The theme this year of World Habitat Day on 6 October spearheaded by the Brazilian city of Rio de Janeiro is water and sanitation. Never before has there been such clear international consensus that sustainable development starts with health and dignity. These fundamental conditions of human development cannot be met without sustained investment in safe water and basic sanitation.

According to UN-HABITAT estimates, 60 per cent of the world’s population will be living in urban areas by 2015, the year set by world leaders to achieve the water and sanitation related Millennium Development Goals. It is further estimated that 90 per cent of the population increase between now and 2015 will be in urban areas. And most of that increase will be in the inner-city slums and squatter settlements of developing countries. In the slums of Nairobi, the bustees of Kolkata or the favelas of Rio de Janeiro, providing safe water and basic sanitation to the urban poor is a critical challenge facing the world today.

Recognizing this challenge, the Governing Council of UN-HABITAT has called for concerted action by the international community help developing countries achieve the Millennium Development Goals related to water and sanitation. The Commission on Sustainable Development will also focus on water, sanitation and human settlements during the first cycle of its deliberations (2004-2005) following the World Summit on Sustainable Development.

A strong political commitment at both the national and local level will be crucial to achieving success. This was underscored by this year’s G8 Summit, which adopted an Action Plan for Water, committing leaders of the world’s wealthiest and most powerful countries to give priority assistance to poorer nations that make a political commitment to place safe drinking water and basic sanitation at the top of their poverty eradication and sustainable development agendas.

The urban water crisis must be recognised for what it really is: a crisis of governance - weak policies and poor management, rather than a crisis of scarcity. Cities need sound policies and the political will to back them up; strengthened institutions and trained managers to run them; a responsible private sector and an enlightened public sector to work hand in hand; and finally, informed public opinion and active participation of communities to draw upon the vast resources of the civil society. In short, cities need an enabling environment which would allow all stakeholders to pool together their resources to meet their needs.

Sanitation and hygiene promotion should receive priority in their own right. In fact, the focus of the international community on water in the past has often masked the growing problem of poor sanitation. This is the most dehumanising aspect of the daily battle for survival of the urban poor. In countries around the world, a publicly stated government policy on sanitation and hygiene is long overdue.

There is an alarming decline in per capita investment in both water and sanitation in the cities of most developing countries. The annual flow of resources to the sector will have to increase all round if the Millennium Development Goal related to water and sanitation is to be reached. In fact, these resources will have to be doubled, at a minimum.

Systematic tracking and review of progress towards water and sanitation targets will be equally important. Monitoring and assessment will also help target international cooperation for the poor more effectively.

World Habitat Day this year is an opportunity to build on the global consensus to meet this critical challenge.

Anna Kajumulo Tibaijuka
Executive Director

WORLD HABITAT DAY
will be celebrated
around the world
on 6 October.

The main ceremony will be in Rio de Janeiro.

For details see page 23
A MESSAGE FROM THE EXECUTIVE DIRECTOR

GLOBAL OVERVIEW
4 Water and Sanitation in Cities ................................. Kalyan Ray

OPINION
6 Pushing for progress on the Millennium Development Goals ........................................... Sir Richard Jelly

SPECIAL MESSAGES
8 The Commission on Sustainable Development ........................ Børje Brende
The Asian Development Bank ......................................... Taizuo Chino

FORUM
9 The role of the Organization ... Bernhard Griesinger and Marilena Oliveira
10 A water pollution crisis in the Americas ..................... Luis Eduardo Galvão
11 Teaching water conservation in African schools ............. Preeh Otieno
12 The poor pay more for their water ............................... Arthur C. McIntosh
13 Toilets for all ................................................................... Bindeshwar Pathak
14 A complex web of partnerships
15 Water for Asian Cities ................................. André Djíaus and Peter van Dongen

CASE STUDIES
16 A novel private sector initiative for the poor ............. Robert E. Sullivan
17 Removing Human Waste ........................................... Graham Alabaster and Isla Issaas

BEST PRACTICES
18 A unique community-led initiative in West Africa ........ Malick Gaye
19 Best Practices in Water and Sanitation

READER’S FORUM
20 Letters
Join the debate

PUBLICATIONS
Water and Sanitation in the World’s Cities
Water for People, Water for Life

EVENTS
22 Tibajjuka decries death of Vicente de Mollo
Major initiative to improve the slums of Kenya
23 World Habitat Day 2003
Sustainable Cities Programme
Africities Summit
Cholera is endemic in East Africa. Yet every couple of years when it rains heavily, storm water washes accumulated human waste, mainly from informal settlements lacking minimum sanitation facilities, into open boreholes and other water sources used by the poor for drinking water. The result is a cholera epidemic.

The most recent cholera epidemic which raged in East Africa in 1997 and 1998, is still fresh in our minds. Within a span of a few months in late 1997, the epidemic, which started in some slums and squatter settlements, spread like bush fire in the region, killing thousands in Kenya, Tanzania and Uganda. The three countries suffered heavily, not only from lost lives, but also from lost exports and a drop in tourism.

Diseases spread rapidly when human and household waste accumulates in a stream people use for their daily water needs as in this picture taken in Nairobi’s Mathare slum.

Photo © Justo Casal/UN-HABITAT

Sadly, the East African cholera outbreak was in many ways like a slow motion video replay of what happened in Peru when a similar cholera outbreak hit its capital Lima in 1991. At the time, Peru lost nearly US$ 1.5 billion in three months because the fishing industry collapsed and tourism fell back.

Both cases, could have been avoided with a modest investment in basic sanitation and safe drinking water, particularly in the densely populated informal urban settlements. The disastrous human toll and the effects on trade and tourism need never have occurred; enormous national medical bills could have been saved, while human suffering and loss of lives could have been prevented.

The good news is that the lessons learnt from Peru and East Africa, and the years of struggle by the United Nations and its partners, have finally stirred the international community to action. Water and sanitation emerged as a key development issue at the World Summit on Sustainable Development in Johannesburg, South Africa, last year. The Plan of Implementation adopted by the summit ratified the Millennium Goal and the related target on safe drinking water. It also included a similar target for sanitation.

Equally important was the inclusion of shelter alongside water and other key issues in the Johannesburg Declaration. It recognized what was emphatically stated by Mrs. Anna Tibaijuka, the Executive Director of UN-HABITAT at the plenary of the Summit: “The battle for water and sanitation will have to be fought in human settlements, particularly in the slums and shanties of the growing urban areas of developing countries.”

More recently, further commitment of the international community to keep water and sanitation at the top of the political agenda came from the Commission on Sustainable Development earlier this year, when it adopted Water, Sanitation and Human Settlements as the thematic focus for the first cycle of its deliberations (2004-2005).

Much, however, remains to be accomplished to translate this political commitment into concrete action at local level. As a member of the United Nations Millennium Task Force, UN-HABITAT has recently carried out the first global assessment on the state of water and sanitation in the world’s cities. The report, Water and Sanitation in the World’s Cities: Local Action for Global Goals, was launched in Osaka during the 3rd World Water Forum in March this year. It brings out three critical areas of action priorities.

First, the urgent need to appraise policy makers of the true magnitude of the urban water and sanitation crisis. Official statistics often disguise the real problem of the poor in cities and towns. For example, in Kenya, official statistics indicate that 96 per cent of urban residents have access to ‘improved’ sanitation. A reality check can, however, give a very different picture. In many slums in Nairobi, 150 or more people are forced to queue up

By Kalyan Ray
daily to use a single public toilet. It is unbelievable but true that a slum dweller in Nairobi, forced to rely on private water vendors, pays five to seven times more for a litre of water than an average north American citizen. The health and economic impacts of these service deficiencies can be very costly to a country in the long run.

Secondly, there is a widening gap between the growing demand and the current provisioning of water and sanitation services. The Millennium Task Force estimates the current financial gap to be around $16 billion a year, a large part of which must go to address the sanitation needs of the urban poor. A strong political commitment at national level and further strengthening of ongoing sector reforms to improve governance at local level will be crucial to enhance the flow of investment in water and sanitation. Future capacity-building efforts must also be closely linked to follow-up investment. In Johannesburg, a promising initiative came from the Asian Development Bank, which committed $500 million in loans to bring pro-poor investment to Asian Cities through the Water for Asian Cities programme of UN-HABITAT.

Africa – a rapidly urbanizing continent with the worst water and sanitation coverage among all the regions – needs special attention of the international community in its struggle to achieve the internationally agreed targets. Over the past three years, UN-HABITAT has helped African countries to improve the management of water and sanitation in their cities. With the support of a broad coalition of donors, the Water for African Cities programme has created an enabling environment for new investment in African cities. The international community showed its willingness to support this process at the G-8 Summit held in Evian in June this year. A notable announcement came from Canada which committed $15 million to UN-HABITAT’s Water and Sanitation Trust Fund for African cities.

Finally, meeting this daunting challenge calls for a broad-based partnership of all key stakeholders on the water scene: governments, the private sector and the communities themselves. Governments and city authorities must create an enabling environment for this partnership to flourish.

