

SANITATION

now

A MAGAZINE ON THE GLOBAL SANITATION CRISIS
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Special edition
for the 2008
International
Year of Sanitation

MILLIONS OF DOLLARS LOST DUE TO:

- Polluted water
- Diarrhoea-related deaths
- Losses in tourist income

Money Down the Drain

POOR TOILETS = MORE POVERTY, STUNTED ECONOMIC GROWTH

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**Hygiene improves
outlook for Ugandan
students**

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**Making money
out of muck**

**Can Jack Sim
enroll the poor?**

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“It’s not just London. In the US, there were 40,000 overflows in 2001, according to the Environmental Protection Agency, and 4% of New York City’s sewage is released into its harbour every year.”

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**Forecast:
Floods!**

**The need for a new
sanitation infrastructure**

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Sanitation versus climate change



I grew up in the countryside in a house without an indoor toilet. A proper bathroom was finally installed, but not until I was in my teens. Telling friends this, I have a hard time convincing them it's true. In Sweden? In the late 1960s? Well, yes.

It has taken rich nations more than a century to build sanitation systems – and they're still far from perfect. Now we are pressuring low-income countries to do it in a couple of decades. Will they?

The UN Millennium Development Goal for sanitation is a tough one. All nations are being called on to halve by 2015 the number of people lacking basic toilet and hygiene facilities. But time is running out. Many countries are still way off track.

■ The cost of ignoring loo matters is mind-boggling: polluted soil and water; millions of diarrhoea-related deaths, innumerable school days gone, substantial losses in tourist income – even rape, as women can be assaulted when looking for a place to relieve themselves in the shelter of darkness.

It's not dignified. It certainly increases poverty and prevents economic growth, recent reports show. The sanitation crisis is one of the most neglected health and environmental problems of our time. The UN has named 2008 the International Year of Sanitation in an effort to win media and public support.

■ In this magazine you will meet people facing up to the challenges. Young Ugandan student Jennifer Akello is thrilled with her school's new sustainable toilets. Their installation has inspired her and she wants to become a doctor. From London comes the revelation that the great city has an ancient, crumbling sewerage system. From Brazil and Britain: innovative ideas on how to cope with flooding.

Climate change will transform the way we look at sanitation. It's not just a poverty issue. In a world of more frequent floods, even wealthy nations have to revise their sanitary solutions.

GUNHILD ARBY
Editor



2008 is the UN International Year of Sanitation, highlighting the silent humanitarian crisis: lack of proper toilets

2.6

billion people do not have access to adequate sanitation: basic toilets and hygiene facilities. A child dies every 15 seconds from water-borne disease, mothers die in childbirth, menstruating girls skip school because of poor facilities.

Source: UNDP 2006

UN target will be missed

■ In 2000, the world signed up to the UN Millennium Development Goal (MDG) target to halve the proportion of people (in 1990), without access to safe drinking water by 2015. In 2002, another target was added: to halve the proportion of people without access to basic sanitation. At the current rate, the sanitation target will be missed in both Africa and Asia by almost one billion people.

SOURCE: DEPARTMENT FOR INTERNATIONAL DEVELOPMENT, UK, 2007.



“ We need to put the word *shit* into people's mouths.

Stephen Turner, policy director of the NGO Water Aid, on the importance of making toilet matters talked about.

“ *The International Year of Sanitation is our big chance.*

We have to agree on 2-3 messages and not tell 40 different stories to politicians and journalists.

Jon Lane, executive director of Water Sanitation and Supply Collaborative Council, addressing professionals at Stockholm World Water Week 2007.

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www.sei.se Kräftriket 2B, SE-106 91 Stockholm, Sweden



www.ecosanres.org

PUBLISHER: Arno Rosemarin/SEI, arno.rosemarin@sei.se

EDITOR: Gunhild Arby/SAGA, cyberhild@telia.com

SUBEDITOR: Kim Loughran/Green Frog

GRAPHIC FORM & LAYOUT: Ulrika L Forsberg/Press Art AB

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KILLING FIELDS

The shame approach hobbles the big killer – open defecation

BY | GUNHILD ARBY PHOTO | KAMAL KAR

Coping with defecation in fields and rivers has taken a new turn since scientist Kamal Kar devised the shame approach. In Bangladesh thousands of villagers started building latrines after realizing they were in fact ingesting each other's faeces. Contrary to donor belief, health is not the main reason poor people want toilets.

■ “Shame and disgust are more important driving forces,” says Kamal Kar, father of the successful CLTS approach, now practised in 18 countries.

CLTS (Community-Led Total Sanitation) assumes that once confronted with the crude facts of mass open defecation, people will react strongly. This certainly seems true for Bangladesh. Although initially without subsidy aid, more than 10,000 villages have stopped defecating in rivers and fields.

First developed by Dr Kamal Kar, an agricultural scientist and consultant, for the village of Mosmoil, Bangladesh's poorest community, the method has spread rapidly and is now being taken up by several non-governmental organisations (NGOs) and donor-supported government programmes.

KAMAL KAR ARRIVED at Mosmoil in 1999, working with Village Education Resource Centre and supported by the NGO Water Aid. Within a month the village had built latrines.

Hardened development banks were stunned by the speedy toilet construction that followed in nearby districts remembers Kar, who later received 17.5 million pounds to scale up the project. Which means he's a hard man to find these days. Based in Calcutta, he's constantly on the move, leading workshops in Africa, Latin America and Asia.

“Hello!” he shouts happily when my call gets through to a hotel in Dubai. He's on his way to Ethiopia. He sounds like a man who has been proven right



Women in Bangladesh meet to discuss toilet matters.

and describes the CLTS work as “a magnificent road”.

“Two-three years ago I was not sure that it was going to survive, but today I'm getting convinced one cannot stop it.”

CLTS IS JUST AN entry point says Kar. A first step on the sanitation ladder is to declare the village open-defecation-free. Followed up shortly by solid waste management, hand-washing with soap, food security and poverty issues. Ethiopia has been using the method to build confidence to fight poverty as a whole.

How does the shame game work? The first step is prompting villagers to

do their own sanitation analysis. This is done on an informal tour – the Walk of Shame – of areas where people relieve themselves. Local dialect is used, polite expressions avoided. The visitor trails a hair over some faeces on the ground, dips it into a glass of water, and invites all to drink.

NO ONE ACCEPTS, and when people comprehend that flies, dogs and lack of hygiene transfer excreta to hands, food and water, they realise they are literally eating each other's shit! Shame and disgust well up. Reactions are fierce. And immediate action is requested.

The next step is the realisation that a covered pit latrine costs less than expected to build – more progress to action and self-respect.

“We do not tell people what to do, and we state very clearly that we are not there to give any subsidy,” emphasises Kar, arguing that people are afraid of costly latrines that are forced upon them. “Development agencies have created an image that toilets are a huge expensive thing.”

