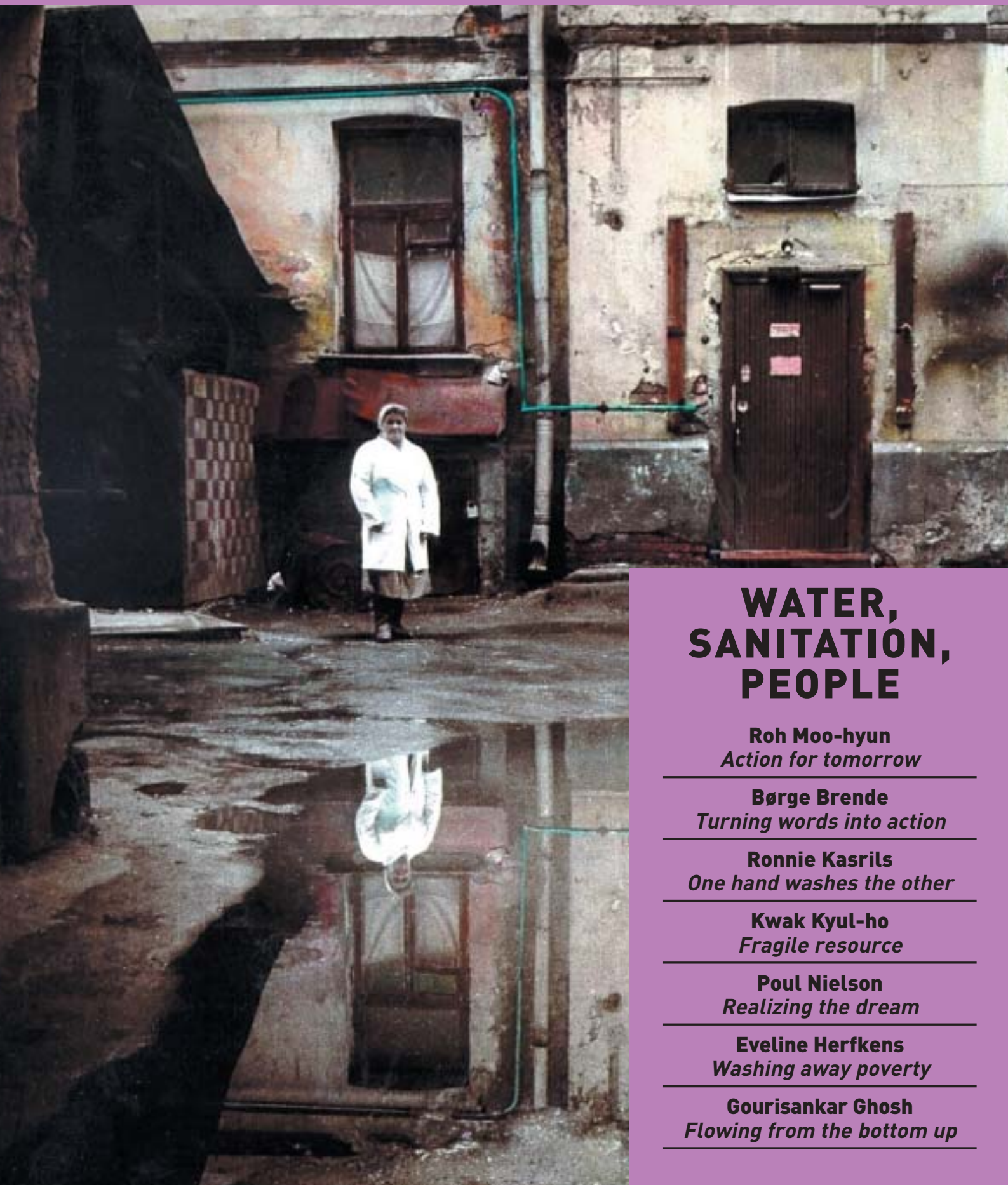
UNEP

Our Planet

Volume 14 No 4

The magazine of the United Nations Environment Programme



WATER, SANITATION, PEOPLE

Banson

Rutty Rajmehunsing/UNEP/Topham

Teddy A. Suyasa/UNEP/Topham

Sanjay Acharya/UNEP/Topham

Our **Planet**,
the magazine of the
United Nations Environment Programme (UNEP)
PO Box 30552, Nairobi, Kenya
Tel (254 20) 621 234; fax 623 927;
telex 22068 UNEP KE
e-mail: cpiinfo@unep.org
www.unep.org

ISSN 1013-7394

Director of Publication: Eric Falt
Editor: Geoffrey Lean
Coordinator: Naomi Poulton
Special Contributor: Nick Nuttall
Circulation Manager: Manyahleshal Kebede
Design: Roger Whisker
Web Editor: Chris Cypert
Production: Banson
Printed in the United Kingdom

Front cover: O. M. Lyushakov/UNEP/Topham

UNEP

From the desk of

KLAUS TOEPFER
United Nations
Under-Secretary-General
and Executive Director,
UNEP

This edition of *Our Planet* is timed for UNEP's Governing Council/Global Ministerial Environment Forum in Jeju, Republic of Korea, where water and sanitation will be central to many of the debates. Their importance is underlined by a report by the Global Water Partnership that highlights the role of improving the availability of clean and healthy supplies in meeting many of the United Nations Millennium Development Goals.

This is, of course, vital if we are, by 2015, to halve the proportion of hungry people and of those living on less than one dollar a day. Water is a key factor in agriculture and other economic activities. But what about gender equality and education, where the aim is to ensure that all children complete primary school and that both sexes have equal access to both primary and secondary schooling?

The report makes it clear that improved water and sanitation means fewer sick children, and thus greater and more predictable attendance, while separate lavatories should also increase the girls' presence. Meanwhile many girls and young women in developing countries are charged by their families and communities with fetching water each day, a time-consuming and tiring business that undermines school attendance and the ability to do homework. Having water resources and sanitation facilities closer to home also means that they are less likely to be sexually harassed or assaulted.

Reducing risks

The Millennium Development Goals also cover maternal mortality, child mortality, major diseases and environmental sustainability. Cleaner water supplies will reduce risks to both mothers and babies. Managing water better can reduce the spread of diseases like malaria, as well as susceptibility to HIV/AIDS. Sound water management is also critical in conserving the rivers, lakes, wetlands and other freshwater systems upon which so many people depend for resources like fish and drinking water.

The Partnership report considers 'integrated water resources management' – balancing the needs of different water users such as agriculture, industry and the public – and the state of national water efficiency plans. The World Summit on Sustainable Development's Plan of Implementation called for these to be drawn up by 2005 as part of the route map for achieving the Millennium Development Goals.

It highlights real progress in such regions and countries as Central America, Australia, Thailand, Burkina Faso, Poland and Uganda, underlining how nations concentrated on water and sanitation issues throughout the 2003 International Year of Freshwater.

Poverty and the environment

Other issues on the table at Jeju include how to progress the bolstering of UNEP's science base. A few months ago governments agreed at UNEP's headquarters in Nairobi, Kenya, that two broad issues urgently need more scientific study.

One is the link between poverty and the environment – or, put the other way, the link between a healthy environment and wealth and prosperity. Instinctively, these relationships seem to exist, but quantifying and pinpointing them precisely needs more examination.

The other was the link between environmental degradation and conflict. Unravelling this will become even more pressing in the 21st century as the number of people living on this wonderful blue planet rises beyond the current 6 billion.

One key question is whether a declining environment automatically triggers instability and conflict, or whether there are more subtle, complex relationships between the two. There are cases where conflict has not occurred despite such a decline, and others where it has. So it may be that a degraded environment is a trigger among a suite of factors.

Water, again, may have a central, if counter-intuitive, role. A recent report by UNEP – in collaboration with other United Nations agencies including the Food and Agriculture Organization of the United Nations – found that cases of conflict over scarce water resources are mercifully rare. It seems that squabbling communities and nations may disagree on many things, but still cooperate on sharing water when required. So water can act as a peace broker, rather than a source of additional tension.

This underlines how studying the links between conflict and the environment may pay dividends in delivering a more peaceful and stable world ■

YOUR VIEWS

We would really like to receive your feedback on the issues raised in this edition of ***Our Planet****. Please either e-mail feedback@ourplanet.com or write to:*
Feedback, Our Planet
27 Devonshire Road
Cambridge CB1 2BH
United Kingdom

Government of the Republic of Korea

ACTION FOR TOMORROW

ROH MOO-HYUN
President of the Republic of Korea

The 21st century is an age of the environment. The solving of environmental problems has become one of the fundamental and most urgent tasks for human survival – not to mention our prosperity.

For the past several decades, countries around the world have been discussing environmental issues, including global warming, the loss of biodiversity and the exhaustion of resources. In 1972, the United Nations Conference on the Human Environment was held, followed by the United Nations Conference on Environment and Development in 1992. The 2002 World Summit on Sustainable Development in the Republic of South Africa highlighted a detailed action plan for the common prosperity of all peoples. Joint endeavours have been made to tackle regional problems such as desertification, transnational air pollution and marine pollution.

Still, there is a long way to go. As stated by the Johannesburg Declaration, actions to resolve poverty, to change unsustainable consumption and production patterns – which waste resources – and to conserve and protect the natural resource base constitute an essential condition for sustainable development. Recognizing such needs, we should work to find ways to address environmental problems and translate them into action.

Action now

If there is to be any life, sustainable development cannot be avoided any longer. No country can be an exception. Time is running out. If we do not translate the many international agreements into action now, we will impose a heavy burden not only on the present but also on future generations.

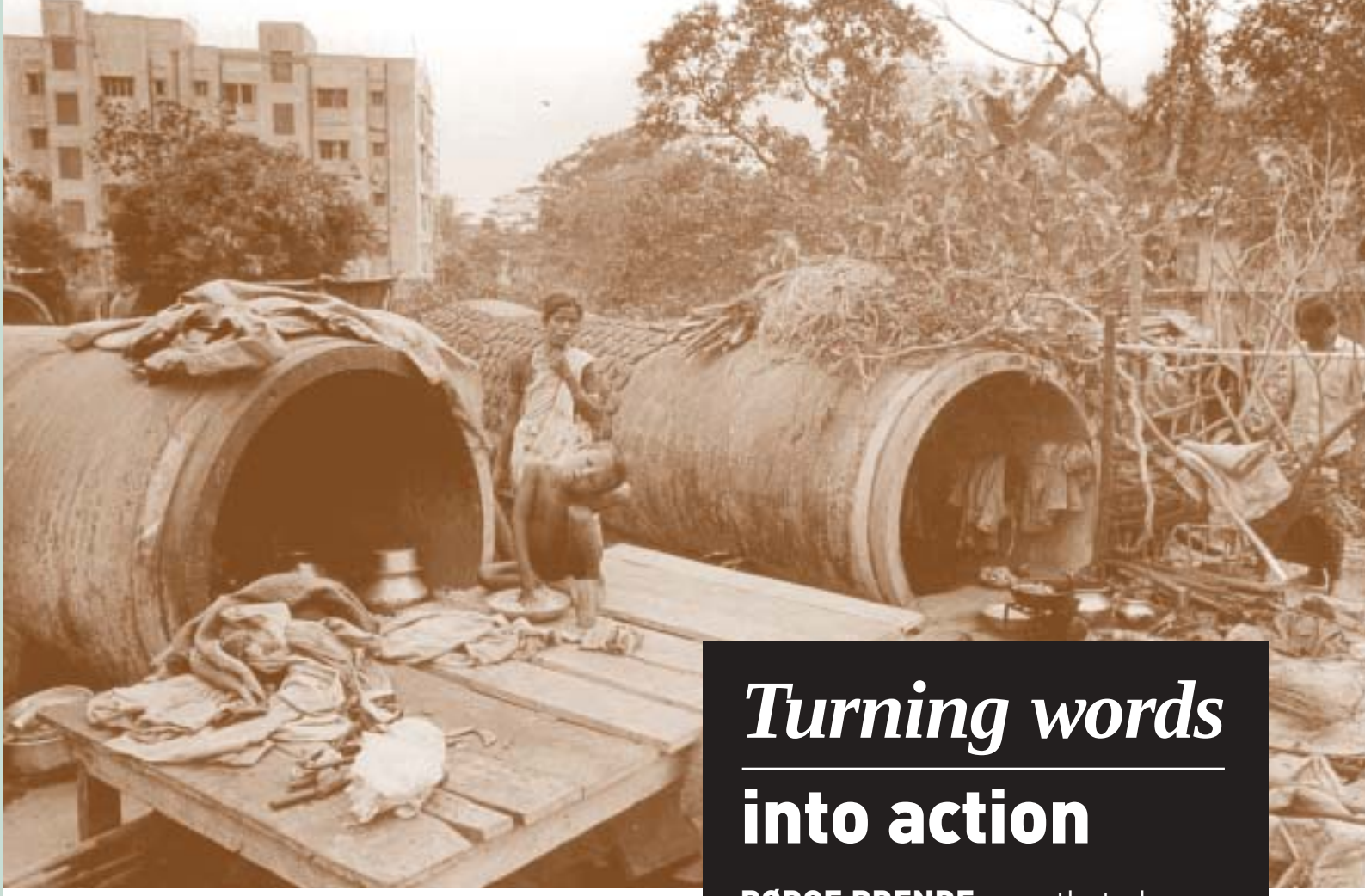
In this light, it is very meaningful to hold the Eighth Special Session of the Governing Council and the Global Ministerial Environment Forum of UNEP in the Republic of Korea. Jeju-do, where the forum will be held, has been designated by UNESCO as a biosphere reserve. I believe that the island will create a beautiful backdrop for a successful meeting and all participants in the forum will leave with happy memories.