Community participation in the water sector will not only ensure that the community is provided with what it wants rather than what the government thinks it needs, but will also provide the community with a sense of belonging and ownership. This can go a long way towards cost recovery and long-term sustainability of services.

Public-private partnerships can bring in efficiency gains and cost-effectiveness in the water sector and effective regulatory control can ensure that poor neighbourhoods are not neglected. A strong political commitment, transparency in management and sound strategies will be needed to attract more private sector investment and risk-taking in urban services.

World Habitat Day this year will focus on Water and Sanitation for Cities. This could be a defining moment for national planners, policy-makers and city authorities to reflect on the challenge ahead and to dedicate themselves anew to a task that a statement by world leaders in Johannesburg called “humanity’s best investment to achieve development and sustainability.”

Kalyan Ray is the chief of UN-HABITAT’s Water, Sanitation and Infrastructure Branch.
Pushing for progress on the Millennium Development Goals

By Sir Richard Jolly

The Millennium Development Goals (MDGs) for water and sanitation are really quite modest. In the 1980s, the world set the goal of water and sanitation for all by 1990. A few years before that, in Mar del Plata, Argentina, in 1977, access to safe water had been recognized as a universal human right - by definition a right of all people in all countries.

In contrast, our goals today are only to halve the proportions without affordable access to safe water and adequate sanitation by 2015. True, these are minimum targets and some countries like South Africa managed to achieve the goal of halving those without access to safe water in only seven years and have now fixed 2008 as the goal for complete coverage or water, and 2010 for sanitation.

The walk of shame in Bangladesh

Some 100 communities have cleaned up their villages to achieve “100 percent sanitation”. This is a new approach, focused not on individuals, but on the whole village. It shows how, as a community, they can deal with their sanitation challenge together. Kamal Kar summarises the fascinating details, many counter-intuitive: no subsidies, no standard model, no counting up all the latrines constructed. Instead, field staff of the Village Education Resource Centre go on a village walk with as many of the locals as possible, analysing the sanitation problems, checking the status of latrines. Often it becomes a “walk of shame” that prompts the community to form a water and sanitation committee and draft an action plan. After that, the goal is “100% sanitation”, but individuals are left to decide themselves what sort of latrine. More than 20 new toilet models have emerged, some costing the equivalent of only US$ 1.27 per unit.

Pay and use in India

There are hundreds of clean “pay and use” public toilets in a dozen major cities and more than a million household latrines. For over 20 years, Sulabh International has pioneered innovative approaches which have proved their effectiveness – and released more than 35,000 “scavengers” and their families from the dirty and degrading work of cleaning out bucket privies and other latrines. Backing up these social innovations is a programme of technologies – encouraging the ‘twin pit’ household latrine, which has the benefits of the VIP model with additional advantage of built-in on-site disposal, eliminating surface and sub-soil pollution and requiring only a seventh of the water needed for conventional flushing. Seeing is believing as I can verify from my own experience.

Goals can make a difference. Though the goals of the Development Decade for Safe Water and Sanitation (1981-1990) were demonstrably over-ambitious, the Decade was by no means a flop as some depict. In fact, it stimulated more progress for both water and sanitation than the world has ever seen, before or since.

According to figures from reports of the World Health Organization (WHO), the United Nations Children’s Fund (UNICEF) and the Water Supply and Sanitation Collaborative Council (WSSCC), during the 1980s, an estimated 1.3 billion additional people got access to safe water and 960 million to basic sanitation. This raised the percentage in this position from 43 per cent in 1980 to 79 per cent in 1990 for water, and from 25 per cent to 55 per cent for sanitation. In the urban areas, over 550 million additional people gained access to both water and sanitation, raising urban coverage for water over the 1980s from 75 to 95 per cent and for sanitation from 53 to 82 per cent.

In short, global goals can help, more than is often recognized. A broader review of performance and outcomes in relation to some 50 global goals set by the UN over the last four decades, shows that most goals have been “largely” or “considerably” achieved – meaning that some 30 to 50 developing countries covering a third or more of the developing world’s population have realised the target by the target date or soon after.

Global goals have also made a difference in building capacity in the developing countries, encouraging a focused approach in development planning and instilling cost consciousness in operations. Few global goals have been total failures – though the 0.7 per cent goals for aid (Official Development Assistance) stands out as one of the goals least achieved – along with halving maternal mortality by 2000, and ending global hunger within a decade, set at the World Food Conference in 1974.

What now will it take to achieve the water goal set at the Millennium Summit in 2000 and the sanitation goal agreed at the Johannesburg summit last September? Seven steps are vital:

All countries need to prepare National Plans of Action with their own targets adopted and adapted in relation to local conditions.
All countries need to put **sufficient resources in government budgets** to ensure enough catalytic support to get action underway in line with the targets and enough to ensure sustained action for the next decade, along with provision for effective systems of maintenance. Government does not have to pay for everything – it must give the lead.

More effective ways have to be found to **empower women** and strengthen their influence in decision-making, on planning, maintenance and management of water and sanitation systems.

**Aid donors can help** by providing their own catalytic support and encouragement within the framework of long-term commitment. Ideally, there also needs to be firm commitment or at least understanding of some extra support to maintain the momentum of a good programme, especially if a country is knocked off course by unforeseen difficulties like natural disasters, or, equally likely, by a price collapse of one or more of its exports.

Another new direction is **synergy with the other Millennium Development Goals**. Much more can be achieved if building momentum in water and sanitation is linked to action and support for all the goals, as part of a broad thrust to poverty reduction on a national and global scale.

**Children and youth as agents of change** is another new direction. If schools and places of worship can show the importance of basic hygiene to children, they will spread the message at home. But for this to be effective, the school must enable children to practice what the school preaches. Separate latrines for girls and boys are a must – and a goal of the WASH campaign for 2010.

Finally, **partnership and coalition**. UN-HABITAT is one UN agency which leads in partnerships. The *Urban WASH* (Water, Sanitation and Hygiene) campaign of UN-HABITAT and WSSCC is a close partnership which hopefully will enable both to be pioneers in the creation of a coalition between the local bodies and governments on one hand, and civil society on the other. Unless people are really brought into the centre of all planning, action and implementation, the real goal will never be achieved and it will not be sustainable.

---

**New initiatives in Africa**

A new awareness through African Ministerial Council on Water and the New Partnership for Africa’s Development (NEPAD) has helped a large number of African countries to develop the partnership approach through WASH campaigns in Madagascar, Uganda, South Africa, Senegal, and Nigeria. Kenya is making new efforts to develop a special approach to the urban problems in Nairobi and other areas.

All the MDGs are important. Achieving one will help achieve another. Ensuring the achievement of the hygiene, sanitation and water goals will not only improve health, it will reduce child mortality and ease the burden on women and girls, leaving them free time and energy for other efforts towards poverty reduction and for girls to attend school.

Because of this, UN-HABITAT, like all other supporters of the hygiene, sanitation and water goals, needs to advocate for all the MDGs, and to put water and sanitation issues at the centre of all goals. Such a partnership of international actions should be created by leaders like UN-HABITAT to create a more enabling environment without which it will not be possible for most poorer countries to achieve the goals: accelerated debt relief, improved access to developed country markets for their exports, and better focused aid.

In a world so prone to conflict, action is needed to show the risks of destroying or poisoning facilities on which millions the world over depend for safe water and sanitation.

A partnership of international action is also needed to create a more enabling environment to achieve the goals. The new UN-HABITAT-WSSC WASH campaign will go a long way to demonstrate how much positive human energy can be released when people are at the centre of all activities towards achieving the goals.

*Sir Richard Jolly is the Chair, Water Supply and Sanitation Collaborative Council. For further information see www.wsscc.org*
The Commission on Sustainable Development

focusing on urban slums

By Børge Brende

An important task for me as Chairman of the Commission on Sustainable Development (CSD) is to increase the global focus on problems facing urban slums world-wide, and to contribute to improving the conditions faced by slum dwellers on a daily basis.

Today, half the world’s population lives in towns and cities. Of these, more than 1 billion people live in urban slums. During the next decade, we may be forced to add another 500 million to this figure. In the Urban Millennium, an incredibly large number of people – children, women and men – will live under extremely harsh conditions.

The global goal of substantially improving the lives of at least 100 million slum dwellers by 2020 may look far-fetched. However, this goal represents a strong signal that we should work together to translate our words into action. In order to achieve this goal, we need to address the urban water and sanitation crisis.

In many slums in developing country cities, 150 or more inhabitants daily queue up for one public toilet. The health and economic impacts of these service deficiencies can be very costly to a country in the long run – not to mention the personal detriment these deficiencies represent. Improving water supply and sanitation services is of crucial importance.

The Commission on Sustainable Development has, in my opinion, a special responsibility to address the water and sanitation problems of urban slums. As Chairman of the CSD, I intend to put water, sanitation and human settlement issues high on the global agenda. I am pleased to note the leadership of UN-HABITAT in this respect.