PARADOXICALLY, Dr Kar is annoyed by the government push for sanitation in Bangladesh. The government is set on achieving toilet solutions for all by 2010, five years ahead of the UN millennium target to halve the number of people currently lacking basic sanitation.

“They are spoiling the process. It needs to be slow.” ●

POTENT COCKTAIL POISONS MILLIONS

One gramme of untreated faeces can contain 10 million viruses, 1 million bacteria, 1 thousand parasite cysts and a hundred worm eggs. Diarrhoea caused by faeces contaminating food and water kills nearly two million children every year. Why? Because 2.6 billion people lack proper sanitation and are defecating in fields, rivers, buckets, plastic bags, in gutters and by train tracks.

Source | UN Human Development Report 2006 and Water Supply & Sanitation Collaborative Council.



The most famous toilets in Uganda

As you approach the toilets at Kalungu Girls Boarding School, a funny smell emerges.

The closer you get, the more repellent the smell. The toilets at the school are probably the most famous toilets in Uganda. As a role model for good sanitation, they attract distinguished visitors such as ministers, researchers and journalists.

BY CAROLINA JEMSBY PHOTO VANESSA VICK

■ Not only are the toilets here environmentally friendly and recycle every input gram, they are also said to be clean, hygienic and non-smelly.

So why this horrible smell?

Head teacher Sister Noellina Birungi Namusisi smiles.

“You see, we kept the old toilets as well – the pitholes, we call them.”

“If we took them away, people wouldn’t understand the difference, and how much better it is with our new ones.”

TRUE ENOUGH. Past the old, odorous pitholes – close to the banana plantation – is a row of white and blue eco-toilets.

As you reach them, the smell fades and a group of eager students explain the miracle of good sanitation in a country where it is as rare as running water and electricity.

“I said that I would never use them, I thought they were strange,” remembers Nabukeera Hanipher.

“But the smell from the old ones forced me here. These were clean, no smell, no flies, no cockroaches.” She walks around the block of 15 toilets, explaining how to use them and sighs when we talk about sanitation in Uganda.

Uganda is a poor country in Sub-Saharan Africa. In the past, the traditional way to manage sanitation was ‘drop-and-run’. Then came the pitholes: dig a hole, use it, and when it’s full cover it and dig a new one. As population in Uganda increases – Uganda has the fastest growing population in Africa – it’s an unsustainable solution.

“And you know, the pitholes can be so disgusting. Sometimes the holes are so big that children fall inside. I tell you – they’re horrible!” says Nabukeera Hanipher.



"We used to not talk about AIDS, then people started dying from it. It's the same with sanitation," says 17-year-old student Jennifer Akello.

➤ She guides me around the school, showing the computer room and the full dormitory. The school is popular and the number of students increases each year. And just look at the queue curling around that corner! It's shower time and students are lining up for their turn.

IN 2000, ADMINISTRATORS at Kalungu Girls Boarding School realised that they were in danger of polluting the ground water, since the pitholes were becoming deeper and deeper. The rustic toilets were also dangerously close to the adjacent banana plantation. The situation became acute.

In Uganda, diseases caused by poor sanitation – diarrhoea, dysentery and cholera – are big problems. The authorities are well aware that too many infants still die from diarrhoea. In 2007, the Uganda National Sanitation Working Group (UNSWG) arranged a sanitation week and toured the country to stress the need for communal responsibility. The slogan was: “Is Your Neighbour Killing You?”

There has also been a photo exhibition on sanitation at the Parliament and singer Bobi Wine composed a song with a sanitation message.

SO AWARENESS EXISTS. But sometimes that's not enough.

“When we introduced our new toilets people were laughing at us,” remembers Sister Noellina Birungi Namusisi.

“But now, now they admire us,” she says with pride.

There's a proud atmosphere at the school – they're proud of being the ones with a solution.

Big green trees shade the schoolyard. One is full of bright yellow weaverbirds, warbling happily. The birds go away during school holidays when the students aren't here. Maybe the birds too enjoy the satisfaction in the air?

A week ago, the students were on national TV showing their famous toilets. But to achieve this hasn't been easy. First of all, just discussing sanitation can be difficult enough. As in many parts of the world, words such as urine and faeces are not easily put out over the air.

“But we have to talk about it. We used to not talk about AIDS, then people started dying from it. It's the same thing with sanitation,” says student Jennifer Akello, who dreams of becoming a surgeon and knows the importance of good sanitation.

“I want to save peoples lives!”

When the eco-toilets were introduced at the school in 2004, it was taken step by step.

Everyone at the school was involved in the project from the very beginning. Since they were the ones who were going to use the toilets, teachers and students were given a say in design and other issues.

A lot of effort was put into information. The constructors toured the classrooms with a model to show the difference

350

girls between 13 and 20 years study here.

Annual school fees are USD300 for a secondary school education.

The Sisters of the Sacred Heart run the school.

Eco-toilets were introduced at the school in 2004. There are now 39.

between the new toilets and the pitholes. They even acted out how to use them. Any embarrassment was soon overcome.

“For me, it's a miracle how everyone adapted. But I believe the way we did it, making everyone part of it, was crucial,” says Sister Maria Gaczol, head of the project and the head of all Sisters of the Sacred Heart schools in Uganda.

EVERYONE UNDERSTANDS the recycling process, how everything is being used and reused.

“It's like, we're fed by nature, but we also feed nature,” says Jennifer Akello.

A toilet pit is dug into the ground in two sections: one for urine and one for faeces. Urine is collected in a septic tank while faeces and toilet paper go into a basket. The user covers this with ash. Every few days

this waste is emptied into a drying chamber. After 6–8 months, it's ready to use as fertilizer for the banana plantation.

Meanwhile, urine mixed with water is also used as a natural fertilizer and pesticide.

“Never before has the banana plantation been so well fed!” smiles Sister Noellina Birungi Namusisi.

And yes! The lush banana plantation is gloriously green. The smell is fresh, rich with flowing oxygen. A passer-by would never guess where the lush crops get their nutrients.

THE QUEUE FOR the shower is gone but the shower area is still full of girls busy getting ready for dinner. Sounds of giggles and gossip trickle out. But the wastewater from the showers

““And you know, the pitholes can be so disgusting. Sometimes the holes are so big that children fall inside.

I tell you – they're horrible!”

Nabukeera Hanipher

and washing doesn't trickle into the water table. It is processed and diverted to a specially designed wetland.

“You know,” says Jennifer Akello, “we're the ones who teach the new students how the toilets work and how to use them. But now, with 2008 being sanitation year, we're also planning to go out to communities to hold seminars and to teach them as well. People have to understand how brilliant this is.”

IN POVERTY-RIDDEN Uganda, people dream of toilets that flush. To own one means you're successful. So the backers of eco-toilets face a battle to convince people to install them instead. Despite the students' enthusiasm, eco-toilets are generally still regarded with suspicion.