Since the 1960s, the Republic of Korea has experienced numerous environmental problems as the price of high economic growth in a short period. Recognizing that without resolving these environmental problems, national growth cannot be sustained, the Korean Government established the Presidential Commission on Sustainable Development. Now, various measures have been taken to support the environment, and life itself. In particular, much effort has been exerted to create a system for the conservation of the environment and to harmonize development and conservation rationally. I hope that the Korean experience and success will serve as a good reference for many countries.

Enthusiastic commitment

I look forward to the enthusiastic commitment of the delegations from many countries to the Eighth Special Session of the Governing Council and the Global Ministerial Environment Forum of UNEP and to that of the members of non-governmental organizations. I expect that there will be many meaningful discussions on issues of common concern to all humanity ■

Government of the Republic of Korea



Benu Sen/UNEP/Topham

Turning words into action

BØRGE BRENDE says that plans agreed at the World Summit on Sustainable Development are the key to managing the world's most precious resource

Sound water management is key to sustainable development and to meeting many of the Millennium Development Goals and commitments made at the Johannesburg World Summit on Sustainable Development. Water is essential to the viability and long-term sustainability of all the world's ecosystems. Ecosystem health, in turn, is critical to the quantity and quality of water supply. Human activities, such as infrastructure development, modification of river flows, land conversion (like deforestation), increased agricultural production, the introduction of alien species and the release of pollutants, upset the delicate balance between water resources and environmental sustainability.

Several threats to the overall health of ecosystems, and consequently to their ability to provide the services upon which human life depends, are particularly relevant to water. Climate change – and resulting alterations in weather patterns, water distribution and fisheries – will, for example, seriously affect marine ecosystems and small island developing states. This will stress poor populations, unable to protect themselves from flooding, erosion and water shortages. Loss of species and genetic diversity has impacts on the health of marine and coastal environments as well as of wetlands. And global fisheries, marine ecosystems and coastal habitats are fast degrading as a result of overfishing and contamination from land-based activities. Addressing these threats through improved water management is a key factor in maintaining the integrity of ecosystems.

Human activities upset the delicate balance between water resources and environmental sustainability

The need to focus on the planning and management of water resources was recognized at Johannesburg, and a short-term target was agreed: for all countries to prepare integrated water resources management (IWRM) plans by 2005. So – how are we doing? Apparently, not so well. According to a survey of 96 developing countries undertaken by the Global Water Partnership, only 12 per cent are likely to meet the target, while 45 per cent need some support to do so, and 43 per cent need substantial support.

Cause for concern

Clearly, there are also encouraging reports. Uganda and Burkina Faso have, with international assistance, gone through multi-year IWRM planning processes, resulting in new national policies, strategies and laws for their water resources development and management. China's new water policies, Thailand and India's water reform processes, and Brazil's wastewater reform are other examples of IWRM processes. More could be mentioned. But the overall picture gives reasons for serious concern: we do not appear to be on the right track to meet the targets.

Firstly, governance is a crucial issue. At the national level, ▶

different ministries need to be mandated to work together, to work on a river-basin scale (for example, through basin committees with various responsibilities), to work with subnational governments and stakeholders, and to provide funding to make these things happen. Programmes and institutions must be established to provide the data needed for analyses, inter-ministerial collaboration, basin institutions, water rights and allocation systems – and to provide policies on IWRM (that include land) and national socio-economic goals to be reached for water resources.

South Africa's National Water Act, the key instrument for implementing IWRM, specifies a 'reserve' as the tool to ensure environmental sustainability and protect basic human needs for water: this refers to both the quantity and the quality of the water in the resource. The European Union's Water Framework Directive will be the key tool to ensure the sustainable use of water within Europe: it calls for general protection of the aquatic ecology, specific protection of unique and valuable habitats, protection of drinking water resources and protection of bathing water – all to be integrated for each river basin.

At the international level, UNEP's water strategy is an important tool when discussing the environmental aspects of water issues. UNEP's activities relating to the transfer of environmentally sound technologies for water management, and to awareness-raising initiatives in the water sector, are crucial if we are to deliver on our promises from Johannesburg.

In the mainstream

The challenges in dealing with the complex nexus of global environment, development and water resources are to reform policies and to bring environmental considerations into the mainstream of economic decision making. Important lessons from experience suggest that the environmental, social, land and water crises are closely linked, and that single sector interventions related to water can make matters worse. The way towards sustainable development clearly involves integrated, holistic management of land, water and ecosystems. IWRM plans are the key tool to achieve this. They should be integrated into national development strategies – including into poverty reduction strategy papers (PRSPs) – and must be for the people, of the people and by the people. IWRM plans and PRSPs should be part of the national processes of planning and budgeting.

Secondly, financial contributions to water management need to increase from all the main sources of finance, such as domestic governments, donors, multilateral financing institutions, commercial lenders, private investors, voluntary donations and solidarity schemes. Improving the efficiency of resource utilization should be given priority next to developing new funding mechanisms. More finance should be raised locally, through progressive tarification, taxation and local capital markets. Internationally, we should meet the commitments made at the 2002 Monterrey summit and global financial mechanisms should be strengthened.

The Global Environment Facility (GEF) is a key mechanism in supporting our efforts to manage international water resources and protect biodiversity. It supports biodiversity projects related to the sustainable use of wetlands and waters and has an impressive portfolio of international waters projects with about 140 cooperating countries. Through these it has been able to help countries specify what reforms they should undertake and how the IWRM approach could be put into operation, including ways of taking livelihoods and biological diversity into consideration.

Finally, we must focus on water conservation. Many rivers and underground reserves are empty because of the wasteful way we use water. IUCN–The World Conservation Union estimates that 1.4 billion people already live in river basins where water abstractions equal or exceed what is available, and thus lead to serious social and environmental damage. Implementing 'environmental flows' in the river basins of the world can repair the damage done and help avoid future conflicts. These ensure that enough water is left in rivers and is managed to ensure downstream environmental, social and economic benefits.

Main challenge

As Chair of the United Nations Commission on Sustainable Development, I see our main challenge as transforming words into action. The international community and world leaders have defined the problems, taken on the commitments and set the deadlines. Implementation is now the key word. For the next two years, the Commission will devote its attention to water, sanitation and human settlements. We will conduct a thorough review at the April 2004 session. We will identify key obstacles and best practices. In short, we will present an assessment of the progress made to reach the targets – and of the lack of it. And, more importantly, of what needs to be done to get there!

National governments are mainly responsible for managing and developing water and for providing water and sanitation services for all. But we, the international community, need to step up our involvement. Our role must be that of a facilitator: providing funding, making sure that water and sanitation issues stay at the top of the agenda in multilateral fora, upholding the international focus on the poorest. The survey undertaken by the Global Water Partnership indicates clearly that we need to scale up our efforts and take action now.

Water is the world's most precious resource. Its fair, stable and sustainable distribution must be a priority in all countries, particularly in the fight against poverty. To succeed, we need a wide range of measures and partners. The needs are great, but so are the opportunities, for governments, private companies and the civil sector. We need them all – and we need them now ■

Børge Brende is Minister of the Environment, Norway, and Chair of the United Nations Commission on Sustainable Development.

One hand *washes* the other

RONNIE KASRILS describes how partnership and participatory democracy in his country are exceeding targets for providing safe water and sanitation, and combating water scarcity and conflict

Rudramath Fraser/UNEP/Topham

Ten years ago, the joy of liberation in South Africa was shared in many corners of the world, when the African National Congress (ANC) – after many years of bitter struggle – finally took the reins of government. On 27 April 1994, the people of the Republic of South Africa, black and white, women and men, stood patiently in queues to cast their votes. That day, and all that followed it, would not have been possible without the support of passionate and committed people throughout the world. What has transpired since in South Africa is as much an achievement of the anti-apartheid movement, that fought so dedicatedly for our liberation, as of the country's people.

Ten years in the lifetime of a country is like a few months in an individual life. South African democracy is still in its infancy – and yet, how mature it is, and how well it has delivered to our people.

In 1994, it was estimated, around 12 million people did not have access to safe drinking water. Mainly in rural areas, they had to fetch their water from springs, from distant rivers, or – if lucky – from distant wells and boreholes. Rural women were condemned to spend many hours of their precious days walking to fetch water. Some faced the daily terror of crocodile-infested rivers. On the other side of the fence, of course, white South Africans had services equal to the best in Europe – full flush toilets, baths and taps and showers aplenty, and even a plethora of swimming pools. There were two worlds in one country. ▶

Gernigon-Spychalowicz/UNEP/Topham

The new Government recognized water's primacy in the struggle for dignity and well-being. The South African Constitution recognizes this, too, guaranteeing the right of access to sufficient water. Water is, after all, a basic human right, fundamental to life. On this basis, the Government began a major programme, which ten years later has brought safe drinking water to almost 10 million people – mostly at communal taps no more than 200 metres from their households. This is a remarkable achievement, testimony to the commitment and creativity of hundreds of people in the Government, the private sector and non-governmental organizations which have worked tirelessly to make it a reality.

The gender struggle in our country has been integral to this process. Frances Baard, a wonderful and powerful woman, a leader in the trade union movement and in the ANC, once said: 'We know that there is no freedom which can be for the men without the women.' Under apartheid, black women in South Africa faced the triple burden of race, gender and class discrimination. Possibly the greatest challenge is to ensure that women are enabled to take their rightful place alongside men, as equal partners in the drama of life. Innumerable women have now been liberated from the drudgery and labour of fetching water over long distances; many more have been freed from the agony of nursing family members made ill by poor water and lack of hygiene. Women have been enabled to carry themselves with pride as members of water committees, as labourers on water projects, as citizens of South Africa.

Up the water ladder

The Millennium Development Goals have set the target of reducing the proportion of people without access to safe drinking water by half by 2015. South Africa is already ahead of its target and well on the way to ensuring that everyone has access to safe drinking water. Still, the latest census figures show, we have some way to go. At least 5 million people are still getting water from unacceptable sources. By 2008 we will have delivered water to them too. But we have also recognized that this is not enough, and have set even more ambitious goals. We now need to begin to upgrade the service to those who have been provided with it, to increase the amount of water available to households, to bring it closer than 200 metres. We need to move our people up the water ladder, to improve the services that we can provide. This is a major challenge that will keep us occupied for many years to come.

At various points, it became important for South Africans to stop and reassess what they were doing. The first real challenge was a severe cholera outbreak. Although interventions by the Government managed to keep deaths to a minimum, it forced the Department of Water Affairs and Forestry to reconsider its strategy. Providing clean water was clearly not enough to prevent the disease from breaking out.