Other prerequisites for improving urban slums are secure tenure and good urban governance, in particular as regards to the situation of women. These items are also high on the UN-HABITAT agenda.

It is my hope that the CSD will contribute to releasing the vigorous potential for growth and development inherent in many slums. We must join forces in order to deliver on our promises.

Børge Brende is the Norwegian Minister for Environment and Chairman of the Commission on Sustainable Development (CSD)

A message from the ADB

Two thirds of the world’s poor are found in Asia and the Pacific, and one in three Asians lives on less than one dollar a day. Of the world’s population without access to clean water, almost two-thirds live in Asia and an even greater number lack adequate sanitation.

If we are to meet the millennium development goals to reduce by half the proportion of people without access to safe drinking water by 2015, and to achieve a significant improvement in the lives of at least one hundred million slum dwellers by 2020, Asia will need to be the focus of action.

To achieve these formidable targets, new partnerships need to be established. ADB is therefore very pleased to join forces with UN-HABITAT to initiate the Water for Asian Cities programme.

This collaboration will initially provide about 10 million dollars in grants to raise political awareness, build capacity, implement pilot demonstration projects, create an enabling environment for investment, and prepare investment proposals for selected Asian cities. Based on these efforts, ADB expects to provide about 500 million dollars in loans for water supply and sanitation projects over the next five years.

ADB has been engaged in this sector through finance and policy dialogue for several decades, and we have gained substantial operational experience. We have learned that investments need to be accompanied by sound regulatory arrangements, conducive policy environments, and strengthened institutional capacity. A major issue continues to be the need for tariff reforms that will allow financial sustainability and promote new investments, taking into account the willingness and ability of poor people to pay for the services.

UN-HABITAT has considerable experience in addressing urban challenges, and in building awareness, providing technical assistance and strengthening institutional capacity. UN-HABITAT’s global know-how in these areas will complement ADB’s role as the main regional financial institution. I am therefore very excited about this partnership because the combined efforts of our institutions will be more effective than if we acted alone.

This is an excerpt from a speech by Tadao Chino, President of the Asian Development Bank
The role of the Organization of American States

By Bernhard Griesinger and Marilena Oliveira Griesinger

The Organization of American States (OAS), governed by the 34 countries of the Americas, is committed to the Millennium Development Goal of reducing by half the number of people without access to clean water and adequate sanitation by 2015. The OAS also shares the emerging consensus that this challenge will have to be largely met in our cities, where most people live, consume water and generate waste.

The OAS’s Unit for Sustainable Development and Environment (USDE) has adopted the concept of Integrated Water Resources Management (IWRM) as a tool to mitigate the contamination and degradation of watersheds, especially those that contribute to the water supply of cities in the Americas.

The USDE has focused its efforts on encouraging the adoption of water resources management policies and efficient development of trans-boundary basins by providing technical support to help member countries implement strategic action plans and by promoting the exchange of information and expertise through the Inter-American Water Resources Network (IWRN).

The process of information exchange began in 1993 with the First Inter-American Dialogue on Water Management (Miami, Florida, USA). Since then, three other Dialogues have taken place. The Fourth Dialogue, recently held in Brazil, reflected the efforts of the countries in water resources management, and urged the definition of appropriate levels of decision making (governance), citizen participation in water management, shared decision making, universal access to water as a basic human right, and sustainable access to clean water and adequate sanitation for the Latin American population.

The IWRM concept is based on the integration of natural, social, economic and political factors at the watershed level, reinforcing interdependency between upstream and downstream water users.

It is also a strategy for action comprising an institutional framework for legal, regulatory, and organisational roles; regulatory and financial management instruments; and the development, maintenance and operation of infrastructure, including water storage structures and conveyance, wastewater treatment and watershed protection.

Having in mind this concept, it is recognised that water, especially from rivers, is a central feature of the urban environment. Human settlements have almost always been close to surface or ground water, so it is no coincidence that many of the world’s great cities are along river banks. But besides providing water for drinking, agriculture, energy, and transport, rivers also play a dominant role in sculpting landscapes and sustaining ecosystems.

The IWRM approach considers the river basin as the unit for action, where both land and water have to be managed together as they form an integrated ecological system.

The USDE has already applied successfully the concept of IWRM to several projects throughout Latin America in partnership with intergovernmental organizations, such as the Global Environment Facility, the United Nations Environment Programme, World Bank, and the Inter-American Bank.

The USDE executes a variety of technical cooperation projects that address the member states’ needs. It also promotes international inter-institutional partnerships with institutions such as the Pan American Health Organization (PAHO), UNEP, the World Meteorological Organization (WMO), the Food and Agriculture Organization of the United Nations (FAO), and UN-HABITAT.

During 2001-2002, the USDE managed projects worth approximately US $60 million, 97 per cent of which came from external funding. The main projects under implementation with the participation of OAS are:

- **Integrated watershed management practices for the Pantanal and Upper Paraguay River Basin** designed to promote integrated sustainable management and development of the Upper Paraguay River Basin.
- **Integrated management of land-based activities in the São Francisco Basin** to promote integrated sustainable management and development of the São Francisco River Basin in Brazil.
- **Strengthening the water management resources sector in Brazil** aimed at helping the Brazilian Water Resources Secretariat (SRH) implement the National Water Resources Policy and promote the development of specific water resources projects to strengthen the National Water Resources Management System.

- **The Strategic Action Programme for the Bermejo Binational River Basin (SAP- Bermejo River Basin)**. This is the first project in international waters funded by Global Environment Facility (GEF) to establish a strategic action plan for environmentally sustainable development in the basin.
- **The Project for the Environmental Protection and Sustainable Integrated Management of the Guarani Aquifer (SAG)**. The project is funded by GEF and executed in collaboration with Argentina, Brazil, Paraguay and Uruguay, with the objective of establishing a common institutional and technical framework for managing and preserving the Guarani aquifer system.
- **The Strategic Action Program for the integrated management of water resources and sustainable development of the San Juan River Basin and its Coastal Zone** to ensure the availability of the goods and services provided by water resources for conserving natural ecosystems and social and economic development options.
- **Integrating management of watersheds and coastal areas in small-island States in the Caribbean** to help the participating countries improve their watershed and coastal zone management. The project is funded by GEF, and implemented by UNEP and UNDP.
- **A regional framework for the sustainable development and management of water resources of the Plata River Basin** to stimulate cooperation among the five La Plata Basin countries by identifying common water resources, policy issues and formulating a cooperative framework which addresses trans-boundary water resources issues.

Bernhard Griesinger is a senior water resources management specialist at the Unit for Sustainable Development and Environment of the Organisation of American States. Marilena Oliveira Griesinger, a geographer, is Professor at the Federal University of Uberlandia, Brazil, and a consultant on water resources management.
A water pollution crisis in the Americas

By Luís Eduardo Galvão

Cities in the world, especially ones located in less developed regions, such as Latin America and the Caribbean, face serious challenges in the management of water resources. Given the crucial need to supply water to the population, treatment of sewage is unavoidable.

The issue becomes critical when fresh water is threatened by the very water source supplying the cities. If there is a high degree of pollution, then the costs of treatment rise to stratospheric levels. The same situation occurs with the removal and treatment of sewage.

In São Paulo, 1.5 million people live near the Bilings and Guapiranga reservoirs that account for the supply of 21 per cent of water to the metropolitan region of Brazil’s biggest city. These important reservoirs are becoming more and more polluted. The cost of water treatment chemicals rocketed from from R$ 34.2 millions (US$ 11.7 million) in 1998 to R$ 60 million in 2002.

While water production increased 8 per cent in four years, the volume of chemicals used in the water treatment process increased 40 per cent hitting 170,000 tons per year — the equivalent to 17,000 truckloads — just to make it safe to drink.

In Latin America and the Caribbean, the degree of difficulty of access to drinking water is mainly due to the pollution of the water by domestic sewage. The region is considered rich in water, with 30 per cent of the planet’s reserves, but even so it manages to leave over 117 million of its inhabitants — just to make it safe to drink.

The Gulf of California has 160,000 units of fecal matter per 100 milliliters of water. The permissible limit established by the Mexican health authorities is 500 units. The gulf is on the north of the country, between the states of Baja California and Sonora, where Guaymas, one of the main port cities is located, and where the Colorado, Sonora, Yaqui and Fuerte rivers flow into the ocean. Specialists noted the largest volume of pollutants comes from municipal drainage, mainly fecal waste.

Proper piped water systems would put an end to puddles of contaminated water like this one in a slum in Rio de Janeiro. Photo © UN-HABITAT

Even the most famous seaside resorts of Latin America and the Caribbean are affected. A lack of sewage treatment is contaminating the area around Cancun and although local authorities show the success of their decontamination plans, research centers and ecologists of the region say that such famous beaches as Viña del Mar, in Chile, Cartagena de Indias, on the Caribbean coast of Colombia, Acapulco on the Mexican Pacific coast and many others no longer offer safe beaches for bathing.