Sister Maria Gaczol wants to introduce eco-toilets to other schools with bad sanitation. But ‘it's not for us’ is the usual answer. People are not keen on unknown novelties.

But Jennifer Akello is hopeful despite the challenge.

“I just finished reading Romeo and Juliet. I loved it! But it also taught me to be patient. If Romeo had been patient he would have seen Juliet waking up. It's the same thing with the eco-toilets – we'll be patient and soon enough people will wake up,” she says enthusiastically, then excuses herself.

She needs to go to the toilet. ●

WORST FLOODS IN DECADES

■ A single latrine had to serve 6,000 refugees in one of the IDP (Internally Displaced People) camps following floods in 2007.

■ Uganda was among the hardest hit by the worst floods in decades in Africa and declared a state of emergency.

■ To avoid an outbreak of cholera, aid organisations made clean water and proper sanitation their priority.

Sources | ICRC, CNN, World Food Programme





Sister Noellina Birungi Namusisi

“When we introduced our new toilets people were laughing at us. But now, now they admire us.”

Sister Noellina Birungi Namusisi



Nambatya Prossy, 14-years-old, studies for classes.

SANITATION IN UGANDA – A HARD ROAD AHEAD

Challenges

- lack of funding
- few experts
- weak government policies, making enforcement difficult
- urbanisation – increased pressure on existing facilities in the cities
- poverty – people can't afford good sanitation
- natural disasters/climate change
- culture and negative attitudes make hygiene and sanitation promotion difficult.

Achievements

- increasing political will
- schools are highlighting sanitation
- research on sanitation now underway
- donors coming in to support sanitation financing
- a national sanitation project in place

Source | Michael Oketch, Ministry of Water, Land and Environment.



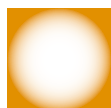
Sister Betty Namyalo holds her senior Level Two class outside.



Immy Namuwonge, 16 years-old, a senior Level Two student waits for her friend at the entrance of the shower area.



The Year London's Stink Returned



It had been a hot and dry summer. When the rains came, they overwhelmed the sewers. Six hundred thousand tons of shit – thirty Olympic-sized swimming pools-full – were discharged into the river, raw and dangerous. Fish died; people got sick. The smell was awful. Newspapers published scandalised headlines. But this was not the Great Stink of 1858, when London's River Thames was so polluted with sewage, the river-bank Parliament was nearly moved inland to escape the stench. This was instead 3 August 2004, by which time London had had a functioning sewer network for over 150 years, and several wastewater treatment plants that cost millions to build and more millions to run. But it still discharged raw sewage into the river, because, as later inquiries revealed, it was doing what it was designed to do, and sewage discharges were common as muck. Thames Water, London's water utility, admitted it discharged into the Thames 60 times a year, in volumes enough to fill the Royal Albert Hall 525 times. Combined Sewer Overflows (CSOs), as discharges are properly called, are business as usual, and the only reason they are not noticed is because fish don't usually die visibly enough for cameras, and because, in the words of William Ripley Nichols and George Derby, who undertook a sewerage survey of Massachusetts in the 19th century, "The temptation to cast into moving water every form of portable refuse and filth, to be borne out of sight, is too great to be resisted."

■ **BUT AT THE TIME** of the Great Stink of 1858, this temptation was the most sensible thing to give in to. Cholera had been massacring Londoners since it had arrived by ship from India in 1831, because it thrived in a city that threw its shit into the same watercourses it took its drinking water from. Even so, it was not until the hot and dry summer of 1858, when the Thames stank, and when Parliament had to douse its curtains with chloride of lime to cover the stench, that politicians finally agreed to build an enormous new sewer network. The Chief Engineer, Sir Joseph Bazalgette, used 318 million bricks and spent £4 million, a gigantic sum. His achievement was brilliant, and his sewers did what they were supposed to, by separating people from their excrement, but they only functioned perfectly for so long. For reasons of cost and convenience, Bazalgette chose a Combined

Sewer System, whereby surface water, human waste and industrial effluent all goes into the same pipe. It was vulnerable to the weather and to unexpected volumes of stormwater that could fill the sewers with more flow than the system could cope with. He accounted for this, building in 25% extra capacity for future population growth, and making them big enough for storms.

■ **BUT HE COULDN'T FORESEE** that 150 years later, 15 million people would still be using a system built for 3 million, or that many of those 15 million people would have concreted over the earth with streets and buildings and patio gardens, so that storm rain has nowhere to go but into sewers. Nor could he guess that climate would change and that storms would get more intense, more severe, so that by 2004, when those rains fell, the system would overload with only 2mm of rain falling in a day. It's not just London. In the US, there were 40,000 overflows in 2001, according to the EPA (Environmental Protection Agency), and 4% of New York City's sewage is released into its harbour every year. Standing at a CSO that discharges into Jamaica Bay, a sewer worker told me, "It's either discharges or it's in people's basements." London's attempt to save basements, announced earlier this year, will take the form of a £2 billion, 30-kilometre interceptor sewer, to be built under the Thames. In 1910, former US president Theodore Roosevelt told the people of Buffalo that "civilized people should be able to dispose of sewage in a better way than by putting it into drinking water." Sewers and wastewater infrastructure aren't going away any time soon. But civilized people, even the ones not knee-deep in sewage in their basements, should ask questions about them, not assume they're the answer.

ROSE GEORGE

Rose George is a freelance writer based in London. Her book on the world of human excreta disposal will be published in 2008.



PHOTO: KAREN ROBINSON



MONEY TALKS

Millions of tourist dollars disappear down the drain report economists

As warnings emerge that UN sanitation targets will not be met, development banks, non-governmental organisations and lloo-lobbyists set out to convince decision makers that toilet investments pay. Conversely, not to invest is bad business, studies confirm. Nepal and India lose millions in tourist income every year because of the perception of poor sanitation.

BY | GUNHILD ARBY PHOTO | MAGNUS ARONSON

■ The World Bank's Water and Sanitation Program puts the lost tourism revenues in India at 238 million dollars annually. Nepal's losses due to the perception of poor toilet facilities amount to an estimated 5.7 million dollars each year.

Since tourism is a key sector for Asian countries this will clearly have an impact, points out Asian Development Bank (ADB). In August 2007 the bank launched the campaign "Dignity, Disease and Dollars," pledging to provide 200 million people with improved sanitation by 2010.

THE BUDGET FOR the water-financing program has doubled and sanitation – which encompasses waste treatment and changing hygiene habits – will get a bigger piece of the pie than usual.

"The ratio should be 50–50. So far it has been 18 percent for sanitation and the rest for water," says urban development specialist Amy Leung, admitting that the ADB has previously dragged its feet over toilet and sewage disposal issues. Roads and water have come first. Now, the plan is to sway reluctant politicians by setting up pilot projects, focusing on best practice, women views and low cost technology.