Rude awakening

Buoyed up by international support and local expertise, South Africa now moved more strongly into the field of sanitation provision – and began a major health and hygiene campaign. 'Water, sanitation and hygiene' became the country's slogan – shortened to WASH! This programme has been championed in international forums as well as in South Africa. With the cry: 'Sanitation is dignity', a campaign was launched to bring basic sanitation to the 20 million South Africans lacking it.

At the World Summit on Sustainable Development held in Johannesburg last year, the world finally agreed a target of reducing the proportion of people without access to basic sanitation by half by 2015. Once again, we have set far more ambitious targets: relying on donor support, South Africa intends to eradicate its backlog by 2010.

A rude awakening posed a second challenge to me and my department when I was visiting a water scheme put into a rural village. A woman, a baby tied to her back, was digging a hole for water near the bank of the river. I asked why she was not using the new tap; she answered that she could not afford it. This event inspired a free basic water policy, which

So far, about three quarters of households with access to safe drinking water are receiving free basic water

Racine Keita/UNEP/Topham

N. Silpngamlert/UNEP/Topham

UNEP/Topham

With the cry: 'Sanitation is dignity', a campaign was launched to bring basic sanitation to the 20 million South Africans lacking it

allows households 6,000 litres per month free of charge. So far, about three quarters of households with access to safe drinking water are receiving free basic water, and the proportion is going up all the time. The Government regards it as a mockery of the Constitution – guaranteeing the right of access to sufficient water – and an insult to the people to put in water schemes and then prevent people from using them by charging an unaffordable price.

Water is a scarce commodity in South Africa. Those who know the country well may remember the beauty of the sun rising over the ancient koppies of the Karoo, the bite of the winter chill hanging between the sparse scrub, the vast expanse of cloudless sky rising above the endless landscape. It is a land of inestimable beauty, but is mostly arid. Most of the country's water falls in the east, in the foothills and majestic mountains of the Drakensberg, over the humid hills of KwaZulu-Natal and Mpumalanga.

South Africa also inherited water pollution problems from its industrial and mining heritage. Abandoned mines continue to release polluted water into the rivers; lack of sanitation causes high bacterial pollution in some areas; industrial pollution is a continual challenge.

Designing the future

Faced with all this, South Africa has developed what is regarded as one of the most progressive pieces of water legislation in the world – and a blueprint for water security – the first ever National Water Resources Strategy. It is a remarkable piece of work, more so since the Government consulted widely with the people of South Africa on the document, with nearly 2,000 responding with detailed comments. The tradition, started with the ANC's Freedom Charter back in 1955, of asking South Africans to contribute to designing their own future, lives on in participatory democracy today.

Shared rivers form one element of the blueprint. South Africa shares most of its major rivers with neighbouring states, in some cases with three others. These are not big rivers by international standards, with more than enough water to spare, but are already under stress, and must be managed with care and sensitivity to meet the needs of all parties.

The spirit of internationalism lives in our water legislation. The Government has a ratified and effective Protocol on Shared River Basins. The Department of Water Affairs and Forestry recently signed the Incomaputo agreement with Mozambique. As a result, South Africa is able to release downstream the amount of water agreed with Mozambique during the current drought in the Inkomati basin. It is a remarkable symbol of mutual cooperation, preventing water wars, and ensuring mutual growth and sharing.

Seeking partnerships

Major challenges, however, still face the Government. Water still has to be delivered to 5 million people, sanitation to 16 million. The quality of the basic services that the state is providing must continually be improved. Government must upgrade, maintain and refurbish ageing infrastructure, and invest in new dams, water-treatment works, major pipelines, pump stations. We have a clear position that the private sector has a key role to play in the delivery of services to our people. Government cannot and will not abdicate from its function to ensure that these are delivered, but recognizes that it cannot do it alone. The investment and capacity that the private sector can offer is essential to future success.

South Africa has come a long way, but the struggle is not yet over. Support is needed in mobilizing funds, whether from individuals or from institutions, for the delivery of services and for long-term maintenance. A South African saying, 'Izandla ziyangezana' (one hand washes the other one), articulates the need to help one another. This is an expression of partnership. Just as we needed international support and unity in the struggle against apartheid, so we seek such partnerships today ■

Ronnie Kasrils is Minister of Water Affairs and Forestry, the Republic of South Africa.

PEOPLE

UNEP

Kofi Annan

Kofi Annan, the United Nations Secretary-General, and **William K. Reilly,** Chairman of the Board of the World Wildlife Fund, United States, addressed the prizegiving ceremony for the 2003 Sasakawa Prize in New York in November.

The prize was presented to the joint winners – **Xie Zhenhua,** Minister, State Environmental Protection Administration of China, and **Dener Giovanini,** who created Brazil's National Network for Combating Wild Animal Trafficking – by **Klaus Toepfer,** UNEP's Executive Director, and **Shuichi Ohno,** Director of International Affairs at the Nippon Foundation, the sponsors of the Prize.

Mr Annan said that **Mr Xie** had 'shown great zeal and imagination in promoting the concept of sustainable development in China' and that '**Mr Giovanini's** work to combat illegal wildlife trafficking not only benefits the embattled Amazon Basin, but helps to address the causes and impact of rural poverty, one of the main threats to this precious resource'. **Klaus Toepfer** said that **Lord Clinton-Davis,** the Chairman of the Prize's selection committee, and his colleagues, by selecting the two winners, had 'sent out an important message, that both government and civil society have a crucial role to play as partners in safeguarding the environment'.

Delivering the **Pastrana Borrero** lecture, **Mr Reilly,** who was **President George H. W. Bush's** Administrator of the US Environmental Protection Agency 1989-1993, called for greater priority to be given to protecting the oceans, 'a resource that is hugely important, seriously threatened and largely ignored by policy makers' ■

UNEP

Klaus Toepfer, second right, and Shuichi Ohno, right, presenting the prize to joint winner Xie Zhenhua.

John Smith/CIRCA Photo Library

The Patriarch of Antioch and head of the Maronite Church, ***His Beatitude Mar Nasrallah Boutros Sfeir,*** *is calling on the Lebanese Government to join him in giving the Holy Valley of Qadisha the status of a National Park. The valley both provided inspiration to the church's early hermits and provided the Patriarchate with safety and sustainability in times of persecution. The Church has undertaken to protect the land it owns in the valley and has named it the Maronite Protected Environment of Qadisha. Last autumn the Patriarch had talks in London on the future of the valley with* ***HRH the Duke of Edinburgh,*** *former international president of WWF* ■

Karl Gabor, Stockholm

The Citizen's Coalition for Economic Justice of the Republic of Korea was one of four winners of the 2003 Right Livelihood Awards, presented in the Swedish parliament in December. The Coalition is a citizen's movement working for economic justice, environmental protection, democratic and social development and reunification of the Korean peninsula. Among its achievements, since its foundation in 1989, it has campaigned successfully for a law to prevent rampant property speculation, established the Right Farming Co-operative – a network of organic farmers – and set up the Urban Reform Centre which carries out a public education programme to create sustainable cities.

The other winners were: **Dr Ibrahim Abouleish** and the organic agriculture enterprise, SEKEM, which he founded; and **Nicanor Perlas,** of the Philippines – who has campaigned effectively against the abuse of pesticides and for integrated pest management – and his fellow countryman **Walden Bello,** the anti-globalization thinker and activist.

David Lange, the former Prime Minister of New Zealand, was given an honorary award for 'his steadfast work over many years for a world free of nuclear weapons' ■

Fragile resource

KWAK KYUL-HO describes how his country has learned a hard lesson from rapid industrialization and is setting out to restore the balance between nature and human desire

Tetsuo Naitano/UNEP/Topham

Although more than 70 per cent of the blue planet, our home, is covered with water, access to safe and clean water has become a major challenge to sustainable development. Facing ever-increasing demand and suffering widespread degradation, the world's water resources are under serious stress. This often debases the quality of life for many and, in extreme cases, threatens the vital life-supporting infrastructures of our planet – as UNEP and other United Nations bodies have warned.

Challenges concerning water also overshadow the Republic of Korea. There are almost 4,000 rivers and 19,000 lakes within our four major domestic river basins. Our ancestors referred to our land as 'the gallery of waters and mountains', thanks to the abundant availability of clean water. But this harmonious co-existence with nature has been shaken by rapid development starting in the early 1970s and characterized by export-led industrialization and urbanization. The Republic of Korea's development was dubbed 'the Miracle on the Han River', but it also incurred high hidden costs. In particular, intensive economic growth triggered a break in the balance between the demand and supply of water resources, thus, in a larger sense, weakening the balance between nature and human desire. Indiscriminate acts of development were rampant, and supply-oriented water management dominated our water policy objectives. The outcomes were staggering: safe and clean water resources became scarce and visibly inferior. We learned that 'it does not take long to go downhill'.

It was only in the 1990s that the Republic of Korea started adopting an up-to-date body of legislation providing legal and scientific instruments for the integrated management of the quality and quantity of water resources. Billions of dollars have been invested to improve quality and to secure resources. Considerable progress is being made, for example, in expanding water supply and sewage treatment to certain rural populations, but the overall improvement is below our expectations. High population density and an explosive increase in consumption – coupled with rising demand for water-related recreation – have posed many new challenges, making water management issues a top priority on the Republic of Korea's environmental agenda. We have come a long way to learn that integrated and preventive water protection measures are the most cost-effective ones in the long run.

Landmark initiative

Now the main focus of our water policy has been shifted toward integrated water resource management, including the harmonious sharing of water resources between upstream and downstream residents, and the balance between the protection of valuable habitats and economic development. In this spirit, the Republic of Korea is currently implementing landmark water initiatives, under the auspices of special laws on the four major rivers, consisting of watershed-based water management practices guided by the principle of an ecosystem approach. It would be premature at present to evaluate their effectiveness, but we expect that implementing and enforcing the special laws will ensure a significant contribution to managing the water resource soundly.

Given the crucial role of water in sustainable development and the worsening water situation around the world, the international community should put water issues near the top of its agenda by strengthening global policy and raising environmental awareness. Major United Nations conferences and international agreements on water over the last 30 years have been paving the way for sustainable water management. In March 2004, our mission will resume in Jeju, Republic of Korea. I believe that the upcoming UNEP Governing Council/Global Ministerial Environment Forum is taking place at a key moment and in a key way, in making a collective effort towards managing water sustainably. It is the first global ministerial meeting since the decision by the United Nations Commission on Sustainable Development in 2003 to discuss water, sanitation and human settlement as a priority in 2004-2005 in its multi-year programme for 2004-2017. The Republic of Korea sincerely hopes that the Jeju meetings will serve to deepen the understanding of our common responsibilities and help implement the internationally agreed goals on water ■

Our ancestors referred to our land as 'the gallery of waters and mountains', thanks to the abundant availability of clean water

Kwak Kyul-ho is Minister of Environment, Republic of Korea.

Realizing the dream

POUL NIELSON describes practical steps towards halving the proportion of the world's people lacking safe water and sanitation

A glass of fresh water from the tap – a luxury? The reality is that for some 1.1 billion people access to safe drinking water is something they can only dream about. Some 2.4 billion people worldwide similarly do not have access to adequate sanitation. Yet access to safe drinking water and sanitation is not just a luxury. It often makes the difference between life and death. Half of the world's hospital beds are occupied by victims of waterborne diseases. And an estimated 6,000 children die each day from diseases caused by poor sanitation and hygiene. Add to this the increasing pressure on the world's freshwater supply over the last 50 years, and the continuous degradation of water quality in many regions around the world, and there can be no doubt that the challenge before us is formidable. But since the global community came together and set itself a common agenda with the Millennium Development Goals, as endorsed and expanded at the Johannesburg World Summit on Sustainable Development in 2002, the challenge has also been clearly spelt out: to halve by 2015 the proportion of people without access to safe drinking water and basic sanitation.

Collective effort

Meeting this challenge will require a collective effort. The European Union (EU) therefore launched a water initiative at Johannesburg to bring together all stakeholders to ensure efficient delivery of the Millennium Development Goal commitments. Within its framework the European Community, member states, civil society, financial institutions and the private sector are working together to:

- reinforce political commitment to improve access to clean water and sanitation in the context of poverty reduction;
- strengthen water governance arrangements by promoting public-private partnerships, and building up institutional capacity at regional, national and local levels;
- improve coordination and cooperation in implementing water-related activities, through introducing sector-wide approaches, multi-stakeholder processes and promotion of South-South cooperation;
- encourage regional and sub-regional cooperation on water management issues, including on a river basin scale;
- generate additional funding, through developing new, flexible and innovative funding mechanisms that will attract new partners.