The great tourist beaches of Rio de Janeiro – Copacabana, Ipanema and Barra da Tijuca – are unsuitable in many parts at certain times. These beaches are saved from having much more serious pollution problems only because they are located on the open sea, the opposite situation of Guanabara bay, that receives, directly or indirectly, waste materials from 15 municipalities.

The Gulf of California has 160,000 units of fecal matter per 100 milliliters of water. The permissible limit established by the Mexican health authorities is 500 units. The gulf is on the north of the country, between the states of Baja California and Sonora, where Guaymas, one of the main port cities is located, and where the Colorado, Sonora, Yaqui and Fuerte rivers flow into the ocean. Specialists noted the largest volume of pollutants comes from municipal drainage, mainly fecal waste.

Even the heavenly beaches of the Caribbean, annually visited by 100 million tourists, that contribute 43 per cent of the GDP of an area without resources to invest in sanitation, receive between 80 to 90 per cent of waste water without previous treatment. In Haiti, Barbados and Jamaica beaches are being degraded by the presence of fecal matter.

Countries in the Americas recognise the grave situation, as noted in the recommendations of recent specialized meetings on the subject. They are making strong efforts to implement new laws, and enforce existing legislation on the discharge of municipal waste water.

— Bernhard Griesinger
Organization of American States

The Gulf of California has 160,000 units of fecal matter per 100 milliliters of water. The permissible limit established by the Mexican health authorities is 500 units. The gulf is on the north of the country, between the states of Baja California and Sonora, where Guaymas, one of the main port cities is located, and where the Colorado, Sonora, Yaqui and Fuerte rivers flow into the ocean. Specialists noted the largest volume of pollutants comes from municipal drainage, mainly fecal waste.

Even the most famous seaside resorts of Latin America and the Caribbean are affected. A lack of sewage treatment is contaminating the area around Cancun and although local authorities show the success of their decontamination plans, research centers and ecologists of the region say that such famous beaches as Viña del Mar, in Chile, Cartagena de Indias, on the Caribbean coast of Colombia, Acapulco on the Mexican Pacific coast and many others no longer offer safe beaches for bathing.

The great tourist beaches of Rio de Janeiro – Copacabana, Ipanema and Barra da Tijuca – are unsuitable in many parts at certain times. These beaches are saved from having much more serious pollution problems only because they are located on the open sea, the opposite situation of Guanabara bay, that receives, directly or indirectly, waste materials from 15 municipalities.

Even the heavenly beaches of the Caribbean, annually visited by 100 million tourists, that contribute 43 per cent of the GDP of an area without resources to invest in sanitation, receive between 80 to 90 per cent of waste water without previous treatment. In Haiti, Barbados and Jamaica beaches are being degraded by the presence of fecal matter.

Luís Eduardo Galvão, lectures on the environment and international relations at Bennet University in Rio de Janeiro.
Teaching water conservation in African schools

By Pireh Otieno

As part of its Water for African Cities programme UN-HABITAT has embarked on a water education campaign to teach children and local communities about the importance of conservation in an effort to cut back waste.

For the first time, this initiative has brought together professionals from the education, urban and water and environment sectors to bring about positive and lasting changes in attitude and behaviour towards water at all levels of society.

Children and young people are the best ambassadors to bring about positive changes in attitudes towards water conservation. Water education in schools and local communities can therefore play an important role in bringing about a new water-use ethic in cities.

The idea stems from a meeting of international and regional experts in education and water resources management convened by UN-HABITAT in collaboration with UNEP and the Stockholm International Water Institute (SIWI) in Johannesburg, South Africa in 2001. NGOs active in water education were also brought in to help devise the best strategy to promote a better understanding of water as a key social, economic and environmental resource.

They came up with an approach called Value-based Water Education to impart information on water, sanitation and hygiene and inspire new attitudes that promote wise and sustainable use of water. The Value-based Water Education initiative focuses on three key areas – the establishment of water classrooms, setting up a water curriculum in selected schools as a pilot project, and then helping raise awareness in the local community.

UN-HABITAT is working with Swedish Water Development AB (SWD) in establishing on-site water classrooms in each participating country. SWD is helping develop Value-based Water Education resource material, and running training courses for teachers.

Non-formal education with community initiatives is centered around children bringing home to their communities what they have learned at school.

Pireh Otieno is a Project Officer with UN-HABITAT’s Water, Sanitation and Infrastructure Branch.

The centrality of freshwater in our lives cannot be overestimated. Water has been a major factor in the rise and fall of civilizations. It has been a source of tensions and fierce competition between nations that could become even worse if present trends continue. Lack of access to water for meeting basic needs such as health, hygiene and food security undermines development and inflicts enormous hardship on more than a billion members of the human family. And its quality reveals everything, right or wrong, that we do in safeguarding the global environment.

— United Nations Secretary-General Kofi Annan

In the Value-based Water Education programme, one of the things schoolchildren are being taught is not to leave taps running unnecessarily. Photo © UN-HABITAT
The poor pay more for their water

By Arthur C. McIntosh

Winnie Flores lives on the Mangahan Floodway in Metro Manila. She is one of about 3 million people who, almost five years after the privatisation of Manila water supply, still have no access to piped water. They pay almost as much for water as for rent. Winnie could greatly improve the quality of her accommodation and her dignity in the neighbourhood if she could get connected to piped water. She sighs, “It’s coming next year they say.”

But she has heard that story for the past five years. Recently, when her husband lost his job, they and her four children had to move to cheaper accommodation at 1,000 pesos (US$18) a month. Yet Winnie pays 900 pesos a month for 10 cubic meters of water, while households connected to the water mains pay about 100 pesos a month for 20 cubic meters. She gets her water from two sources. One is from an entrepreneur who drilled a well and pipes it to a small number of families in the neighbourhood. The water costs 44 pesos per cubic meter but is of poor quality.

Twice a day, a water vendor delivers 20-liter jerry cans of drinking water to a water main about 2 km away. She buys 4 containers a day at 5 pesos a container.

Why are Winnie and so many others in this deplorable situation? It is not a question of land tenure — the neighbourhood has concrete streets and many homes built in permanent materials. It’s all about where the funds are. When privatisation was introduced, the advantages, much heralded, were that the private sector would invest funds in water supply and improve efficiency, by, for example, reducing non-revenue water. In reality, after almost five years, non-revenue water has not reduced greatly and new funding has been much less than expected. What happened?

The “water crisis” in Manila in 1996 was the rationale for privatisation that was completed in just 18 months. Unfortunately two mistakes were made. First, the contracts with two different concessionaires were not made on the basis of a formal and publicised government policy. There was no independent regulator to monitor the implementation of that policy and see that the contract conformed to the it is not in your contract.” Of course, had the contract been based on a policy of connecting the poor, it would have been easy for the two parties to get together and amend the contract so as to align it with policy and agree on a tariff hike. After all, both concessionaires are guaranteed a certain rate of return based on the whole contract. But there was no policy, only a constraining, restrictive contract. So for a couple of years, the government (not the regulator!), fought to resist the tariff increase. Who was this hurting? Without a doubt, the still unconnected poor, like Winnie.

One of the mysteries is why the NGOs did not come to the help of the poor and demand a tariff increase. In the end, the poor people asked for the tariff increase themselves. The logic was simple. If the tariff for those people connected, was raised from an average of 5 pesos per cubic meter to 10 pesos per cubic meter and that allowed the concessionaires to connect the poor, then the poor would go from paying 90 pesos per cubic meter and be much better off. Is it not too much to ask those connected to water to help pay for those not connected to get the same access? In the end, the government capitulated and gave the tariff adjustment to both concessionaires.

What are the lessons to be learned? First, policy is everything, but it must be in front of the public at all times. Second, counter-intuitively, hiking the tariffs does help the poor who are not yet connected to piped water. Third, in the future, investments in large city water supply should be financed directly from tariffs.

Arthur C. McIntosh was until recently the Principal Water Supply Specialist, Asian Development Bank, Manila, Philippines. The views expressed are those of the author and do not necessarily represent the views of the ADB.
Toilets for all

By Bindeshwar Pathak

Adequate supplies of safe water and sanitation are essential for a healthy and productive life. Water that is not safe for human consumption can spread disease. Inadequate sanitation causes pollution which adversely affects agricultural productivity. Industrial activity is hit due to illness-related absenteeism.

Urban populations in developing countries are growing at very fast rates. Rapid urbanisation creates more demand for basic services like water, sanitation, drainage, refuse disposal, and housing which local authorities are unable to meet. The gap between demand and supply is continuously widening. A closely related issue of rapid and uncontrolled urban growth is the creation of slums. In many cities in developing countries more than half the population live in slums. The debilitating effects of unhealthy living conditions and deteriorating environments lower the productive potential of the very people who can least afford it. Among the poor, the women and children suffer the most.

