos Santos, Sandy Cairncross. (2007). *Effect of city-wide sanitation programme on reduction in rate of childhood diarrhoea in northeast Brazil: assessment by two cohort studies*. The Lancet. Vol 370 November 10, 2007
- 17 UNICEF and Department of Public Health Engineering DPHE (1992). *Sanitation in primary schools (plan of action)*. Dhaka, Bangladesh, UNICEF
- 18 Hutton, Guy. and Laurance Haller. (2004). *Evaluation of the costs and Benefits of Water and Sanitation Improvements at the global level*. Water, Sanitation and Health Protection of the Human Environment World Health Organization Geneva 2004
- 19 Hutton, Guy. Laurence Haller and Jamie Bartram. (2007). *Economic and health effects of increasing coverage of low cost household drinking-watersupply and sanitation interventions to countries off-track to meet MDG target 10. Background document to the "Human Development Report 2006"*. WHO 2007
- 20 Dollar, David, and Roberta Gotti. (1999). *Gender Inequality, Income and Growth: Are Good Times Good for Women?* Policy Research Report on Gender and Development. Working Paper Series. No. 1. Washington, D.C.: The World Bank. <http://www.worldbank.org/gender/pr>
- 21 Bradford, B. and R. Suarez (1993). *The economic impact of the cholera epidemic in Peru : an application of the cost of illness methodology*. (Wash field report; no. 415). Arlington, VA, USA, Water and Sanitation for Health Project (WASH). http://pdf.dec.org/pdf_docs/PNABP618.pdf
- 22 IRC International Water and Sanitation Centre (2005). By: Brian Appleton and Christine Sijbesma *Hygiene Promotion*. Thematic Overview Paper 1. http://www.irc.nl/content/download/23457/267837/file/TOP1_HygPromo_05.pdf
- 23 UNDP (2002). *Fact sheet on the United Nations International Year of Water 2003*. Published by the United Nations Department of Public Information— DPI/2293B—December 2002. <http://www.un.org/events/water/factsheet.pdf>

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