Over the last 12 months partners have been busy translating the many good intentions of Johannesburg into a real drive forward, and the initiative is beginning to show its first results. Efforts have been concentrated, in the initial phases, on setting up the structures within which results will be created. This involves in-depth needs assessments – country by country, region by region – spelling out the strategies and actions needed to fill the gaps identified and making sure that the necessary guidance and technical support are made available to keep the process on track. A multi-stakeholder forum has been established as a space for debate and exchange of ideas. Finally, working groups have been set up at regional level between European and partner countries – in Eastern Europe, the Caucasus and Central Asia, the Mediterranean, Latin America and Africa – to ensure momentum.

In Africa the process is being driven

Dinh Tram/UNEP/Topham

Safe water and sanitation often makes the difference between life and death

forward within the framework of a newly established EU-Africa strategic partnership on water affairs and sanitation that also emerged from Johannesburg. This involves close collaboration between the EU and the African Ministerial Council on Water and the New Partnership for Africa's Development. Its first activities have included elaborating needs assessments on providing water and sanitation and integrated water resources management in Africa both at national and transboundary levels.

Reinforced coordination is now well on track. And a coherent, cost-effective approach to planning and delivering water-related programmes is emerging. The usefulness of these efforts should not be underestimated. They are essential in maximizing the effect of available resources. However, we must also acknowledge that coordination alone will not deliver clean water and sanitation to those who need them. Availability of funding remains as ever a precondition for action. Within the framework of the ninth European Development Fund, EUR555 million ($633 million) have already been allocated to water in 14 African, Caribbean and Pacific (ACP) states. But the European Commission recognizes that significant amounts of additional funds will have to be invested in water and sanitation if we are credibly to maintain the ambition of delivering on the Millennium Development Goals.

A concrete proposal

Earlier this year we therefore proposed establishing an EU water facility of EUR1 billion ($1.14 billion) from the European Development Fund to promote access to clean water and sanitation for the people of the ACP countries. The initiative is being followed up by a concrete proposal, presented to the EU Council at the beginning of 2004. The main objective of the facility will be to serve as a catalyst – promoting new initiatives and new information, building research and management capacity in ACP countries, and providing the flexible source of funding which is often the missing link in financing sustainable water-related programmes.

The facility will be based on three key principles:

- Governance: It will offer a helping hand to those ACP countries that display real commitment to the development of sound national water policies. Funds from the facility will be invested in measures to build or strengthen institutional and regulatory frameworks which are seen as a precondition for recipient countries' ability to attract more funds.
- Ownership: The facility will be a demand-driven instrument supporting the realization of existing initiatives such as the EU-Africa strategic partnership. At country level, the focus will be on realizing recipient countries' poverty reduction strategies that fully integrate water and sanitation as priority areas.
- Innovation and flexibility. The facility should generate maximum leverage by offering creative combinations of grants with other financial sources to fund basic infrastructure. This could be the necessary seed capital to get projects off the ground and ensure the development of the enabling environment needed for investment. And it should be a tool in forging the public-private partnerships needed to increase funding.

Many will be the rewards – such as in poverty reduction, sustainable development and conflict prevention – if we manage to deliver real improvements in people's access to water and sanitation around the world. Many, too, will be the costs if we fail. We have undertaken clear commitments. Now it is time for these to be reflected in developing countries' policies and budgets, and in the response from the international community in generating the necessary funds. The Commission stands by its commitments. With the water initiative, the water facility and other efforts seeing the light of day, there is a real chance that we will be able substantially to reduce the number of people for whom a glass of clean tap water remains a dream ■

Poul Nielson is EU Commissioner for Development and Humanitarian Aid, and Chief Executive Officer for the EuropeAid Co-operation Office.

Many will be the rewards if we manage to deliver real improvements in people's access to water and sanitation around the world

K. C. Limarga/UNEP/Topham

Washing away **POVERTY**

EVELINE HERFKENS says that water and sanitation can provide the path to meeting the Millennium Development Goals

The water and sanitation crisis does not grab headlines, but far more people suffer from it than from the issues that do. Each year water-related diseases claim over 5 million lives, mostly in Africa and Asia. A child dies every 15 seconds from diseases largely caused by poor sanitation and contaminated water; that is more than 2 million preventable child deaths a year. Young girls in Tanzania miss school because they need to help their mothers fetch water from several kilometres away.

In September 2000, world leaders from 189 nations recognized the urgency of freeing their fellow citizens from 'the abject and dehumanizing conditions of extreme poverty' in the Millennium Declaration. From this emerged the Millennium Development Goals, firmly committing governments to an ambitious set of targets by 2015, including halving the proportion of people without sustainable access to safe drinking water. Two years later, the World Summit for Sustainable Development reaffirmed the goals and pledged the world community to expand provision of sanitation to the poor.

The Declaration's promise to ensure that 'globalization becomes a positive force for all the world's people' remains unfulfilled. Take the stark disparity of water use. People in rich nations on average consume 400-500 litres a day compared with 20 litres in poor countries. Over the years, global demand for water will grow, more lives will be lost, more diseases will spread and the development of poor countries will continue to stagger. Inequalities and powerlessness result when water is controlled by a few to the exclusion of the many.

Today's world has the resources, technology and knowledge to lift hundreds of millions of people out of poverty. What is preventing us from meeting the goals is world leaders' lack of firm political will to deliver on their promises. If they reconcile rhetoric with action, achieving the water and sanitation targets is possible; and achieving them would accelerate progress in reaching other human development goals by 2015.

Access to water and sanitation is fundamental to female empowerment and parity in education

The Millennium Development Goals package holds unprecedented promise for sustaining development, eradicating poverty, and improving the human condition and environment. The goals stand apart from other international targets, especially because of their synergy and interdependence. Progress on one goal brings you closer to progress on others. The water and sanitation targets are so inextricably linked with other facets of human development that to prioritize them is to make progress on a range of other fronts.

- **Poverty (Goal 1).** One fifth of the world's population lives in extreme poverty, while 800 million people are chronically hungry. Sufficient clean drinking water and adequate water for other household, agricultural and economic activities can be instrumental in eradicating poverty and hunger.
- **Education and Gender (Goals 2 and 3).** Queues for water almost always consist of women or girls. These time-consuming activities prevent women from engaging in productive work and keep girls from attending schools. Expanding access to water and sanitation is fundamental to female empowerment and parity in education.
- **Health (Goals 4, 5 and 6).** More than 5 million deaths are caused each year by water-related diseases. Contaminated water is the biggest killer of young children. Realizing the health goals critically depends on increased access to water and proper sanitation.
- **Environment (Goal 7).** The target on water and sanitation officially resides in the overall goal of ensuring environmental sustainability. Water is also essential for sustaining the biodiversity of all the world's ecosystems.

Clearly the water and sanitation targets are a critical entry point for the development community to accelerate progress on the other Millennium Development Goals. But meeting them will depend largely on governance – whether we can all value and better manage scarce water resources at the individual and collective levels through integrated water resources management and improved water service delivery mechanisms, through a participatory approach, at all levels of society.

Eradicating poverty

If poor countries are to have any chance of realizing these first seven goals, rich countries must deliver – well in advance of 2015 – on their commitments in **Goal 8: Global Partnership for Development**. In it rich and poor country leaders recognized their shared role in eradicating poverty worldwide and, for the first time, established a clear division of labour. Developing countries pledged to strengthen governance, institutions and policies. Developed countries committed to increase the quantity of aid and improve its quality, deliver more meaningful debt relief, and expand access to trade and technology for poor countries.

What progress have we made? According to a 2003 World Bank Report to its Development Committee, poor countries' policies and governance have never been stronger; but the actions of the rich countries do not match their promises. They must adopt concrete deadlines and specific targets for delivering on their commitments under this goal.

- **Aid.** More, and more effective, aid is essential if poor countries are to reach a self-sustaining path towards achieving the goals. At least an additional $50 billion per year is needed, according to the UN Zedillo Report and the World Bank. The United Nations Development Programme estimates that the total costs range from $50 billion to $102 billion for meeting the water supply goal and from $23 billion to $42 billion for sanitation between 2001 and 2015. Rich countries need substantially to increase financing, but not at

Zeng Fei/UNEP/Topham

Clean water can be instrumental in eradicating poverty and hunger

the expense of funding other programmes such as Education for All or HIV/AIDS. Donors must set a date to increase overseas development assistance levels to the 0.7 per cent of their gross national income towards which they promised to work more than 30 years ago. Aid must also be untied from the interests of donor countries, target the poorest countries and respect the national ownership of recipients. Donors must also implement the Rome Declaration on Harmonization that committed them to reduce the transaction costs of aid to poor countries.

■ **Debt relief.** Many of the poorest countries need to free up resources to finance priority investments such as water and sanitation, but their burden of debt hinders development. Governments that have had debt forgiven under the Heavily Indebted Poor Countries (HIPC) initiative used the additional resources to finance progress towards the goals in primary education and health. But faster and deeper debt cancellation is needed if they are to achieve the Millennium Development Goals.

■ **Trade.** Developing countries must integrate into the world economy, but the playing field is not level: trade policies discriminate against them. A 'pro-poor' Doha deal, estimates show, could lift an additional 144 million people out of poverty by 2015 and increase global income by as much as $520 billion. The outcome of the fifth World Trade Organization's Ministerial Conference in Cancun demonstrated developing countries' tremendous frustration with a trade system that, for the last 10 to 15 years, has been a boulevard of broken promises. Rich countries must create a more equitable global trading system by expanding market access and eliminating agricultural subsidies that distort the markets on which poor farmers in poor countries depend. Trade ministers must follow through on their commitments in the Doha Declaration to ensure that developing countries are more than just beggars at the feast.

Equitable access

We know that more equitable access to safe water and sanitation are the key to poverty reduction, sustainable development and the future safety of the world. The challenge now is to ensure that the political commitments made at the Millennium Summit and subsequent meetings are implemented. Time is short and if we do not act now, we will jeopardize our chances of meeting the Millennium Development Goals.

Water is everybody's business and everyone must now focus on implementing these great promises. The mounting water challenges of the 21st century will only be met if all levels of government and society are involved. We are the first generation with the knowledge and resources to eradicate poverty. Let us refuse to miss the opportunity ■

Eveline Herfkens is the United Nations Secretary-General's Executive Coordinator for the Millennium Development Goals Campaign.

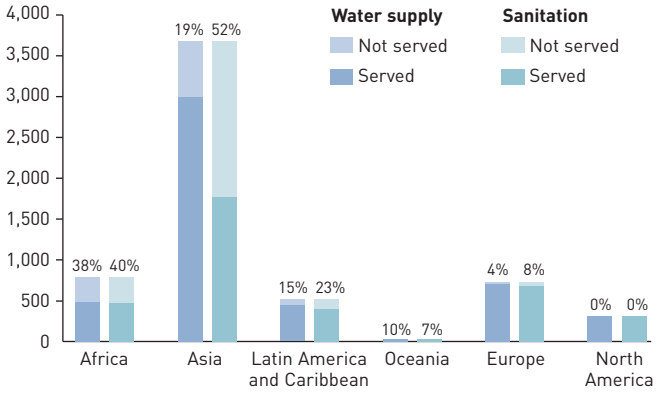
Raharto/UNEP/Topham

AT A GLANCE:

The lack of safe drinking water and sanitation is one of the major causes of disease and death worldwide. Every year over 5 million people die from water-related diseases: some 3 million from diarrhoea and around 2 million from malaria. Meanwhile women in developing countries walk many kilometres a day to fetch often unsafe supplies of water for their families, carrying back loads of some 20 kilograms – the weight of a piece of aircraft luggage. And, within a few decades, about a third of the world's people are expected to suffer from chronic water shortages.