Globally, more than 2.4 billion people are without adequate basic sanitation facilities. In India, more than 733 million people out of population of 1.027 billion, according to the 2001 Census, either defecate in the open or use insanitary buckets, dry privies or community facilities.

Poor sanitation coverage in India is primarily due to insufficient motivation, a low level of awareness of the problems and a lack of affordable sanitation technology. Most of these people are from lower socio-economic groups and are not aware of the health and environmental benefits of sanitation. It is still not seen as a high priority, resulting in absence of people’s participation.

The Sulabh Sanitation Movement has been actively involved in the development and implementation of sustainable technology in the field of sanitation since 1970. The twin pit flush toilet, popularly known in India as Sulabh toilet, is an important sanitation breakthrough. The technology is simple, affordable, appropriate and socially acceptable. It requires only two litres of water to flush excreta. The cost of a single toilet varies from the equivalent of US$ 10 to US$ 1,000 depending on the size of the unit. Sulabh has constructed more than 1.2 million such toilets in individual houses.

The provision of public toilet complexes at public places and in slums on a pay and use basis is another important Sulabh landmark. Pavement dwellers, the floating population, rickshaw pullers and those who cannot afford their own household toilets, can all use well designed and managed pay & use community toilets with bath, urinal and laundry facilities. This system has proved a boon to the local authorities in their endeavour to keep cities, especially slums, clean. Sulabh has constructed so far over 5,500 such toilet complexes in different parts of the country, providing maintenance around the clock.

Recycling and reuse of human waste for biogas is an important way to get rid of health hazards from human excreta. Sulabh is the pioneering Organization in the field of biogas generation from public toilet complexes. The Sulabh biogas plant does not require manual handling of human excreta and there is complete recycling and resource recovery from the waste. Biogas is utilised for cooking, lamps, electricity generation and body warming during winter.

Sulabh has also developed a new and convenient technology by which the effluent from the biogas plant is turned into a colourless, odourless and pathogen free liquid manure. The technology is based on charcoal filtration and ultraviolet rays.

Much of the demand for latrines comes from women as they suffer the most due to non-availability of these facilities. Women have by far the most influence in determining household hygiene practices.

Although low-cost technology is easy to implement, it requires ingenuity and expertise for precision in construction and competence in supervision to guard against faulty construction and pollution of ground water. Training of personnel for operations and management is therefore essential.

Sulabh employees make house-to-house contact to educate and motivate householders and disseminate information about the system.

Because children are more receptive to new ideas, Sulabh visits schools to make children aware of the importance of sanitation and personal hygiene. In order to inculcate a habit of using toilets at a young age, schools are provided with sanitation facilities.

Dr. Bindeshwar Pathak is the Founder of the Sulabh Sanitation Movement.

I live in Patil Estate slum. There were no taps in our slum. We used to go to the toilet near the riverside. The insects used to climb up our legs. We went to defecate under the bushes ... then they made open drains, but the children defecate in them ...

— SANGITA CHAVAN, a resident of a slum in Pune, India

Without clean water you can get diseases.

— Maureen Nyango, former Nairobi street child.

If water were clean, children would not die from cholera.

— John Mwaura, a former Nairobi street child mourning the death of a friend who died from cholera.
A complex web of partnerships

This article is excerpted from UN-HABITAT’s new report, Water and Sanitation in the World’s Cities: Local Action for Global Goals

Urban water and sanitation utilities are virtually never sold off to private enterprises to use as they see fit. But there are several models of private sector participation and many variations, depending on the legal and regulatory frameworks, the nature of the company and the type of contract. In all of these models, regardless of the level of private sector involvement, the public sector role and the regulatory environment are critical.

Finance is usually the paramount consideration driving governments to involve the private sector in water and sanitation utilities. Arguments and evidence favouring private sector participation may be influential. Political shifts can make a difference. In recent years, however, public sector decisions to radically increase the involvement of private enterprises are almost always related to the need for finance, even when undertaken by pro-private-sector governments.

The most important aspect for private companies and their financial partners is the potential profit or rate of return. A key consideration is scale. Bankers and multinational water companies are looking for large-scale projects, with values of US$100 million upwards, in population centers with at least 1 million inhabitants. Smaller urban centers are unlikely to be attractive.

The bidding process for large contracts typically starts with the government making the decision to privatise, and then having its team of legal, financial and technical consultants develop the bid documents. Companies then submit their bids accordingly. In cases where companies find a situation worse than they had expected, they usually try to renegotiate relevant terms of the contract.

One of the justifications for private sector participation in urban services in low- and middle-income countries is that public funds and development assistance cannot finance the level of investment required to expand water and sanitation services to all of those lacking adequate provision. Without foreign private finance it is difficult to see how the required investments can be made. Unfortunately, the level of foreign private finance has been disappointing, even in projects involving private sector participation. Most finance for investment in water and sewerage services in the cities of low- and middle-income countries continues to come from development loans, equity finance and the public sector, with comparatively little investment from international corporations.

Regulation is often seen as a way of controlling a private company to ensure it does not abuse its monopoly position. The percentage of the world’s population currently estimated to be served by formal private water providers and PPPs is still less than 10 per cent, although there are significant regional differences. In most of Africa, Asia and Latin America, a much higher share of households are served by informal or small-scale private water providers, and the share can rise as high as 70-80 per cent in some poorly served African cities, such as Bamako (Mali), Conakry, (Guinea), Cotonou (Benin) and Dar es Salaam (Tanzania). Such partnerships include:

- Service contracts which are usually short-term agreements whereby a private contractor takes responsibility for a specific task, such as installing meters, repairing pipes or collecting bills. Examples can be found in Mexico City and Uganda.
- Under a management contract, the government transfers the responsibility for the operation and maintenance of the water or sewerage network to a private company.
- An aftermerge contract is similar to a management contract, but the private operator takes responsibility for all operation and maintenance functions, both technical and commercial. A lease contract is similar to the aftermerge contract, except that the revenue is determined solely by tariffs.
- Under concession contracts, the private contractor manages the whole utility at its own commercial risk. Build-
- The full privatization model has only been adopted in England and Wales, apart from a few small and isolated instances. The private company purchases the assets from the government and takes over their operation and maintenance as a business on a permanent basis, but under strict commercial rules.
- A joint venture is an arrangement whereby a private group forms a company with the public sector and private investors. There are also multi-utility contracts whereby a private company runs more than one type of utility.
- Finally, small-scale providers are important because they provide water and sanitation services to a very large proportion of low-income urban households. Without them, provision for water and sanitation would be much worse. They often serve populations living in areas that are difficult to serve with conventional water distribution and drainage networks. It is difficult to estimate how many people rely on them, but in many cities and smaller urban centres in sub-Saharan Africa and in low-income nations in Asia and Latin America, they are certainly far more important than large-scale private water companies.

For both developed and developing countries the public sector remains the preferred form of water service provision. Only 4 per cent of populations in Central & Eastern Europe, 5 per cent in the US, 4 per cent in Latin America, 3 per cent in Africa and 1 per cent in Asia has privatised water provision.

— Eddie Cottle, Against the Current: Water and Privatisation in the Southern African Region in a briefing paper at the EU-SADC Civil Society Conference in Copenhagen, Denmark
The north-west Indian city of Indore has been suggested as the first city to benefit from UN-HABITAT’s new Water for Asian Cities programme. The main city of Madhya Pradesh state, Indore has a population of 1.6 million with a high annual growth rate of 4.6 percent. But it is located in a region where water is scarce.

The problem is such that the city is able to provide its residents with roughly half of the water usually provided in India of 67 litres per capita per day, as against the norm of 135 litres per day. It is exacerbated by the fact that about 32 per cent of its residents do not have access to piped water, forcing the poorest of all to depend on hand pumps or water vendors for supplies.

The city depends for 80 per cent of its water on Narmada River, some 70 kilometres away. The distribution network is ageing and suffering from low maintenance and a lack of investment. Unaccounted-for water constitutes 52 per cent of the total water production. And those lucky enough to have piped water only receive intermittent supplies of an hour or two a day.

This situation has had a direct impact on the city’s sanitation problems. Only 10 per cent of the population is connected to the sewerage system. For the rest, sanitation needs are met by septic tanks (42 per cent), and dry pit latrines (1,000 units). About 15 per cent of people are forced daily to defecate in the open. Women all too often have to wait the whole day to sneak out under cover of darkness.

The Indore city fathers have developed a new innovative policy to rectify the situation by instituting water saving initiatives and city-wide rain water harvesting programmes. But it needs capacity building and follow-up investments – and this is where UN-HABITAT’s new Water for Asian Cities collaborative initiative with the Asian Development Bank and Asian governments can help. In close consultation with the City of Indore, the Madhya Pradesh State government and the central government of India, an investment programme for Indore has been developed using a participatory approach involving all major stakeholders of the city, including urban poor communities.

This seeks to maximise the existing water supply system through water demand management measures, augment supplies to unserved low-income areas, improve sewerage collection, and provide sanitation to unserved areas. It is also intended to improve municipal solid waste management through improved collection, and safe treatment and disposal.