Health doesn't cut it; it's all about money, Leung remarks:

"Sanitation is definitely not top agenda. Who cares if people are dying of diarrhoea? We aim to prove to governments that it's

costing them economic growth. But we can't do it alone. We want to work with NGOs, UN bodies, even private partners."

Leung is not the only one attempting to shift discussion from diseases to dollars. Jon Lane, director of the WHO-hosted partnership Water Supply and Sanitation Collaborative Council, says one of the main messages for the 2008 International Year of Sanitation should be that sanitation is a good investment. "We haven't really made that argument. For decades professionals have approached sanitation as a health issue. Now we need to talk to ministers of finance," Lane argues.

Global warming hype could well make this easier. The British Stern report in 2006, revealing the economics of climate change, paved the way when presenting GDP-costs for a scenario of business as usual. Similarly, the Peruvian cholera outbreak in 1991 provided a striking example of how poor sanitation affects economies.

THE OUTBREAK CAUSED panic. Cholera bacteria entered via the ballast tanks of a Chinese ship and spread with raw sewage, leaking into waters and contaminating shellfish, fruit and vegetables. Fish and other perishable food from Peru were banned and a severe decline in tourism followed. In all, it cost the Peruvians approximately 200–800 million dollars. Proper sewage treatment would have been considerably cheaper, claim Jon Lane and others. ▶



“You need to be pragmatic.” Gert de Bruijne at Dutch organisation WASTE on why their fund to encourage investment in waste companies is a success.



“We will demonstrate that sanitation is an excellent investment,” pledges Amy Leung, Asian Development Bank.



Lesha Witmer of the Women for Water Partnership, want donors to change perspective: “Instead of looking at lowest cost, stay close to local habits.”

“There is enough money around. The key issue is how to direct it.

is a poison, unless you know how to give it and to whom.” And, he adds, you need to be pragmatic.

“We are doing our best to promote sustainable solutions, but if financiers come up with conventional ideas I won’t say no. Otherwise I would close a financial window.”

Sustainable solutions have become a hot topic. Among toilet lobbyists there is a growing concern that donors focus too much on goals in terms of numbers, and too little on environmentally sound systems. Investors often create new problems when they pay for conventional water closets without considering sewage disposal, reflects Lesha Witmer, honorary secretary of Women for Water Partnership, a global network promoting women in water management.

SHE PROPOSES A different point of view:

“Instead of looking at lowest cost per unit, maybe you should look at the end of the scale: how are people going to sustain, repair and get rid of the waste from the facilities?”

“If you stay close to local habits, chances are toilets will be used better and quicker,” she concludes.

Toilet lobbyist Jack Sim, founder of the World Toilet Organisation, also advocates stronger local focus. Funding sanitation should be about financing business teams, teaching locals appropriate technology and turning the poor into entrepreneurs, he says.

“Financing local market infrastructure is pivotal. You have to reach the local businessman, which is often a woman. Then the rich entrepreneurs can scale up. The IKEA of the poor needs to be born.” ●

dollar spent on low-cost sanitation – functioning toilet and hygiene facilities – gives approximately 9 dollars in return.

Source WHO 2006

THE OUTCOME WAS unexpectedly successful. 4-5 million euros have been used to build businesses in five countries and an expansion is in the pipeline.

“We have mobilized three times as much as we thought we would from private banks. Some of them gave us our guarantees back within six months, saying they had completely misjudged business opportunities. Once they saw the investment was profitable, they were willing to take on the risk on their own.”

In short: donor money attracts more money. For Gert de Bruijne, “donor money

TIME-SAVING THE REAL BREADWINNER

- The main benefits from sanitation investments are increased work productivity and higher school attendance, due to time saved from fewer sick days and having easily accessible water supplies and toilets.
- In the Nigerian dry season, the average daily journey to local springs takes 4-7 hours.
- 3,8 billion dollars annually is the estimated investment needed to achieve UN goals for sanitation in non-OECD-regions by 2015 – considerably less than rich countries spend on bottled water.

- Failure to reach UN targets – to halve the proportion of people without access to safe water and sanitation by 2015 – is calculated at 38 billion dollars per year. Sanitation accounts for 92% of this sum.
 - At the current rate of progress UN sanitation targets will not be met until 2076 – and not until 2105 for Sub-Saharan Africa.
- Sources| “Sanitation and economic development,” University of California and Water Aid (2007). WHO (2004). UN Human Development Report (2006).

Turning toilets into trade

For Jack Sim, founder of the World Toilet Organisation, providing toilets for the poor is a matter of sniffing out business opportunities.

■ The next WTO Summit (Macao, November 2008) will be a sanitation fund forum, announces Sim. Promoting local small businesses must be a major mission for fundraisers, he proposes.

A former construction entrepreneur from Singapore, Jack Sim is renowned for his devotion to the toilet task – and his media savvy. In 2001, having accumulated enough private money, he founded World Toilet Organisation to “do some good before it was too late.” The Singapore-based network today includes toilet associations from more than 40 countries.

“**AIDS IS SEXY**, toilets are not. We attract media and politicians by mixing crazy happenings and serious facts,” Sim drums in. The man and his unorthodox strategies occasionally irk professionals but more often win plaudits – in 2006 he was named social entrepreneur of the year by the acclaimed Schwab Foundation and invited to Harvard Business School to lecture on his philanthropic success.

Spectacular events provide razzle-dazzle for WTO summits, held each year in different cities. The lord mayor of Belfast made media headlines as “Lord of the Rings” when he let himself be photographed with a toilet ring around his neck. At a WTO conference in Berlin, posters showing white-collar workers defecating in the street were plastered all over Potsdamer Platz.

JACK SIM GREW up in a neighbourhood with appalling sanitation. He recalls seeing intestinal worms crawling out of his friends’ anuses. He stresses the importance of being outspoken on issues still taboo for many. Where did his innovative drive come from? His mother, Sim says. “She was always creating business opportunities out of nothing.”

His confidence in the poor women of the world is emphatic. “Empower local women and you won’t need billions of donor dollars,” is his mantra. Their ability to build a future with a little help of small loans has been proven right by micro financing promoters such as Nobel peace prize laureate Muhammed Yunus and the Grameen Bank, he points out.

“Micro credit has shown that the poor can handle credit.” ●

Childhood experiences defined former businessman and WTO-founder Jack Sim. “Funding sanitation should be about turning the poor into entrepreneurs. Empower local women and you won’t need billions of donor dollars,” he argues.



TSUNAMI RELIEF

■ WTO is spearheading the World Toilet College to train people on architecture, cleaning and ecological sanitation. After the tsunami in Sri Lanka training staff helped aid agencies build safe dry toilets. Previously most families used crude holes-in-the-ground or pit latrines, contaminating ground water, and causing widespread diarrhoea.