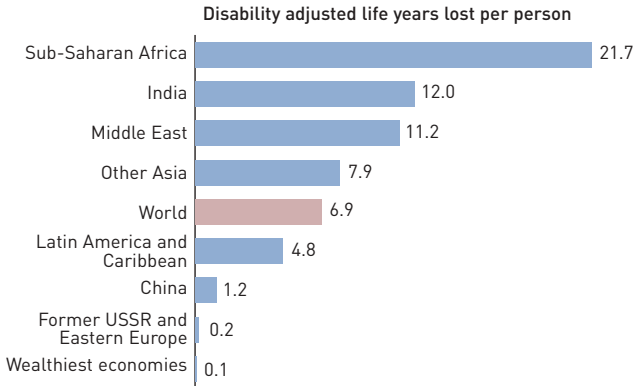
The incidence of disease and death around the world could be cut by three quarters if there were adequate supplies of safe drinking water and adequate sanitation. There have been improvements over past decades. In the

Fig. 1: People with water supply and sanitation, by region, 2000 (millions). % of population unserved is highlighted above bars



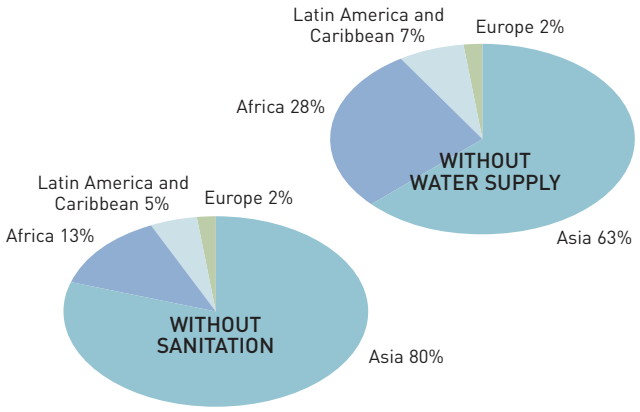
It is estimated that 82 per cent of the world's people had improved water supplies in 2000 – up from 79 per cent in 1990. But much has still to be done on both water and sanitation.

Fig. 3: Regional differential in average health burdens from diarrhoeal diseases, 1990s



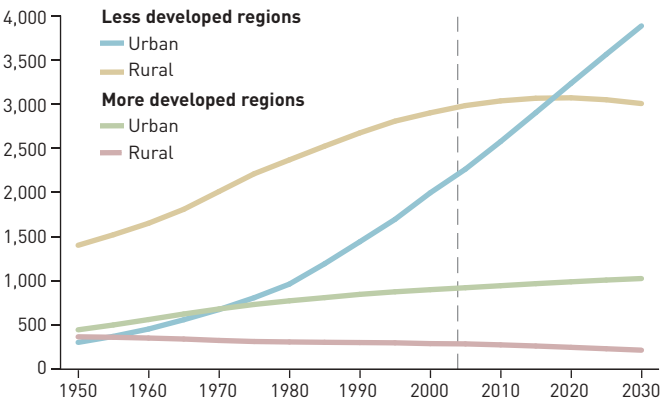
There are about 4 billion cases of diarrhoea worldwide every year. 2.2 million people – mainly children – die of them annually, equivalent to 200 jumbo jets crashing every day.

Fig. 2: Distribution of global population without improved water supply and sanitation, by region, 2000



1.1 billion people still lack access to safe drinking water; 2.4 billion to improved sanitation. More than 90 per cent of them live in Asia and Africa.

Fig. 4: Growing cities: urban and rural populations, 1950-2030 (millions, medium variant)



Humanity is about to become an urban species for the first time in its history, as more and more people in developing countries migrate to cities and towns.

WATER AND SANITATION

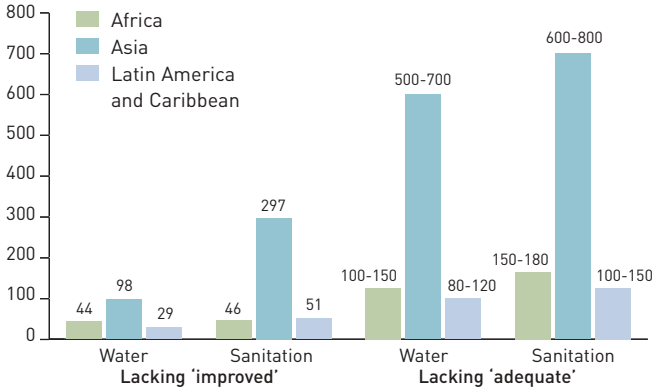
1990s the number of people with improved water supplies increased from 4.1 to 4.9 billion. In the first half of the decade, 170 million more developing-country urban dwellers were provided with safe water and 70 million more with appropriate sanitation. But this achievement was swamped by the effects of population growth and urban migration, which meant that 300 million more people in cities and towns lacked a safe water supply by the end of 1994, and 600 million more lacked adequate sanitation.

At the present rate of investment safe drinking water will not be provided to all the peoples of Asia before 2025, and this will not be achieved in Latin America and the Caribbean before 2040 or Africa before 2050. The rate of progress urgently needs to be accelerated. At the Millennium Summit in September 2000, the world's nations resolved to reduce by half the number of people without access to safe and affordable drinking water by 2015. Two years later, at the World Summit on Sustainable Development in Johannesburg, they adopted a similar goal for sanitation.

Meanwhile more than half the world's rivers are seriously degraded and polluted, threatening the health and livelihoods of people who depend on them. But the World Water Council reports that many developing countries – through investing in wastewater treatment – 'have halted the decline in – or actually improved – the quality of surface water'.

Geoffrey Lean

Fig. 5: Urban dwellers lacking 'improved' and 'adequate' water and sanitation, 2000 (millions)



Official statistics suggest that almost all urban people have improved water supplies and sanitation, but surveys carried out by UN-HABITAT reveal that for many it is far from adequate.

Fig. 6: Sanitation in selected African cities, by type of service (% share), 2000

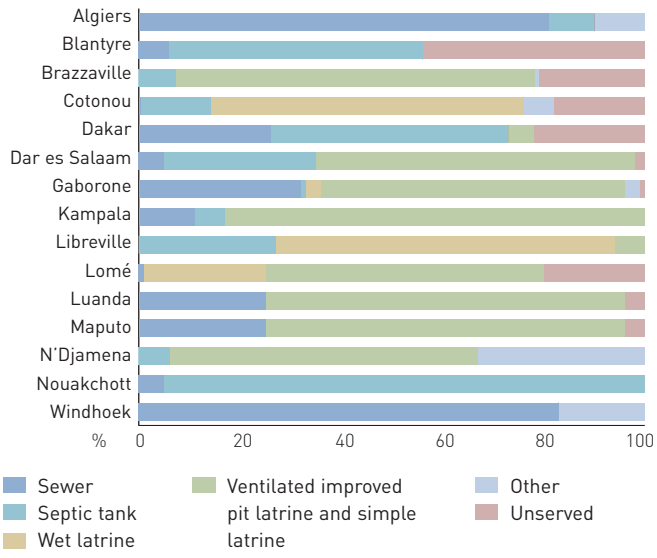
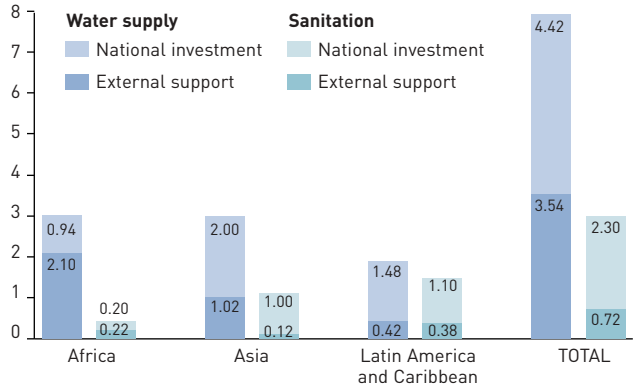


Fig. 7: Annual investment in urban water supply and sanitation, by region, 1990/2000 (billion $)



Developing countries themselves provide most of the resources for improving water supplies and sanitation. But overall the sector remains seriously underfinanced.

Fig. 8: Cost of water from different sources in selected Asian cities, 2000 ($ per cubic metre)

	House connection	Public tap	Water vendor
Bandung, Indonesia	0.38	0.26	3.60
Bangkok, Thailand	0.30	–	28.94
Karachi, Pakistan	0.10	–	1.14
Kathmandu, Nepal	0.18	0.24	2.61
Malé, Maldives	5.08	–	11.20
Manila, Philippines	0.29	–	2.15
Mumbai, India	0.07	0.07	0.50
Phnom Penh, Cambodia	0.13	–	0.96
Port Vila, Vanuatu	0.42	0.86	8.77
Seoul, Rep. of Korea	0.25	14.13	21.32

Note: Some of the cities with very high costs from vendors have quite small proportions of their population served by vendors, e.g. Seoul.

The urban poor who have to buy water from vendors have to pay much more for it than the well-off whose homes are connected to the mains.

Sources: 1 & 2: WHO/Global Water Supply and Sanitation Assessment 2000; 3: World Bank; 4: UNDP; 5: WHO/UNICEF 2000/UN-HABITAT; 6: UN-HABITAT, Water and Sanitation in the World's Largest Cities; 7: WHO/UNICEF 2000; 8: UN-HABITAT

ANGELIQUE KIDJO

MUSIC MAKES MAGIC

'Give out the water, spread out the water,' sings Angélique Kidjo in the all-African thriller *Critical Assignment*. The message, from her song 'Goddess of the Sea', is appropriate, as the film – described as an 'African James Bond' – tackles the issue of access to safe drinking water.

Written by a young Nigerian screenwriter, Tunde Babalola – and based on his own experience of water shortage as a child – it contrasts clean water and dirty politics. Shot in five African countries, with daring stunts and high-speed car chases, it depicts a battle with a clique of politicians and corrupt businessmen who try to siphon off funds supposed to be spent on providing water for the poor.

'I like the message of the film: corruption can be overcome by passion and conviction,' Angélique Kidjo told *Our Planet*. 'I guess it's naive, but that's my belief!'

The Benin-born singer and songwriter is no stranger to concerns about water and sanitation. In 1996 she sang at the Stockholm Water Festival, and she has long campaigned on sustainable development issues. She has communicated strong messages on HIV/AIDS to African young people, and is a UNICEF goodwill ambassador.

Her lyrics have explored issues like race, homelessness, the environment and the need for integration, and she performed at the 1996 Nobel Peace Prize ceremony and at the 2002 UN General Assembly Special Session on Children.

Her greatest concern is education, which she believes is the key to her continent's future. 'Education is my priority because sanitation issues, social and political issues, can't change if the people are not aware of what the world is, what their rights are and what the value of their life is. So many health problems come from ignorance (and lack of financial resources, of course).

'Almost everybody agrees that it is unbearable and scandalous to know that children are suffering so much in some parts of the world. Changing the future of children is the only way to change the world. When you are an artist you want to move things, but don't know how because you are so busy travelling and working. I have seen the presence of UNICEF in so many places where it is needed, and know that the money is spent for the children.'

One of nine children, Angélique Kidjo was born in a village called Ouidah on the coast of Benin and she speaks of the security she felt in the solidarity and community life of the village. Her music still throbs with the tribal and pop rhythms of her West African heritage. She was raised in the voodoo religion as well as Catholicism, and speaks of how it teaches respect for nature, without which people would not exist.

Her mother owned a theatre group with which she first performed, aged six. Later the family left the country because of an unstable political situation, and went to live in Paris where she studied jazz and law and met her husband and collaborator, Jean Hebrail.

She considered becoming a human rights lawyer, but decided that she could make a greater impact through her music. 'I have been singing onstage since I was a child, but my dream was to help the world get better,' she says. 'My law teacher told me that I'm not diplomatic enough to be a lawyer! I get much too passionate.

'I like to write love songs, and I do sometimes, but a lot of my lyrics are inspired by social injustice. Coming from a very poor country always put things in perspective for me.

'I truly feel that through music something magical happens that creates a special bond between people from very different backgrounds.' ***GL***

Angélique Kidjo

Targeting SANITATION

CEES VAN DE GUCHTE and **VEERLE VANDEWEERD** address the environmental aspects and costs of meeting the World Summit on Sustainable Development target on improved sanitation, and describe the growing global consensus on alternative low-cost technologies

Some four children die every minute in developing countries from diseases caused by unsafe water and inadequate sanitation. On average, 250 million cases of gastroenteritis occur worldwide every year from bathing in contaminated water, and 50,000-100,000 people die from infectious hepatitis. The global burden of human disease caused by sewage pollution of coastal waters has been estimated at 4 million lost person-years annually.