The Indore investments are estimated at US$ 130 million. They will be part of a larger ADB loan under the Integrated Urban Development Madhya Pradesh (IUDMP) project. The investment component of the programme, which is led by ADB, will be complemented by a capacity building, awareness and education component led by UN-HABITAT. Canadian International Development Agency will also support an initiative on urban governance.

The Water for Asian Cities programme will address the promotion of pro-poor governance and institutional development, tackle water conservation and demand management, and promote integrated environmental sanitation through demonstration of technological options and hygiene awareness creation and education. It will also address income generation for the urban poor through community-based water and sanitation services.

The Water for Asian Cities programme was first announced at the World Summit for Sustainable Development in Johannesburg, South Africa last year, and officially launched by Mrs. Anna Kajumulo Tibajjuka, Executive Director of UN-HABITAT and Mr. Tadao Chino, President of ADB, at the Third World Water Forum in Japan in March 2003.

André Dzikus is a Human Settlements Officer in the Water, Sanitation and Infrastructure Branch of UN-HABITAT and a Programme Manager of the Water for African and Asian Cities programmes.

Pieter van Dongen is a Water Resources Consultant.
A novel private sector initiative for the poor

By Robert E. Sullivan

How does one get cheap, clean water into a Philippine coastal town? Easy, with a debit card that you carry in your pocket. It is beginning to work fairly well, and cheaply, for the poorest people, in Ronda, Cebu, the Philippines. According to entrepreneur Quentin Kelly, it may be the wave of the future for poverty stricken rural and urban areas that do not have electric power.

Mr. Kelly sees the system as ideal approach for “slum upgrading projects in the world’s most derelict urban neighbourhoods.” His New Jersey-based WorldWater is installing a complete water system for the town of Ronda, from a deep, solar-powered well that needs neither diesel fuel nor any connection to an electricity grid. The water is fed through channeling pipes, to standpipes and taps. The project goes well out on a limb from his core business of solar-powered water pumps.

“First we convinced the mayor and the town council,” he said in an interview with Habitat Debate, “then we went to the local banks.” The ace up the sleeve, he said, was the so-called AquaCard which is pre-paid by water users into an account, from which money is automatically deducted as the water is used.

“We told the banks they’d get their money instantly,” Mr. Kelly said he said. “And we told them that according to the World Health Organization people use about 20 litres a day. That’s a lot of business. They were convinced by that.”

It took about two years to get the system up and running. "And the result is that the banks are getting their money back, while the people are getting clean water for about 15 to 20 per cent of the price they used to pay,” he said. The entire project is run and sponsored locally.

The construction of a complete water system is a new advance beyond Mr. Kelly’s normal core business of solar pumps - a field they have been involved in for more than 20 years. WorldWater solar panels and pipe systems are currently pumping up water for remote populations of the Cholistan Desert of Pakistan to the suburban green houses of Ecuador. They are also pumping water in rural areas Sri Lanka, Malawi, Tanzania, Mozambique, Ethiopia, Angola, Somalia and several parts of the Philippines, as well in huge farms and vineyards in California.

He has been invited to bid for contracts in several other countries, but would prefer not to be too specific. All his projects in the developing world have two very basic things in common: solar power brings the water up without need of polluting fuel or connection to the electricity grid, and the operations are locally run. Even the pumps are locally bought as to make for easier repairs and maintenance. The projects are 100 percent financed ahead of time, and the overwhelming majority of his projects are in conjunction with partners in the private sector.

As to urban areas, Mr. Kelly said he had been examining various parts of the world and was eager to roll up his sleeves and work in the worst city conditions.

Referring to slum areas like those, which are close to downtown Rio but with little or no water, Mr. Kelly said: “What we would do is tap into the main water supply. We would establish our own distribution system and set up standpipes, and then, using solar energy, pump the water into the neighbourhoods where they need it.”

When Mr. Kelly read that UN Secretary General Kofi Annan recently launched a new UN commission to get the private sector more directly involved in development, he said, “that’s exactly what we do”.

WorldWater started as a research and development company in 1984 specifically aimed at private business activity supplying water and power in developing nations. The company also makes solar powered refrigeration units, and even street lamps, the kind which, he said, “could be used in slum upgrading projects” without the need for an electricity grid.

Robert E. Sullivan, an Irish journalist based in New York, specialises in the developing world for a range of international publications and electronic media.
Removing human waste - the Vacutug solution

By Graham Alabaster and Iole Issaias

While world and civil society agonise over how to meet the Millennium Development Goal of halving the number of people without access to adequate water and sanitation by 2015, interim solutions have to be found to remove human waste safely from slums that are home to almost 1 billion people around the world.

According to the latest UN-HABITAT statistics, the majority of these 1 billion people live in developing countries where over 40 percent of the urban populations live in slums.

The interim solutions also help sustain the goals set as improvements gradually come into place. Moreover any future investments in sanitation infrastructure will need to go hand-in-hand with investments in adequate human waste removal from either on-site or off-site sanitation systems, if these goals are to be truly met and sustained in the years to come.

Thus in 1996, UN-HABITAT in association with Manus Coffey Associates, designed a machine to provide sanitation services for the residents of densely populated low income settlements to remove the human waste from pit latrines. Known as the UN-HABITAT Vacutug, it is engineered for access to pit latrines in the narrow, unpaved streets of poverty stricken slum settlements where larger removal vehicles cannot pass.

Composed of a vacuum tank and a pump assembly with a capacity of 500 litres, it is operated by a small gasoline engine that has the capacity to remove waste at 1,700 liters a minute.

In 1997, the machine was tested on the outskirts of the Kenyan capital, Nairobi, by a local NGO in Kibera, the largest informal settlement in East Africa, to see whether or not its design and overall management would be feasible. The sustainability factor of the UN-HABITAT Vacutug was its potential to generate income because it is operated by a team of five that is able to remove human waste at a cost equivalent to US$ 7 per load.

The pilot phase has shown a huge demand and willingness to pay for this service in Kibera. It also meant that for the community there was no need to close down pit latrines when they became full and thus no need to relocate them, or manually empty them.

Together with good hygiene promotion, the machine can be fully integrated into a sanitation system, which would altogether be more effective in providing adequate sanitation. Furthermore it was deemed a success in terms of its income generating and cost recovery potential — it earned about 36 per cent profit on total initial cost.

But before any claims can be made on the viability of the machine providing adequate removal of human waste in low-income areas, more information on the socio-cultural and financial sustainability factors will be required.

There are certain design modifications which have to be made to make the machine more durable and efficient under the rough conditions in which it operates.

Currently there are nine machines undergoing field trials in Africa, Asia and Latin America under a programme funded by the Department for International Development (DFID) of the United Kingdom and Irish Aid.

The machines will be tested for a year in various cities in developing countries, under different conditions and managerial structures: some will be tested in informal settlements, rural areas, a refugee camp, and by a local municipality. UN-HABITAT will share the results via the Internet. It is hoped after the trial period any final design changes will be made and the machine can then be sold commercially.

Graham Alabaster is a Human Settlements Officer in the Water, Sanitation and Infrastructure Branch of UN-HABITAT and a Programme Manager of the Water for African and Asian Cities Programmes.

Iole Issaias is a consultant with UN-HABITAT’s Water and Sanitation Branch who also manages the vacutug project.
Global water consumption has increased so dramatically over the last 50 years that it is now at the top of the agenda of many organisations.

The 1994 figures for people in the developing world outside Asia with access to household running water were 65 per cent for Africa, 89.7 per cent for the Middle East and 92 per cent for Latin America. In the Sahel region of Africa, less than half the population had access to piped drinking water. Due to the low level of access to household running water, public standpipes have become an important source of water supply for poor families.

A joint study by the United Nations Development Programme (UNDP) and the World Bank showed that of seven west African capitals - Cotonou, Ouagadougou, Abidjan, Conakry, Bamako, Nouakchott and Dakar - Ouagadougou had the highest rate of water distribution at 86 per cent.

This was in spite of a rather low rate of supply of less than 34 litres per person per day. Ouagadougou’s high rating comes from the fact that a considerable portion of its water supply is distributed through a system of public standpipes. Cities such as Cotonou or Conakry, where the public water standpipe distribution system is barely operational, have water distribution rates of less than 40 per cent.

Poor management of used water affects the health of both the local inhabitants and of workers in charge of used water evacuation. This can not only lead to environmental degradation, but can also contribute to the contamination of marine resources.

A study undertaken in 1990 in the bay of Dakar revealed fishing resources were being contaminated by polluted water. In urban areas, it is quite common to find untreated water being used for agricultural purposes.

Achieving better management of used water in developing countries would necessitate the use of various water treatment systems. For poorer countries, policies involving the possibility of establishing alternative sanitation systems, alongside the conventional sewage disposal systems, should be explored.

As part of the Water for African Cities programme UN-HABITAT and the international NGOs ENDA Tiers Monde and ONAS are helping Senegal evaluate a successful community-based waste water collection, treatment and disposal system.