"Small systems best for many cities"



MAKING SANITATION more sustainable is a multi-faceted challenge that goes well beyond technical improvements allowing for health and environmental protection, water savings, source separation, containment/treatment and reuse of urine, faeces and grey water. Sanitation is first about human behaviour and to be successful, systems need to prioritise such things as affordability, comfort, dignity, privacy, odour control, ease of cleaning and user acceptance by men, women, elderly and children. To be sustainable, sanitation systems must build in all these aspects.



ARNO ROSEMARIN

Arno Rosemarin is a senior researcher at SEI, Stockholm Environment Institute.

government will be investing 330 billion RMB (US\$41.3 billion) in the construction of new sewage treatment and recycling facilities during 2006-2010. What about India where 67% of the total population lacks access to basic sanitation? For India to achieve the MDG target for sanitation would require an additional six billion dollars per year until 2015.

■ **URBAN SANITATION** systems in densely populated urban areas require innovative approaches in order to provide reliable and affordable services. Waterborne piped systems have been very successful in making toilets safe for the user. But if the collector pipes are not maintained or are of insufficient capacity and if the treatment system is ineffective or non-existent, the downstream impacts especially on poverty-stricken areas that lack protection can be devastating. That half the world population is now urban and is increasing rapidly in developing countries makes sanitation a major challenge to city planners and health officials.

■ **THE TRACK RECORD** is generally poor in both the North and the South. Only about 80 major cities in the EU have advanced treatment systems. Treatment coverage in Belgium and Portugal is only 40% and in Greece, Poland and Italy at about 60%. Canada over the next seven years needs to upgrade the treatment facilities in its 4600 cities at a price tag of C\$ 33 billion. The US has spent since 1972 some US\$ 70 billion on sewage treatment but due to urban growth the pollution loads have returned to the same level they were 35 years ago. More than half of China's 1.3 billion population, including 278 cities, lives without any form of sewage treatment. Eight of those cities have populations of more than 500,000. The Chinese

■ **A "NEW" WAY** of thinking when it comes to urban centres is to strive for smaller decentralised systems that keep storm water separate from sewage. Simplified sewage systems require much smaller pipe systems, making them more affordable and allow for more flexible solutions including smaller treatment systems and artificial wetlands.

Successful projects have been carried out especially in Brazil. Based on a successful alternative 10-year sanitation project in Stockholm at the Gebers apartment complex where urine-diverting dry toilets have been used, a similar project was tried at a larger scale in Dongsheng, Inner Mongolia in China. The first phase of this "eco-town" was completed in 2007 for about 850 households in 4- and 5-floor apartment buildings. The sanitation system saves about 30% of the water normally used by urban households and allows for source separation of urine, faeces and grey water. Source separation of this kind allows for affordable treatment systems. This is just the beginning of a long development period for the entire world to find ways of providing affordable and environment-friendly sanitation systems. ●





Pakistani children wait to fill their pots with fresh water in Karachi September 20, 2005. Water supplies contaminated with sewage and toxic waste killed at least eight people and led to around 3,500 more being treated in hospital in the Pakistani city.

PHOTO | ATHAR HUSSAIN

Sowing seeds in Pakistan

Those who believe sanitation goals can be achieved within a decade are building castles in the air, sighs scientist Ausaf Rahman. Even so, he is laying bricks. Together with OPP, the famous Pakistani NGO, he is blue-printing an ecological solution for Karachi.

■ Pakistani-born Dr. Rahman is an environmental specialist, a professor at the University of California. Could he really be mocking the UN millennium development goal to halve the number of people lacking basic sanitation by 2015?

“It’s super to have a MDG [Millennium Development Goal] for sanitation. But it’s like asking us to reach for the moon. It has taken developed countries a century to build sewerage systems – how can we expect less developed countries to do it in a decade?”

HE CONCEDES you have to start somewhere, and some years ago formed an alliance with a group of researcher friends. Their ambition is to “sow a seed” in Karachi by

promoting urine-diverting dry toilets that will cut water demand and prepare the way for the use of treated faeces as a soil fertilizer. A well-known NGO, the Orangi Pilot Project (OPP), will partner up by organising micro credits for house and sanitation improvement.

OPP TRIGGERS SLUM ACTION WORLDWIDE

■ Pakistani NGO Orangi Pilot Project was formed in 1980 to improve sanitation in Orangi, a densely populated low-income section of Karachi.

■ Despite initial government opposition, OPP has organized solutions for hundreds of thousands of Karachi’s poor.

■ A key element is to encourage people to build their own toilets and pipelines – each street sharing components, thereby cutting costs. The city then steps in to construct the main sewerage trunks. The model has inspired slum improvers worldwide.

Sources | State of the World (2007), Worldwatch Institute. More Urban Less Poor, Sida, (2006).

Karachi is a city of more than 15 million inhabitants, 40 percent in squatter settlements. Although houses in low-income sections may have toilets, discharges are mostly untreated, polluting water supplies. During storms, raw sewage floods the streets.

SINCE 1980, OPP has catalyzed better sanitation for hundreds of thousands of poor in areas like these at a fraction of the cost initially proposed by experts.

Introducing eco-toilets could be the next move for OPP and an opportunity to help citizens climb another step on the sanitation ladder, believes Rahman.

“We will estimate the cost, then hopefully within a year be able to approach people who lack toilets and try to convince them it will improve their water quality. We will also channel household wastewater to recharge areas – small parks, oases – that can absorb contaminants.”

GUNHILD ARBY

Sulabh: sewers not a solution

■ Sewers are no longer the solution for the billions lacking toilets, according to Indian charity Sulabh International. “Sewage systems are essentially 19th century solutions. We need modern solutions,” said Sulabh founder, Bindeshwar Pathak, opening the World Toilet Summit 2007 in New Delhi. Sulabh has developed a low-cost system that turns waste into biogas for generators.

SOURCE: AP | ASSOCIATED PRESS

No seat = no seat

■ Political candidates in Indian villages should be allowed to run for election only if they have a toilet at home, declares Raghuvansh Prasad Singh, Minister of Rural Development. More than half of India’s rural inhabitants, including government officers, defecate along roadsides and railway tracks. Mr Singh has written a letter to all chief ministers suggesting they put his proposal into law.

SOURCE | BBC NEWS, DELHI

African program chops disease

■ A South African study shows the introduction of dry toilets and hygiene education significantly improved health in a district outside Durban. More than 50,000 sanitation units were installed and 7,000 new users surveyed. “We have a 70 percent reduction in diarrhoea,” concluded Dr. Stephen Knight, University of Kwa-Zulu-Natal, at the Stockholm World Water Week 2007.