The deterioration of the aquatic environment is visible around the globe. The discharge of untreated domestic wastewater has been identified as a major source of pollution in most of the UNEP Regional Seas. Untreated sewage affects over 70 per cent of coral reefs, precious habitats are disappearing and biodiversity is decreasing, fishing and agricultural potential are being lost, while poor water quality is reducing income from tourism and the value of real estate.

Such concerns have helped push the international community to ensure that the targets of the 2000 Millennium Development Goals and the 2002 World Summit on Sustainable Development (WSSD) address improved access to safe drinking water and adequate sanitation.

The WSSD agreed target on water and sanitation is 'To halve, by the year 2015, the proportion of people who are unable to reach or to afford safe drinking water and the proportion of people who do not have access to basic sanitation'.

Increased problems

Population growth, rapid urbanization, and increasing water supply and sanitation provision to meet the 2015 targets will all generate increased problems from wastewater pollution. At present, only about a tenth of the domestic wastewater in developing countries is collected and only about a tenth of existing wastewater treatment plants operate reliably and efficiently. Ignoring wastewater pollution issues proves costly, in human, ecological and financial terms. Discharging it untreated to the natural environment directly affects the primary resource for drinking water supply, ▶

Nguyen Van Than/UNEP/Topham

Some of the damage associated with inadequate handling of wastewater

❏ Increased direct and indirect costs caused by increased illness and mortality.

❏ Higher costs for producing drinking and industrial water, resulting in higher tariffs.

❏ Loss of income from fisheries and aquaculture.

❏ Poor water quality deters tourists, immediately lowering income from tourism.

❏ Loss of valuable biodiversity.

❏ Loss in real estate values, when the quality of the surroundings deteriorates: especially important for slum dwellers where housing is the primary asset.

Some examples of the costs of inaction

❏ The global burden of human disease caused by sewage pollution of coastal waters is estimated at 4 million lost 'person-years' every year, which equals an economic loss of approximately $16 billion a year.

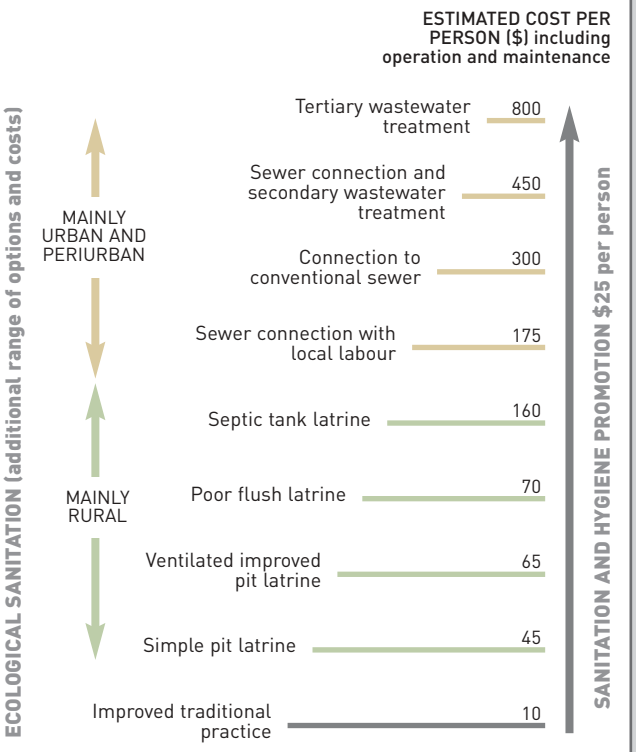
❏ GESAMP (Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection) estimated the global impact of bathing in and eating shellfish from polluted seas at approximately $12-24 billion per year.

❏ Lost income and additional health costs from the 1992 cholera epidemic in Peru were estimated at ten times the annual national budget for water supply and sanitation.

❏ The aggregate annual benefits of improving the water quality of East Lake, a recreational area in Wuhan, China, affected by daily discharges of effluents from industries and households, ranged from $42 million to $112 million using contingent valuation.

❏ The cost of water pollution along 20 beaches of the Estoril Coast in Portugal, used by approximately a million people a year, was around $68 million annually.

A ladder of options: different levels of sanitation services and their tentative costs



essential ecosystem functions and the sustainable use of water (see box). Increasing sanitation coverage, therefore, requires public sewage collection and treatment systems, so as to prevent raw sewage from entering groundwater, surface waters and coastal areas. Reusing wastewater should be considered as an important option, especially in water-scarce regions. A sustainable approach to sanitation includes wastewater collection, treatment and reuse.

Overall, the same number of people in both urban and rural areas (1.1 billion) will require improved sanitation by the target year of 2015. This means that 400,000 additional people will have to be supplied with services each day. The World Panel on Financing Water Infrastructure estimated in March 2003 that $72 billion was needed annually – four to five times more than currently spent – to achieve the target on sanitation, including household sanitation, hygiene and wastewater treatment: $56 billion of this is required for wastewater treatment alone.

One approach to bridging this enormous financial gap is to consider how the use of different technologies can affect costs. The figure above illustrates tentative cost estimates for different levels of sanitation service and technology as a 'ladder of sanitation options', starting at a basic level and moving up to higher levels of service. It illustrates that there is an important difference between the (mostly non-

A sustainable approach to sanitation includes wastewater collection, treatment and reuse

UNEP/Topham

TEN KEYS for local and national action on municipal wastewater

1. Secure political commitment and domestic financial resources.

2. Create an enabling environment at national and local levels.

3. Water supply and sanitation is not restricted to taps and toilets.

4. Develop integrated urban water supply and sanitation management systems also addressing environmental impacts.

5. Adopt a long-term perspective, taking action step by step, starting now.

6. Use well-defined timelines, and time-bound targets and indicators.

7. Select appropriate technologies for efficient and cost-effective use of water resources and consider eco-technology alternatives.

8. Apply demand-driven approaches.

9. Involve all stakeholders from the beginning and ensure transparency in management and decision-making processes.

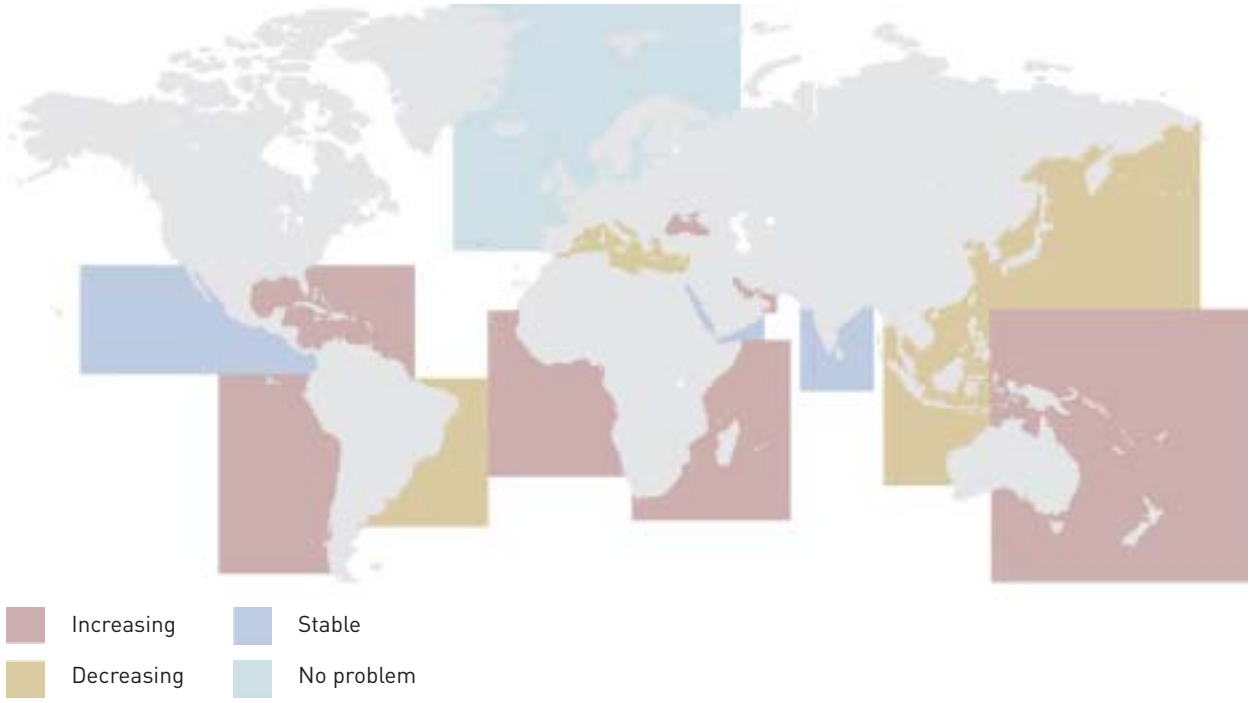
10. Ensure financial stability and sustainability.

10.1 Link the municipal wastewater sector to other economic sectors.

10.2 Introduce innovative financial mechanisms, including private sector involvement and public-public partnerships.

10.3 Consider social equity and solidarity to reach cost recovery.

UNEP Regional Seas discharge of untreated domestic wastewater



networked) rural sanitation component of the target and the (mostly networked) urban improved wastewater treatment component. Understanding these different options is important. Most sanitation discussions and financing calculations do not differentiate clearly between providing basic sanitary services or improved ones, including wastewater collection, treatment, reuse and reallocation to the environment. This can cause confusion and results in wide variations in cost estimates. Depending on the level of sanitation services, cost estimates vary widely – up to 32 times over.

Local low-cost solutions

Global estimates of financial needs therefore often do not consider local low-cost solutions. The funding gap between the current level of investment and what is required to reach the sanitation target agreed at WSSD can thus substantially be reduced if lower-cost technology is used in appropriate situations. This is particularly true in towns and cities, where the traditional assumption has been that full sewerage connection is the most appropriate level of service. Septic tank systems could also be suitable in densely populated areas, to give one example, and decentralized eco-technologies should also be considered as cost-effective alternatives. Some of the low-cost options, however, can have negative environmental consequences if not properly planned and managed: these include the effects of sewerage connection without adequate treatment, or of inadequate sludge disposal contaminating the environment.

Providing improved sanitation requires that a range of design attributes are considered – not just the technology but also, for example, institutional and management arrangements, or billing and tax collection procedures. Low-cost, appropriately designed sanitation schemes provide a possible option for poorer urban communities to match solutions to their limited cash resources.

A global consensus is emerging on how to address municipal wastewater collection and treatment sustainably. *Guidelines on Municipal Wastewater Management* and its Ten Keys for local and national action were considered by over 100 countries at the UNEP/GPA Intergovernmental Review meeting in 2001. Aimed at setting a new global standard in the field of sustainable municipal wastewater management, the Ten Keys cover policy issues, management approaches, technology selection and financing mechanisms. They have been developed jointly by UNEP, the World Health Organization, UN-HABITAT and the Water Supply and Sanitation Collaborative Council, and supported by UNICEF.

Best practices and successful innovative approaches urgently need intensifying and scaling up. Capacity building through pilot projects and training 'on the spot' will enhance further implementation. Partnerships that actively and effectively implement innovative approaches are key to success. These partnerships rely heavily upon strong commitment, shared responsibilities and – just as important – shared risks among all stakeholders ■

Cees van de Guchte is Senior Project Officer at the UNEP/GPA Coordination Office, The Hague, Netherlands. Veerle Vandeweerd is Coordinator, GPA, Head, Regional Seas Programme and Deputy Director, Division of Environmental Policy Implementation, UNEP.

GPA is the Global Programme of Action for the Protection of the Marine Environment from Land-based Activities, see: www.gpa.unep.org

In a city like MUMBAI

KALPANA SHARMA describes what it is like to live without adequate water supplies and sanitation in one of the world's most populous cities

Travel to any city in India and you will find two common images – women lining up with pots of various shapes and sizes waiting for water, and men and children defecating in the open (women have to do this under cover of darkness). The basic services of clean water and sanitation have still to reach millions of people in India even as it boasts of an accelerating rate of economic growth.