The system, in an informal settlement called Rufisque, has been developed by ENDA and comprises a low-cost shallow sewage system linked to a decentralised treatment plant. It is based on a lagoon system with floating macrophytes.

The system is used to collect the waste water from over 500 households where water consumption is between 10 and 30 litres a day.

Indeed, even if conventional water purification plants are necessary or even indispensable, they cannot adequately satisfy demand. For example, the costly Senegalese water purification station at Cambrene can hardly cope with one tenth of the used water regurgitated by the capital city, Dakar.

The Rufisque system was inspired by a determination to provide underprivileged population groups with access to water purification services.

Comparative epidemiological studies have shown that the purification plants installed in residential quarters do not favour the proliferation of malaria, as was widely believed by the general public. In fact, they show the system has had a positive impact on the health of the local population.

Malick Gaye, an architect, is the Coordinator of Enda Tiers Monde.
Water for African Cities

UN-HABITAT’s Water for African Cities Programme is a collaborative initiative of UN-HABITAT and UNEP within the framework of the UN system-wide Special Initiative on Africa. The programme is collaborating with a variety of international agencies, NGOs and donors, including the Water Supply and Sanitation Collaborative Council and the Swedish International Development Cooperation Agency (SIDA).

A direct follow-up to the Cape Town Declaration of 1997, it was adopted by African ministers wishing to address the urgent need for managing water in African cities. The programme started in October 1999 and is the first regional initiative of its kind to support African cities to manage growing water demand and protect their fresh water resources from the increasing pollution loads from cities.

During a recent Washington luncheon for Mrs. Anna Tibaijuka, Executive Director of UN-HABITAT, and attended by US Senators, Congressmen, policy makers and planners, US Senator Timothy E. Wirth, President of the United Nations Foundation, praised the programme as one of the most cost-effective projects funded by the Foundation.

Drawing water in Quito

Quito, the capital of Ecuador is a city of over 1.5 million located in an Andean Valley at about 2, 800 metres above sea level. The city consumes roughly 7 cubic metres of water per second. Potable water is provided by a municipal public company. About 80 per cent of Quito’s potable water comes from two protected areas.

Water demand is growing, while financing for increasing supplies is tight. Moreover, even in the protected areas, there are a number of activities threatening the city’s water supplies. In 2000, the city established a water fund (Fondo del Agua) to finance the management and conversation of surrounding watersheds.

Finance is expected to come primarily from fees levied on domestic, industrial and agricultural users, although some initial seed funds have been provided. Users may form associations to contribute to the fund.

The main users include the Metropolitan Enterprise of Water and Sewer systems in Quito which uses 1.5 cubic meters per second for drinking water and has already agreed to pay 1 per cent of sales, worth about $12,000 per month.

Water comes to arid Ananthapur

With a safe drinking water supply close to their doorstep, the people of Ananthapur in India are happier today. But until the completion of the Sathya Sai Water Supply project in 1996, getting safe drinking water was a daily drudgery for a million people living in three towns and 730 villages in the district of Ananthapur in Andhra Pradesh, the second most arid district in India. Also, because of heavy reliance by the people on ground water with excessive fluoride, the incidence of fluorosis was common in the past, often with severe bone deformities.

After the government failed to find a permanent solution to the water crisis in Ananthapur for more than five decades, a unique public-private partnership was forged in 1995 to provide safe drinking water to Ananthapur at the initiative of Sri Sathya Sai Central Trust, a charitable trust established by Sri Sathya Sai Baba. With voluntary contributions from all over the world, the trust contributed US$ 69 million and implemented this massive project within 18 months, which included laying of 2,500 kilometres of pipeline, constructing 268 overhead and 145 ground level reservoirs, 40 booster pumping stations, 280 deep boreholes and 13 infiltration wells.

After completion, the project was handed over to the state government, which has assumed responsibility for its maintenance, operation and management in partnership with grass roots level democratic institutions (Panchayet Raj). The project has clearly demonstrated that in a developing country, the creation of a public service facility need not wait for a government initiative if people can be inspired to participate and contribute to the common good.

Fishing in troubled waters in Calcutta: a century-old innovation of farmers

Farmers around Kolkata (Calcutta), India, developed a technique of using domestic sewage for fish culture almost a century ago. This technique is widely used to meet the growing demand for fish in this densely populated Indian city. The technique is considered to be unique and is the largest operational system in the world to convert waste into consumable products.

Early success of fish culture in stabilized sewage ponds, which were used as a source of water for growing vegetables, provided stimulus for the large-scale expansion of sewage fed fish culture system. The area under this unique system of culture peaked at 12,000 hectares, but in recent years there has been a steep decline in the area due to the increasing pressure of urbanization. Today, a considerable amount of fish consumed in Kolkata city is produced from this system.

The wastewater-fed ponds provide employment for about 17,000 poor fishermen and produce 20 tonnes of fish daily for urban and periurban markets in Calcutta. Fish is mainly purchased by less well-off consumers.

Nicaragua

The local Development Programme (PRODEL) in Nicaragua provides small grants for infrastructure and community works projects, and loans and technical assistance for microenterprises and housing improvements. The programme also helps to develop the capacity of local institutions to implement these measures. Its immediate goal is to improve the physical and socio-economic conditions of families living in poor communities. Between 1994 and 1997, it was active in five municipalities, and from 1998, it became active in three more.

By the end of 1998, more than 38,000 families had benefited from the US$ 10.5 million programme – 48 per cent of the total population of the eight towns. Just over half of this funding was provided by the Swedish International Development Cooperation Agency (SIDA) with the rest being mobilized locally mostly from the households taking part and the municipal authorities. Between 1994 and 1998, the infrastructure and community works component supported 260 projects (upto US$ 50,000 per project) in 155 neighborhood with a total investment of US$4.4 million. Among the works funded were piped water supplies, sewers and drains, treatment plants, roads and footpaths, electrification and street lighting, health centers and day care centers, playgrounds, sporting facilities, and sites for the collection, disposal and treatment of wastes. The communities contributed 132,000 days of work (volunteer and paid).
In praise of UN-HABITAT’s value-based water education project for African Cities.

Just like in any society, people at our school hardly realised the importance of water and the need for its conservation.

Taps were often left running. The school had many leaking pipes. Pupils and teachers usually ignored such leakages, assuming they would simply be repaired. Pupils would take unnecessarily long showers. Toilets were often flushed for no apparent reason.

A similar situation prevailed in many of our homes. In the townships, council water pipes often had leakages. Public taps, frequently vandalised, had water pouring out all the time.

And when VBWE was introduced to our school in October 2001, the teachers and we students sighed at the thought an additional subject on the curriculum. We were also suspicious of the idea of values because we thought that this was colonialism.

Yet as the programme was unfolded, our fears quickly abated. We realised that the values of truth, love, peace, decent conduct and non-violence and their many practical applications, have always been part of our culture. We came to enjoy VBWE issues in class.

As a result of this programme, which opened our minds and eyes and touched upon our hearts, we became wiser in the use of this valuable resource. So what did we do?

The whole school, teachers and pupils, took practical steps to ensure that the seeds of VBWE took root in us. A Water Task Force (WTF) was formed; running taps were closed and these soon became uncommon; open drums were placed under the taps in order to stop wastage and at the end of each day, the water collected was used for plants and flowers; toilets were only opened at specific times, and the unnecessary flushing has been reduced.

In addition to all these practical steps, we also have a Water Room where quotations on and about water are displayed. Water billboards posted around the school compound. We now wear water badges and Thursdays have been set aside as water days when songs, poetry and drama relating to water are sung, recited and performed. We are very grateful to UN-HABITAT for introducing this programme. It has brought about rapid changes in the way we look at and use water.

— Isaac Chanda, 17, Head boy of the Sathya Sai School in Ndola, Zambia

A word of congratulations

Congratulations on the new format of Habitat Debate and on the quality of the contents of the magazine. I am looking forward to views on the housing delivery system in a globalizing world.


**NEW PUBLICATIONS**


*HS/686/03E*

*ISBN: 1-84407-037-9 paperback 1-84407-036-0 hardback*

*Language: English*

Every two years, UN-HABITAT publishes its flagship *Global Report on Human Settlements*. This year’s report entitled, *The Challenge of Slums*, is packed with statistics and figures on our rapidly urbanizing world – a world in which the total number of people currently living in slums is estimated at 928 million. This figure will grow at an accelerated rate if no policy action is taken now. The report, to be launched on World Habitat Day on 6 October 2003, carries a series of sharp insights by such personalities as the former South African President Nelson Mandela, the Nobel Prize laureate Amartya Sen and the United Nations Secretary General Kofi Annan.

In a detailed review, the report addresses growing global concern about slums, in line with the recently adopted United Nations Millennium Declaration which aims, among other development priorities, to eradicate extreme poverty and hunger and to significantly improve the lives of at least 100 million slum dwellers by the year 2020. “To attain the goal of cities without slums, urban planning and management policies designed to prevent the emergence of slums should be implemented vigorously, alongside slum upgrading and within the strategic context of poverty reduction,” it says.