Best medical advance

■ The “sanitary revolution” – the introduction of clean water and sewage disposal – has been the greatest medical advance in the last 166 years according to a poll made by British Medical Journal. Choosing between 15 milestones, 11,000 readers put sanitation at the top.

Future fixes

Global warming threats could open up for some real changes to the world's wastewater infrastructure. From Brazil and Britain come two ideas on how to cope with future flooding.

from Britain...

■ “People must expect to get flooded and build flood-proof houses. The drivers for this should be insurance companies,” proposes professor Duncan Mara, a sanitation expert at Leeds University in England.



wage, cannot always cope with extensive flooding.

And despite warnings of more frequent future floods, Britons still build houses on flood plains, increasing the risk of wastewater leaking into homes.

“The UK has a lot of infrastructure that’s very old. It’s not designed to cope with the storms we are beginning to have now. And it would be ridiculously expensive to change it.”

BRITAIN’S OLD city centres usually have a combined sewer system, with human waste and storm water in the same pipes. When the pipes are flooded, sewage is often discharged into the open. But even modern, separate sewer systems, with one pipe for storm water and one for se-

An insulating ‘second’ door, constructed to form a water seal, is one of professor Mara’s ideas. Plastic pieces could be rammed into ground ventilation to prevent water pouring in. Better closure for sinks and toilets is also needed.

“Someone has to persuade the insurance companies to sponsor the development of the system and to promote their use,” he says.

“At least you minimize damage. And it’s a relatively quick fix. It should take only a few days to install.”

...and Brazil

■ In Brazil, sanitary and environmental engineer Augusto Sérgio P. Guimaraes advocates a reorganisation of the simplified sewer system pioneered by him and other committed Brazilians in the 1980s.



The system, now used in both rich and poor areas in Brazil, is generally known as condominial sewers. As opposed to conventional combined sewers, pipes are buried shallow, thereby almost halving the cost of construction and maintenance. The pipes pass through property lots (condominials) rather than through streets, allowing community members to cut costs even more, for example by digging their own trenches.

Simplifying rainfall calculation is one way of improving the system and decreasing overflows. Using regional data is more efficient than searching for local weather

statistics to decide the size of the pipe, recommends Mr Guimaraes. Through Water & Sanitation for the Urban Poor (WSUP), an international partnership, he is currently preparing two low-cost projects involving 130,000 people in Rio de Janeiro.

“Regionalized precipitation tables are easier to find than localized ones. But they haven’t been used because engineers, like myself, tend to be unnecessarily precise, regardless of need.”

GUNHILD ARBY



Tewkesbury Abbey is surrounded by floodwater from the River Severn and River Avon, western England, 23 July 2007. The flooding crisis in central and western England continues with thousands of homes losing water and electricity supplies. The Environment Agency said water levels in the county surpassed the devastating floods of 1947.

PHOTO| NIGEL ISKANDER



Heber de Souza (53) evacuates his family and his cats during floods in the city of Maraba, 630 km from Belem do Para, northern Brazil, in February 2004. More than 1,200 families lost their homes to the torrential rain.

PHOTO| FERNANDO ARAUJO

FORESTING THE FAVELAS

■ A reforestation program has impacted more than 500,000 in Rio de Janeiro. One third of the city’s residents live in favelas, many built on terrain too steep for safe construction. Floods frequently wash out homes and overflow sewers. Now, millions of fruit trees and vegetables have been planted on the slopes to provide food and prevent flood disasters. Underground sewerage pipes are being installed to separate waste from open drainage canals. The Favela-Bairro program was launched in 1994.

Source| State of the World 2007, Worldwatch Institute.

Assault led to "Amila"

After a young girl was raped while searching for a place to relieve herself, a network of women professionals in Sri Lanka constructed the Amila toilet for use in flooded areas.

■ "This is not a local problem, it's global. You will need Amila toilets in England," predicts Kusum Athukorala, president of Network of Women Water Professionals, referring to the 2007 UK disaster that incapacitated both water and sanitation.

The Sri Lankan network was founded in 1999 and includes technicians, teachers, etc. Members are pushing for women participation at all levels.

THE AMILA TOILET was devised after a young girl in a refugee camp was raped while trying to find a place to squat. The event triggered the network to design emergency latrines in cooperation with universities. After the 2004



"Political decision makers are the key. If you don't reach them, you can have international years of sanitation until 2090, it still won't make a difference," says Kusum Athukorala.

PHOTO | MAGNUS ARONSON

tsunami, refugees in Sri Lanka were given shelter and food but in some camps a thousand people had to share a single toilet, a pit latrine, contaminating the surroundings.

"We wanted an affordable sanitary toilet that could be put in place in one day", says Kusum Athukorala.

The first model was a lightweight squatting plate

attached to a simple pit latrine, the 'pit' being an old oil barrel, foreseen to last three months. Two improved models were designed later, one with a bio-filter to decompose bacteria. Amila – which means priceless in Tsingali – was awarded second prize in the 2006 Kyoto World Water Grand Prize competition.

GUNHILD ARBY

Nature's design holds storm water

■ Experiments in the US show that storm water doesn't have to end up as surface flow. Seattle Public Utilities and the University of Washington are re-designing streets to function more like nature itself, allowing water to filter through to the ground.

Monitoring shows that winding streets with shrubs on the side hold water longer than conventional paved surfaces. A similar project in Chicago is retrofitting the city's hundreds of alleys with environmentally sustainable road-building materials.

In Portland, the Oregon Museum of Science and Industry is using mini-wetlands to filter contaminants. Green infrastructure has saved the museum 78,000 dollars in hard infrastructure costs for pipes etc.

SOURCES | ENVIRONMENTAL SCIENCE & TECHNOLOGY 2007, ENVIRONMENTAL INTEGRITY PROJECT: BACKED UP, 2005, NEW YORK TIMES, NOV. 2007.

Biggest insurance loss in history

■ Insurance giant Munich Re concludes that weather-related insurance losses have increased heavily since 1950. Hurricane Katrina, ravaging New Orleans in 2005, was the biggest insurance loss in history: 125 billion dollars. The insurance loss of the 2007 summer floods in England is an estimated 8 billion dollars. Costs for Mumbai's 2005 floods, the worst in a century, killing 1,000 people, should be higher, but poor people are not insured. Munich Re is trying to introduce micro-insurance in low-income areas in Colombia.

A TASTE OF TROUBLES AHEAD

It was a wild year. According to the journal Nature, climate change might mean a higher risk of flooding than previously predicted, and headlines throughout 2007 appeared to corroborate this.

■ Floods following extreme tropical storms and cloudbursts in Asia hit at least 37 million people hard.

■ Torrential downpours, starting in August, caused havoc across Africa – submerging whole towns and displacing hundreds of thousands in 17 countries – as officials talked of "the worst floods in living memory."