The crisis is well illustrated by a visit to one of the many slums that dominate the scene in India's commercial capital, Mumbai. Almost half of its 12 million people live in slums or dilapidated buildings. They are located on open land, along railway tracks, on pavements, next to the airport, under bridges and along the city's coastline. Although there are variations, generally this half of the population gets little water and has even fewer lavatories. The water, when available, is often unclean. And the lavatories that exist are usually filthy, broken down and generally unusable: it is safer to defecate in the open than to use some of them. So few are functional that open defecation is anyway the only alternative for millions of people.

Life on the pavement

The 30,000 families who live on Mumbai's pavements are worst off of all. They do not have access to either water or lavatories because in the eyes of the law they are 'illegal' and should not be living there. In fact, generations have grown up often on the same pavement since the city government turns a blind eye to their existence and does not plan for an alternative.

Women's lives on these pavements are dominated by a daily hunt for water. They beg it from people living in adjoining buildings. They find ways to break open fire hydrants for water. They find plumbers who know how to tap waterlines running below the pavement that is their home. As Sagira, one such pavement dweller, says, 'These are unofficial taps. We cannot get taps officially'. 'Official' water is not available to those who are considered illegal. And the 'unofficial' water can cost more than 10 times the water supplied by the municipal corporation. For poor people, this can mean a daily expenditure of up to 10-30 per cent of their incomes.

Close to a million people live and work in semi-permanent structures in slums that have been around for a long time, such as the vast agglomeration called Dharavi located at the crossroads between the old island city of Mumbai and its expanding hinterland. The settlement is 'regularized' in that the city government does not plan to demolish it and move its residents elsewhere. It has also provided them with water, electricity and lavatories – but these are nowhere near adequate for the numbers of people living there.

Most of the water is accessed through public standpipes located in various parts of the slum. It is the women who have to line up and collect the water. Water is released in these taps at different times of the day for a couple of hours at a time. This system has been devised by the municipal corporation to ensure that the water coming into the city from its sources outside the city limits is distributed to all parts of the city.

Heavy toll

Such a system is not a problem for people who live in formal housing as they can pump the water up to overhead tanks regardless of when it is released and so get a continuous supply through the day. But, for people in slums, there is no option but to collect the water whenever it is released. The timings can be at any time of the day – or the night. Each slum devises its own system of water distribution. But one aspect is common: it is the women who collect the water. The amount they collect depends on their ability to store water in their tiny houses. And the wait for water – and carrying heavy pots of it over uneven surfaces to their homes every day of their lives – takes a heavy toll on most women's health.

Basic clean water and sanitation have still to reach millions of people in India

The situation with lavatories is even worse. In 1986 a survey revealed that there were only 800 lavatory blocks in Dharavi, for a population of around 400,000 people. Each lavatory block would have perhaps 15 or 20 individual lavatories. Almost two decades later, the population has more than doubled but the lavatory situation is much the same. This situation is mirrored through all the slum settlements in Mumbai without exception.

Patchwork solutions

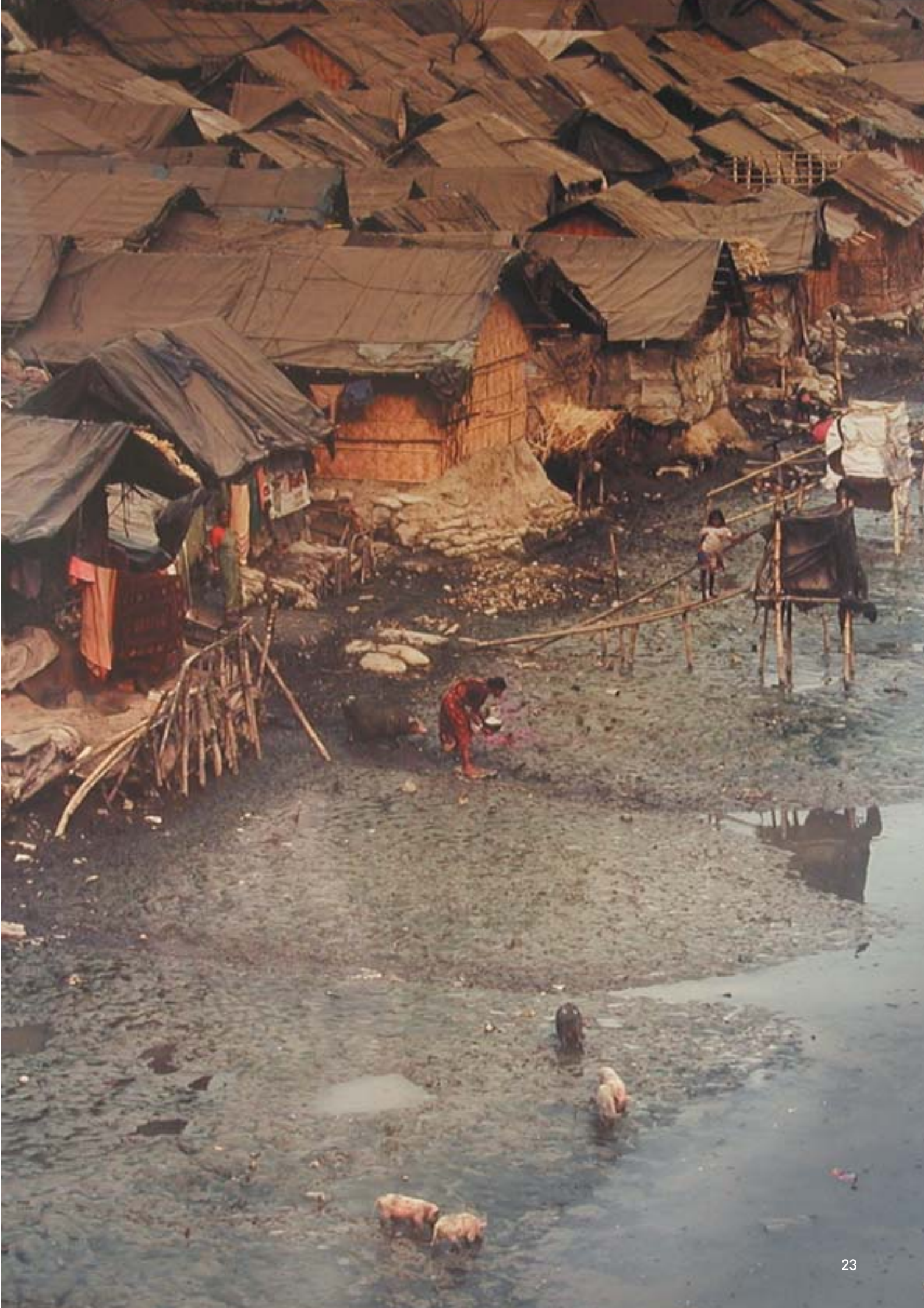
Mangal Sadashiv Kamble, who used to live along the railway tracks, described her daily experience to two researchers working with the urban poor in these words: 'For lavatories, we had to use the railway tracks. There were public lavatories, but they were some distance away – about half an hour walk. They used to be so dirty that we did not feel like using them. And there were such long queues! Instead of using those filthy lavatories, we used to go on the tracks after ten at night or early in the morning at four or five o'clock.'

Given the density of slums, even constructing new lavatory blocks is a problem. The Mumbai municipal corporation has taken on the task of building lavatories in several slums. But they have to negotiate with the residents to find a suitable location, as some of their houses would have to be demolished to free up the land – a hugely complex and often explosive process.

Providing safe water and sanitation to the urban poor is inextricably linked with a sound and affordable housing policy. Without this, only patchwork solutions are possible – and these can never meet the extent of the need of people for safe water and sanitary living conditions in a city like Mumbai ■

Kalpana Sharma is Deputy Editor of The Hindu *in Mumbai. She is author of* Rediscovering Dharavi: Stories from Asia's Largest Slum *(Penguin India, 2000).*

Stephen Dolmer/UNEP/Topham



Flowing from the
BOTTOM UP

GOURISANKAR GHOSH calls for integrated management of water – of the people, for the people and by the people

Lack of access to sanitation and water is one of the major causes behind the cycle of poverty. The poor lack access because they are poor, and because they do not have access they remain poor – suffering ill-health, more diseases, less education for their girl children and life in degrading, environmentally unhygienic conditions. They remain in that miserable state, sometimes very close to the opulence of multi-storied building complexes or hotels in developing world cities. Living in illegal slum settlements, they provide cheap labour to the urban economy, but remain unrecognized as legal residents.

Global commitments

Global leaders endorsed the Millennium Development Goals for water at the Johannesburg World Summit on Sustainable Development in 2002. They also, for the first time, recognized the need for sanitation goals, and committed themselves to reducing by half the proportion of people without access to safe water and sanitation by the year 2015.

Some, however, are now attempting to weaken the goals. They claim that these are narrow and not viable, and project a very high cost for achieving them – one not compatible with what is actually needed to reach the poor populations that should be targeted. It is an attempt to divert attention to capital-intensive investments in large water structures and waste treatment plants, and to justify this with an argument based on an integrated approach. This new paradigm – advanced by followers of the same school of thought that claims that the last International Water Supply and Sanitation Decade failed – is simply to promote more investment in infrastructure and greater allocations of donor funds for large structures and multipurpose projects. This is not necessarily an integrated approach, and contains little or no mention of the need for popular involvement.

Meenakshi Sahai/UNEP/Topham

Eugene F. Simon/UNEP/Topham

Yet the lessons from the last decade were that no sustainable solution can be achieved without putting people at the centre of planning, implementation, operation and maintenance; and that the only way to ensure long-term sustainability of water resources is, again, to involve the people at all stages and levels of water protection, conservation and development.

The Millennium Development Goals must be approached through choosing the right models with appropriate and affordable costs. Achieving them also calls for good local planning and design; sound, dynamic policy; responsibility delegated to the people; and environmental protection. Advocating top-down planning and infrastructure-oriented approaches will not reach the poor and will divert precious resources.

Self-determination

In the second half of the Water Decade, India experimented with an integrated approach through the Water Mission (later named the Rajiv Gandhi National Drinking Water Mission) involving almost all its departments and institutions. Over the five years 1986-1990, this reached nearly 165,000 villages with a population of almost 300 million people. It did so by proper planning and coordination, by systematic monitoring, by allocating resources out of its own budget and controlling cost, and, above all, by mobilizing a programme on its own.

Angelo Sande/UNEP/Topham

The most important experiments were mini-missions, implemented in approximately 16 pilot project districts, each with a population of around 1.5-2 million people. An integrated approach was developed through mobilizing all the development programmes related to water, forestry, agriculture, schools, health, education and energy, and coordinating them through elected bodies in villages and districts. They were further coordinated by the district administration to develop water-

harvesting structures and to recharge groundwater through deep wells, to introduce hydro-fracturing techniques for rejuvenating wells, and to offer geological advice on better locating wells and water conservation structures.

Popular involvement

The key point was that the people were involved at all levels through local governments. The most successful model was in Jhabua district in Madhya Pradesh, where the tribal population tripled their agricultural productivity, got rid of guinea worm, increased school attendance, improved their hygiene practices and planted more trees for afforestation.

Gautam Banerjee/UNEP/Topham

Similarly the local government (panchaats) in Medinipur in the state of West Bengal involved volunteers from youth and women's groups for a campaign on sanitation and hygiene run through a non-governmental organization (Ramakrishna Mission), taking an integrated approach to sanitation, education and health. Instead of subsidizing free latrines, small loans were provided through the youth clubs, after health and hygiene education. The community recycled funds, encouraged local entrepreneurs and provided the people with options for different sanitation models. As a result, nearly 16 million people were served in just ten years.

Lack of access to sanitation and water is one of the major causes behind the cycle of poverty

Of course, like all models, the Indian experience is not perfect. Imbalanced demand and supply has been created by the absence of proper regulation for groundwater extraction, over-irrigation of crops, deforestation and an indiscriminate increase of urban population with inefficient water system management. Top-down water policy development may never provide long-term solutions to such complex water management problems.