*The Challenge of Slums* presents the first global assessment of slums, emphasizing their problems and prospects. The report is written in clear language and supported by informative graphics, case studies and extensive statistical data.

It also uses a newly formulated operational definition of slums. It presents estimates of the numbers of urban slum dwellers and examines the factors at all levels, from local to global, which underlie the formation of slums as well as their social, spatial and economic characteristics and dynamics. It goes on to evaluate the principal policy responses to the slum challenge of the last few decades.

Almost 1 billion people live in slums, the majority in the developing world where over 40 per cent of the urban population are slum dwellers. The number is growing and will continue to increase unless there is serious and concerted action by municipal authorities, governments and civil society and the international community.

The report shows the way forward and identifies the most promising approaches to achieving the United Nations Millennium Development Goals for improving the lives of slum dwellers by scaling up participatory slum upgrading and poverty reduction programmes.

This global report is an essential tool and reference work for researchers, academics, planners, public authorities and civil society organisations around the world.

**Water and Sanitation in the World’s Cities: Local Action for Global Goals**

*Earthscan, London, 2003*

*HS/682/03E*

*ISBN: 1-84407-004-2 paperback 1-84407-003-4 hardback*

*Languages: English, Spanish*

The report describes a water and sanitation situation in major cities of the developing world much worse than anyone had imagined. It is a problem compounded in part by skewed statistics.

The report warns that it will not be possible to meet the UN Millennium Goal of halving the number of people without adequate water and sanitation by the year 2020 without a major review of urban sanitation. Current official national statistics often disguise the real problem of the poor in cities and towns because most surveys assume that the urban poor are better served than the rural poor with “improved” provision of water and sanitation.

Packed with statistics, it examines in detail problem areas in Africa, Asia, Latin America and the Caribbean, and packed with personal accounts of distress from poor urban areas around the world and many case studies. It also makes useful suggestions for ways of resolving a problem that is growing daily. A Spanish edition of the report will be launched during the celebrations to mark World Habitat Day in Rio de Janeiro on 6 October 2003.

**Water for People, Water for Life, 2003**

*ISBN UNESCO: 92-3-103881-8*

*ISBN Berghahn: 1-57181-627-5 (cloth) 1-57181-628-3 (paperback)*

*Language: English*

A new report by UNESCO, *World Water Development Report - Water for people, Water for Life* shows how peace and harmony between and within nations are threatened where, for whatever reason, there is insufficient water to meet human and environmental needs. And it shows how the value of fresh water exceeds narrow economic calculations by encompassing a whole range of social, cultural and ethical considerations.

The report runs into over 500 pages looking at the world’s fresh water resources.

This body of work is the main outcome of the World Water Assessment Programme, a long-term project started in response to decisions of the United Nations General Assembly and the Commission on Sustainable Development.

It is published in 2003 jointly by United Nations Educational, Scientific and Cultural Organisation (UNESCO) and Berghahn Books.
RECENT EVENTS

Tibaijuka decries death of Vieira de Mello

The bombing in August 2003 of the United Nations headquarters in Baghdad which resulted in the death of UN Special Representative to Iraq Sergio Vieira de Mello, and nearly a score of other UN staff was condemned as a “senseless” act by Anna Tibaijuka, UN-HABITAT’s Executive Director.

“This senseless act of violence must be condemned not only for the death and destruction it has brought about but also because of the damage it does to the hopes and aspirations of the Iraqi people themselves,” said Mrs. Tibaijuka.

Recalling that her colleague had served in some of the most dangerous places in Africa, Kosovo, and East Timor helping bring peace against all the odds, she added: “In losing Mr. Vieira de Mello, the Iraqi people have lost a friend and the world has lost a champion of justice and freedom. The only way we can pay tribute to the man, is to continue the UN mission to establish peace and prosperity in Iraq.”

With a large team of international staff, every day since 1997, UN-HABITAT has helped provide over 20,000 new homes, more than 600 schools, over 100 health centres, more than 500 kilometres of water and sewage systems, nearly 3,000 kilometres of new roads. Managing a US$600 million budget, UN-HABITAT has conducted the reconstruction projects under the former Oil-for-Food programme.

Today, with its well established operational network, the organization is providing an immediate operational response to the post-war emergency situation and building foundations for the longer term needs of the people. UN-HABITAT’s offices in Baghdad are situated about 10 kilometres away from the main UN headquarters where Mr. Vieira de Mello was killed.

Major initiative to improve the slums of Kenya

Kenya’s Minister for Roads, Public Works and Housing, Mr. Raila Odinga, last month announced the Kenya Slum Upgrading Project, a major initiative aimed at improving the conditions of the slum dwellers in Nairobi, who make up over 60 per cent of the city’s population.

He said the goal of the programme is to improve the lives of hundreds of thousands slum dwellers in Nairobi and other urban areas in Kenya.

Mr. Odinga the priorities of the programme, which aims to improve the living and working conditions in slums, these include ensuring security of tenure, improving physical infrastructure such as access roads, water supply, sanitation facilities, and providing basic health facilities, schools and other social infrastructural services.

The programme will cover the urban areas of Kenya, starting with selected slums in Nairobi, the capital city, and Kisumu City, located in western Kenya. Mr. Odinga stressed that, in common with other best practices from around the world, tenants and landlords would be consulted and fully involved in the planning and execution phases of the slum upgrading project to ensure that their needs and concerns are addressed.

In fact, consultative meetings with slum dwellers have already started. In response to questions on whether slum residents would be forced to move from their lodgings while improvements were underway, Mr. Odinga insisted that there would be no forced evictions. He confirmed that land at sites near the slum areas had been identified where some residents could be moved to create space for improvements. However, the displacement of people would be minimized and take place only after consulting and reaching agreement at the community level.

Nairobi gets new youth centre

Nairobi City Council and UN-HABITAT have opened a new youth centre in the Kenyan capital Nairobi to help young people hone the skills and extra training needed to find jobs.

The One Stop Youth Information Resource Centre in a building newly refurbished with funding from the government of The Netherlands was launched on 12 August 2003 as part of the International Youth Day celebrations. Its training workshops and computerised facilities also has the backing of a wide cross-section of private businesses and NGOs.
Sustainable Cities Programme, Local Agenda 21 Global Meeting 2003
Alexandria, Egypt.
29 September – 2 October 2003
Theme: Environmentally sustainable urbanization through planning and management capacities aimed at poverty reduction in Alexandria.

World Habitat Day 2003
Rio de Janeiro, Brazil
6 October 2003
Theme: Water and Sanitation for Cities

According to a new report by UN-HABITAT, Water and Sanitation in the World’s Cities, in Africa alone, for example, there are as many as 150 million urban residents – up to 50 per cent of the continent’s urban population – who lack adequate water supplies. Even more people, an estimated 180 million, lack adequate sanitation.

The idea behind the annual World Habitat Day is to remind governments, municipalities and the public at large about the urgency of striving to improve human settlements and especially those of the urban poor who live without clean water, proper sanitation and basic services.

Among the highlights of the global observances of World Habitat Day in Rio de Janeiro will be the Habitat Scroll of Honor, an international award for outstanding contributions towards urban governance by individuals, organizations and projects. The Building and Social Housing Foundation, a non-governmental organization based in the United Kingdom, will also present the World Habitat Awards in recognition of innovative, sustainable and replicable human settlements projects throughout the world.

International Federation for Housing and Planning (IFHP), 47th World Congress
Vienna, Austria
5-8 October 2003
Theme: Cities and Markets, Shifts in Urban Development

Africities Summit
Yaounde, Cameroon
2-6 December 2003

B ringing together up to 2,000 experts from Africa and other regions of the world, the Africities Summit is scheduled to gather ministers of local government and finance, mayors, central and local government officials, elected representatives, academics and researchers who will discuss how local governments in Africa can ensure access to basic services. UN-HABITAT Executive Director Anna Tibjaïjuka has been invited to deliver a keynote address.

World Summit of Cities and Local Authorities on the Information Society
Lyon, France
4-5 December 2003

The meeting will focus on the role of local authorities in exploiting information and communication technologies for the future of our societies, especially in education, culture, democratic participation, and economic development. It is linked to the World Summit on Information Society (WSIS) which takes place five days later in Geneva.

Commission on Sustainable Development, 12th Session
New York, U.S.A.
16-30 April 2004

At the beginning of its first two-year cycle (2004-2005), the Commission on Sustainable Development (CSD) will focus on water, sanitation and human settlements. As with every cycle in the new programme of work, CSD-12 will tackle this agenda using a number of cross-cutting issues.

For Further information see: www.un.org/esa/sustdev/csd/csd12/csd12.htm

Second World Urban Forum
Barcelona, Spain
13-17 September 2004
Theme: Cities : crossroads of culture, inclusiveness and integration.