■ In June and July the most severe flooding for 60 years

drenched Great Britain, cutting power in city centres, turning streets into gutters and leaving people without water and functioning toilets. The Royal Air Force conducted their biggest peacetime rescue ever.

■ In October/November devastating floods affected one million Mexicans in one of the largest natural disasters in that country's recent history, prompting fears of cholera and other waterborne diseases due to overflowing sewers.



PHOTO | PUNIT PARANJPE

MEGA CITY: Indian slum dwellers live in hutments near a water pipeline in India's financial capital Mumbai. About 30 percent of India's more than one billion people live below the official poverty line and are extremely vulnerable to floods.

50 % of the world's population now live in urban centres. 33 cities will have at least 8 million inhabitants by 2015. 21 of these are situated on coastlines, vulnerable to floods and rising sea levels. Providing safe sanitary solutions is a major future challenge for mega cities.

Source | State of the World 2007, Worldwatch Institute

“Every Indian city was named after its pond. Now they are dumping grounds for sewage; we've lost those ponds.

Sunita Narain, director, Centre for Science and Environment, India, pleading for a reinvestment in lakes as buffer zones for devastating floods.



The Ukrainians in from the cold

Ukrainian school children have easier access to computers than decent toilets. And health officials dismiss the issue by saying that country children are used to outdoor toilets, even in extreme cold. The women of MAMA-86 are slowly proving that indoor sanitation rules.

BY | GUNNEL BERGSTRÖM PHOTO | ANDREJ NESTERENKO

■ The school in Bobryk (Little Beaver) village, used to have 325 pupils. Now there are only 26, and eleven teachers.

It is a standard 1960s Soviet school, built in yellow brick. The big hall is painted bright turquoise with white lace curtains. It is early November 2007 and cold inside. But the new bathroom is cosy.

The bathroom floor and walls are covered with new white tiles. "Notice, no

odour at all!" says head teacher Ada Grigorievna. Proudly, she indicates the two sinks for hand-washing, a urinal and an all-purpose toilet. It is a so-called ecosan model, a urine-diverting dry toilet with two holes on the floor. Squatting makes it easier to divert.

THE NEW BATHROOM system was inaugurated in September 2006.

The old toilet is some 200 meters distant, next to the football field, in a ramshackle shed with several holes in the damp wooden floor.

"To go to an outdoor toilet when it is very cold must be bad for your reproductive health. And children feel ashamed when they come back to school with dirty boots," says Anna Tsvietkova, water and sanitation programme coordinator for MAMA-86, the NGO that arranged the new, hygienic bathroom.

MS TSVIETKOVA IS one of our guides on a field trip to Nizhyn this chilly November day.

The excursion is an introduction to a conference on water and sanitation in the capital city, Kiev, organised by MAMA-86 and Women in Europe for a



who came

Common Future. The final stop is in Vertivka village where the afternoon sun spotlights a white church surrounded by golden birch leaves and a black sky. Next to the church is a kindergarten for 40 children. It is being completely restored with a new system for water and wastewater. The toilets are not ecosan, since diverting is too complicated for small children.

THE SUPER-ENERGETIC kindergarten director, Valentina Nazirenko, greets the delegation and tells about all those who made the renewal of the building come true: Italian donors, parents and the head of the village council. Special gratitude went to Valentina Schtchotkina, the project leader for the water, waste-

water and bathroom installation. "Now our children can go to the bathroom inside, using hygiene facilities," says Ms Nazirenko.

Valentina Schtchotkina is head of the Nizhyn branch of MAMA-86, and an engineer. She had found contaminating nitrates and other hazardous components in several wells and saw to it that the NGO helped the kindergarten drill a new well and install a water purification device.

Before we field trip people move on, a little group of children dressed as vegetables treats us to autumn and water songs.

During the concert, the ceiling lamp flickers. I silently hope that the electricity grid will be able to support all the new installations in the building when the winter comes. ●



The old outdoor toilet in Bobryk village school.



The new indoor toilet was inaugurated in September 2006.

KEEPING WARM

- At the back of the school building, a little door gives access to the faeces box under the toilet. A replaceable urine container of one cubic meter is underground so it won't freeze. The urine will be stored elsewhere before being used as fertilizer. As yet, there are no routines in place for its transformation into nutrition for agriculture.

- Experts emphasize that urine-diverting toilets should be indoors, not only for the conservation of the urine, but mainly for the comfort of the users.



47

million people live in Ukraine, almost 70 per cent

in cities. The gap between rich and poor is increasing. Agriculture used to be very important because of the rich, black soil. In the Soviet era farming was inefficient and overuse of pesticides and fertilisers depleted and polluted the soil.



Power partners

Valentina Nazirenko, kindergarten director; Valentina Schtchotkina, water and sanitation project leader in Nizhyn, and Anna Tsvietkova, coordinator for water and sanitation issues within MAMA-86 Ukraine, made it possible for the kindergarten in Vertiivka to get water and sanitation.



MAMA knows best

At first cold-shouldered by decision-makers, MAMA-86 ultimately managed to influence Ukrainian water legislation. Sanitation is now a key priority, thanks in part to mothers shaken by the Chernobyl disaster's impact on child health.

■ Currently the non-governmental organisation is trying to promote ecological solutions such as urine-diverting toilets. But these do not have a high recognition factor in Ukraine. Anna Tsvietkova, water and sanitation programme coordinator for MAMA-86, talks about lessons learned:

“Users have to be active and environmentally oriented. You can't just build toilets — you have to educate users, especially children. You also have to give better instructions on how to build the toilets in a cold climate.”

She says the health risk of using cold outdoor toilets was discounted by a representative of national authorities on health protection. “He asked why MAMA-86 talks about ‘dirty things’. He said children are used to these conditions! This attitude still exists among people in power”.

ANNA TSIETKOVA WAS born in Kiev. She is a biologist and a biochemist. In 1990, while working at the Institute of Hydrobiology, she was invited to join the

scientific unit of a Greenpeace Ukraine project. What attracted her was the chance to do practical work as well as analysis. Eventually she joined forces with another Anna — Anna Golubovska-Onisimova — who had started the MAMA-86 organisation in Kiev as a movement for young mothers concerned about children's health following the reactor explosion in Chernobyl. The 1986 disaster near Pripyat in northwestern Ukraine caused widespread radioactive fallout and is the worst nuclear power plant accident in history.

The water activities of MAMA-86 started with a summer camp in 1997 where the mothers attended seminars while their children played.

“The first step was to do water analysis. Sometimes our results were not the same as the official statistics,” Anna Tsvietkova remembers.

A NON-GOVERNMENTAL organisation is ideally a mediator between the public and private sectors, between suppliers and consumers. The NGO has market intelligence, as it is in touch with people's value systems. Anna agrees. “But it also has professionals and other experienced people,” she adds. “Knowledge from the local level is the base for our national activities.”



“We don't compete with the experts, but we work very closely with scientists, engineers, local authorities, water utilities, etc.” says Anna Tsvietkova, a biologist and a biochemist who joined MAMA-86 in the 1990s.

Though relations to decision makers were non-productive in the beginning, MAMA-86 managed to exert some influence over water legislation. In 2003, the organisation launched its Water and Sanitation for All campaign, giving lectures at schools on water, sanitation and hygiene.



Blessed partners

MAMA-86 has received money for pilot projects. But it is difficult for a non-governmental organisation to get funding for follow-up projects. Churches, for instance this one in Vertiivka, are potential partners. Churches have influence in the villages and also need water and sanitation.

MAMA-86 – A CHERNOBYL REACTION

- MAMA-86 is an NGO founded in Kiev in 1990. The driving force was a band of young mothers concerned about the impact on children’s health of the Chernobyl meltdown. In 1986 a reactor had exploded at the nuclear power plant in Chernobyl, Ukraine, causing widespread radioactive fallout.
- The NGO has 17 branches in Ukraine. Some 12 of these are involved in drinking water and sanitation projects.
- MAMA-86 is a member of the global Women for Water partnership as well as Women in Europe for a Common Future (WECF). MAMA-86 and WECF have pushed through several projects on water and sanitation.

“We realized that we cannot solve the drinking water problem unless we first solve the wastewater problems. Instead of asking for extra purification at the end of the pipe, we have to stop the pollution at the source,” says Anna.

SHE HAD HEARD about ecological sanitation from a colleague in Bulgaria and a little research showed that using faeces and urine as fertilisers is very sustainable. “Then we don’t use drinking water to flush our problems to our neighbours.”

Sanitation issues engage women more than men, Anna observes. She thinks it is natural for women to connect water with health issues. “We not only take care of cleaning and cooking, we also take care of the hygiene of our children.”

MAMA-86 currently wants to develop ecological toilet systems in rural Ukraine and in summer houses, dachas, near the cities. They have experience from Poltava, Nizhyn and Yaremche regions. In Poltava, bureaucratic procedures took three years.

“Now it takes us less than a year to get a permission to build Eco-toilets” says Anna Tsvietkova. “It is very important to make a chart of whom to turn to and in which order.” ●



At Vertiivka kindergarten, the pupils know it’s important to wash their hands.

LEAKING LATRINES A COUNTRYSIDE PEST

- Less than nine percent of rural residents in Ukraine use centralised sanitation services. The rest – more than 14 million people – use pit latrines or septic tanks, which are often in bad condition causing severe pollution in the soil and sometimes also in ground water.
- Ukraine acknowledges the UN MDG (Millennium Development Goal) for water, but has no special plans to fulfil the MDG for sanitation – to halve the number of people lacking basic sanitation by 2015.
- In 2006, 270 million hryvnia (approx. 36m euro) were allocated for the water supply and sanitation sector in Ukraine. Statistics on health issues related to water and sanitation are hard to come by.

Dedicated to dirty work

Would you leave a plum job as a chief geologist to become a toilet cleaner? Trevor Mulaudzi did. In South Africa he's known as Dr. Clean because of his dedication to cleanliness around schoolchildren.

■ Trevor Mulaudzi's life changed dramatically one day at the end of the 1990s. Driving through the streets of Carletonville, west of Johannesburg in South Africa, he noticed a group of children wandering about. He asked why they were not at school. They told him they were looking for a toilet.

CURIOUS, MULAUDZI went to the school and found its latrines in a shocking state: filth and faeces smeared on floors, blockages caused by socks and other materials, sewage leaking out.

In a second, his life changed. In front of astonished onlookers, he pulled up his sleeves and started cleaning. The next day he resigned his mining job with company perks — to embark on an uncertain career as a toilet cleaner.

TODAY DR. CLEAN manages several cleaning companies, employing more than 290 staff. Teaching hygiene, as well as how to avoid toilet blockages, is part of the project. But it hasn't been an easy road. And why on earth did he choose it?

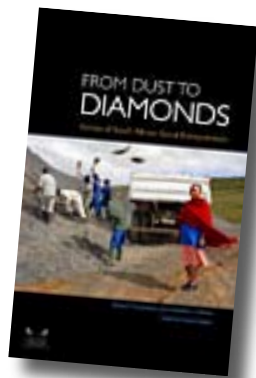
"I was happy with my job but concerned about the welfare of the children," he explains in *From Dust to Diamonds*, a recent book about 19 South African social entrepreneurs — people using innovative approaches to achieve large-

443 million schooldays are lost annually worldwide due to diarrhoeal diseases caused by inadequate sanitation.

Source | UN Human Development Report 2006.

scale social change. His story has also been told in the media and at conferences.

Trevor Mulaudzi wanted to provide clean, hygienic facilities at schools and in the workplace. UNICEF reports told him half of the world's schoolchildren lacked proper sanitation, severely impacting attendance and learning capacity. But when he tried to get authorities to pay for basic cleaning and toilet paper, he was turned down; sanitation doesn't top anyone's agenda.



AFTER MULTIPLE refusals and fund-raising efforts that accom-

plished little, a committed Danish Embassy official came to Mulaudzi's rescue. Within a week the embassy pledged a considerable sum to cover the first commercial clean-up proposition.

2001 the former mining specialist was appointed a Fellow of Ashoka, an organisation supporting social entrepreneurs worldwide. He has also contributed to the 2006 UN Human Development Report on water and sanitation.

Trevor Mulaudzi is proud of what he does and says a key motivation is to stop kids dropping out of school because the toilets are dirty:

"Because I believe in education."

GUNHILD ARBY

“You need to go back to the drawing board and look at how floods affect sanitation.”

Muhammad Zamir, vice president of Bangladesh Water Partnership, on the Asian Development Bank pledge to provide 200 million people with improved sanitation by 2010.

“Very few people are aware that it's futile to immunize children who are later going to die from diarrhoea.”

Dr Anna Tibajuka, Under-Secretary-General of UN-Habitat, on the fact that diarrhoea caused by inadequate sanitation kills more children than AIDS/HIV.

“It is as important an issue as anything.”

Bindeshwar Pathak of the NGO Sulabh International tells BBC News, Delhi, that more than 700 million people in India have no access to toilets with proper waste disposal systems.

“Now instead of my being famous for negotiating peace, I'm famous for being the Number One latrine builder.”

Ex-president Jimmy Carter, reflecting to Time magazine on teaching Ethiopians to build toilets and cut disease.

LESSONS FROM TREVOR:

- Asked to do something to showcase your organisation, respond quickly and people will take you seriously.
- Take an interest in the lives of the people you work with.
- Do the job no one else wants to do — and do it really well. That gives you a better negotiating position.

Source | *From Dust to Diamonds*, Beulah Thum-badoo and Gretchen L. Wilson, Macmillan 2007.