Tavinee Santipraena/UNEP/Topham

Yet experience from India and, more recently, South Africa – where I have been fortunate to be closely involved in policy development and reconstruction since 1994 – demonstrates the need for countries and governments to take leadership. It shows that India, with a GDP of less than $350 per capita and a population of close to a billion, could develop a programme of nearly $1 billion a year out of its own resources, and reach the goals in stages. The Indian programme has been developed through successive five-year plans and is now undergoing further evaluation and reform.

Carlos Earfas/UNEP/Topham

Indigenous, appropriate, affordable

South Africa is one of the developing countries allocating the highest percentage of GDP to water and sanitation. It demonstrates that – with determination, self-esteem and proper planning within its own resources – goals can be achieved without waiting for outside support. The choice of technology and approach has to be indigenous, appropriate and affordable.

Both the Indian and South African Governments are responsible to their people. Though the programmes are never perfect, they are based on learn- ▶

Klarehen Kallenbach/UNEP/Topham

ing from experience, and are part of a continuous process. Moreover, the integrated approach is based on decentralized governance, involvement of the people and a true people-centred programme.

Crucial leadership

The leadership given by India and South Africa and their political leaders has been crucial. Only governments can do this, and they should help multi-stakeholder coalitions to grow towards the sustainable achievement of their goals. Smaller countries will also need capacity development and support to develop their infrastructure. More education, capacity-building, open dialogue and encouragement of small private entrepreneurs will be essential

Water is not a global issue. It is very local, but not restricted by political boundaries. Both water and pollution travel downstream. More cooperation is needed between nations on transboundary water resource management. However, the process must be affordable, appropriate and environmentally sustainable for the poor.

Reynaldo A. Mercado/UNEP/Topham

If water management is beyond the poor – and is commercialized as a business – it will neither be sustainable nor integrated. Without water, no poverty reduction is possible.

We need a water management strategy oriented ... towards conservation, involving the people

Without integrating sanitation into water resource management plans and actions, water quality and health will not improve.

The World Summit on Sustainable Development's Plan of Action identified school sanitation and hygiene education and integration of sanitation into integrated water resource management as priority areas. Hence we need a water management strategy oriented not just towards creating infrastructure but towards conservation, involving the people; focused not just on private-sector development but on developing true partnership and encouraging small private entrepreneurs; and stimulating not just an addition of assets but the development of an efficient and well-managed system. This strategy should not destroy sustainable models and technologies like rainwater harvesting, but encourage ones close to the people and managed by them. Lastly, we need to know the parameters and indicators to measure progress and success in different countries, so as to reach the Millennium Development Goals through an integrated approach.

Fournier Frederic/UNEP/Topham

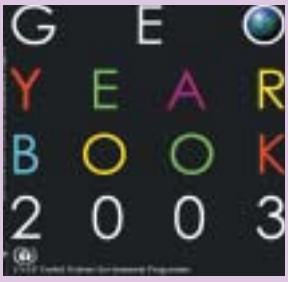
N. Van Tian/UNEP/Topham

The world needs integrated management of water – of the people, for the people and by the people – towards the achievement of the Millennium Development Goals ■

Gourisankar Ghosh is Executive Director of the Water Supply and Sanitation Collaborative Council, Geneva.

Carmine Pavico/UNEP/Topham

BOOKS & PRODUCTS



The GEO Year Book 2003 is the first report in a new annual series from UNEP, presenting major environmental issues and developments of the year at both global and regional levels. It includes a special Feature Focus on Water and its critical role in realizing internationally agreed goals and targets, including those in the Millennium Declaration and the WSSD Plan of Implementation. A section on Emerging Challenges – New Findings, focusing on the nitrogen cycle and marine fisheries, describes some of the latest scientific knowledge. The Year Book also uses Indicators to highlight trends in many of the global and regional environmental issues featured in previous GEO reports. It will be an important guide for policy makers. Copies can be ordered from UNEP's online bookstore: www.earthprint.com ■

Grant Gibbs

Hippos *are saving thousands of women and children in southern Africa from the daily backbreaking trudge to collect water.* ***The Hippo Water Roller*** *is a plastic drum, carrying 90 litres of water, that is pushed along the ground, even over rough terrain. It allows women and children to collect five times as much water as they would normally carry in a bucket, increasing their supplies and relieving them from making repeated journeys to the water source – both improving health and saving time for other vital activities. However their modest cost, $50, is still beyond the means of most poor people and the Hippo Water Roller Project (www.hipporoller.org) is trying to raise money from business to fund their distribution* ■

Slimbridge Wetland Plants

Some 45 ministers of water and environment from across Africa launched an action plan to meet the **Millennium Development Goals on water** in December. Meeting at the **Pan-African Implementation and Partnership Conference** in Addis Ababa, they resolved to give special attention to countries likely to miss their targets for water and sanitation. They made proposals for concrete actions, launched initiatives – including the **Africa Water Facility** with targeted funding of over $600 million for medium-term projects – and signed a joint declaration with the European Commission. More than 300 million people on the continent lack reasonable access to safe water and 14 of its countries are suffering from water stress or scarcity ■

Dryden Aqua

Recycled glass from used wine bottles is to be used to filter drinking water and purify sewage. Backed by a grant from the **European Union** and the **UK Department for Environment, Food and Rural Affairs,** a British company is building a factory in Scotland to turn the bottles into 'green sand' for the purpose. It is thought that the process, once fully developed, could both save the quarrying of high quality sand, and provide a use for most of the bottles put out for recycling in Britain. (More information at www.drydenaqua.com) ■

CSMCRI

Oxen, one of the most traditional of all sources of power, are being harnessed to a modern task – turning brackish groundwater into drinking water. The **Central Salt & Marine Chemicals Research Institute** in Gujarat, India, has developed a desalination plant driven by two bulls constantly circling on the end of a 4-metre shaft. Over an eight-hour day, the system can produce enough water for drinking and cooking for a village of 1,000 people. The Institute is now working to modify the system to desalinate seawater for coastal settlements ■

A technique developed by the Romans has proved more effective than modern technology in stabilizing river banks, the UK Construction Industry Research and Information Association concludes.

Stakes of live willow, woven into trellises, are up to nine time cheaper than sheet piling, work more effectively and look better, it says. (For more information see the Slimbridge Wetland Plants website at www.slimwetwillows.co.uk/erosion.htm) ■

Watering a thirsty land

LUIS CACERES VILLANUEVA
describes how wastewater can be used to green cities, even in difficult circumstances, and outlines how to treat and manage it

Banson

North Chile is a virtually rainless land. It contains six cities spread out in the Atacama desert, one of the driest regions of the world. Water supplies for urban areas are transported from distant wells or rivers close to the Andes mountains, where precipitation takes place. But a large fraction of the known supplies are affected by high concentrations of dissolved solids including boron and arsenic, which are present as soluble compounds in volcanic sediments, minerals and soils along the mountain range. This situation requires careful selection of water sources and water treatment methods to take out arsenic. Only about half of the water is suitable for direct human consumption: the rest is treated to remove its high arsenic content.

Municipalities, institutions and private owners face substantial challenges in providing the green areas and gardens required by urban dwellers. Greening initiatives are hampered by the high cost of water and by high salt and boron concentrations in the water and the soil, which severely affect the growth of sensitive ornamental plant species. A large fraction of the urban land set aside for recreation has ended up as empty fields or degraded parks. Universities, municipalities and private organizations launched a joint project to promote the development of appropriate green areas and gardens. It studied the feasibility of managing the use of available non-potable water through proper treatment and irrigation procedures. And it conducted field studies to select and evaluate native and introduced plants that could tolerate the salt and be used for ornamental purposes.

Reusing treated wastewater to irrigate green areas and vegetables was deemed to be most relevant. But its high salt content limits the range of acceptable crops to those resistant to it. Research established that it was convenient to use native plants as ornamental species because of their high resistance both to high salt concentrations in the soil and to water shortage.

Surprisingly, however, these species are not known to the local people – so it is necessary to promote their use through communication and training. Using native plants and available marginal-quality water – such as saline groundwater, and treated municipal and industrial wastewater – in this way are low-cost options for increasing green areas and gardens to develop a distinctive landscape for northern Chile.

Worldwide consensus

There is a general worldwide consensus on the benefits of wastewater recycling. But the design of any community system must bear in mind local factors affecting the process of treatment and reuse. It has not been possible, in many urban areas, to solve all the problems associated with where sewage ends up, because of economic difficulties, lack of adequate legislation, lack of interest in the community or lack of an organizational structure. The basic condition for implementing a wastewater treatment system is the existence – or establishment – of an efficient sewerage system to transport the wastewater to a treatment site. Another key factor is knowing the level and fluctuations in concentrations of chemicals that are hard or impossible to remove by conventional methods.

The choice of a wastewater treatment system is closely linked to the specific reuse intended – such as irrigating green areas or industrial use – and to the participation of interested sectors in generating ideas and projects. It can be difficult to finance any large-scale treatment project. So it is often appropriate to recommend localized projects – such as parks, gardens and orchards with their own system of sewage treatment – around populated areas, schools, hospitals, buildings and companies.

Natural systems, like stabilization reservoirs, are well developed, simple and inexpensive – and can be adapted to rural areas where land is cheap. Yet there is a marked preference for conventional processing of activated sewage sludge. This is apparently the result of publicity by manufacturers of modular

Using native plants and available marginal-quality water are low-cost options for increasing green areas and gardens

plants. Any system of sewage treatment must take into account economic, social and environmental aspects – some of which are addressed by specific regulations – including bacteriological parameters, and concentrations of organic matter, heavy metals and sulphate. These all have foreseeable environmental impacts including eutrophication, which affects aquatic species; the emission of offensive smells from treatment plants operating under bad conditions; and the intrusion of salts caused by badly maintained drainage networks. These make it difficult to reuse water on sensitive plants in agriculture, lead to the loss of large quantities of scarce water in desert areas, and make it likely that diseases will spread through contact with sewage in bathing areas in rivers, lakes and on the coast.

Luis Cáceres Villanueva

Choosing instruments

High rates of disease are generally due to deficiencies in sewage collection and management systems. This is so in several Latin American countries, where programmes have begun to search for sources of contamination through sampling and measuring the load of coliform organisms and/or faecal organisms in rivers, coastal areas and other water bodies. Corrective measures include the control of treatment plants and/or dosing water bodies with chlorine. The formation of organo-chlorinated compounds resulting from this practice has not been considered an environmental problem requiring standardization, as it has in industrialized countries. Strong odours are common near treatment plants all over the world, and usually provoke complaints from the community. They are associated with high concentrations of sulphate and organic matter in the sewage. In most cases, the problem is solved by confining or eliminating anaerobic areas. The concentration of suspended solids generated during treatment or management frequently causes problems. Long accumulation of treated water in open tanks or in anaerobic conditions favours the growth of micro-algae or bacteria in suspension, obstructing irrigation accessories. Choosing instruments, including sand filters, which will avoid this problem is most important so as to avoid problems of obstruction: those that can be cleaned manually have proved to be the most convenient.

Luis Cáceres Villanueva

Managing the sewage sludge generated in the treatment plants is conditioned by its heavy metal content, mainly the result of releasing domestic cleaning products into the drain network. Disposing of highly contaminated sewage sludge causes constant controversy even in industrialized countries, due to the high costs of management and the regulations involved. In rural areas, the quality of the treated sewage sludge (free of bacterial activity, and chemically stabilized) is good enough for it to be used as a soil conditioner. Good sewage treatment requires the study of local conditions to establish strategies to eradicate or reduce adverse effects, and to harmonize selected technological treatment alternatives with environmental regulations ■

Banson

Professor Luis Cáceres Villanueva is Associate Professor of Chemical Engineering at the University of Antofagasta, Chile.

Banson

PEACE *through parks*

GERARDO BUDOWSKI describes the advantages of peace parks and suggests ways in which they could be extended

The future of transboundary protected areas (TBPAs) and peace parks looks bright. Interest has focused on the possibility that TBPAs can promote peace and cooperation. Their number has grown substantially. In 1993 the inventory indicated the presence of 70 TBPAs in 65 different countries. In 2001 this had grown to 169 located in 113 different countries.

They bring many benefits to the people living in or close to them – and to society at large. They promote peace and international cooperation between countries by creating a protected area on their borders. TBPAs enhance environmental protection across ecosystems, and there are often significantly more of these than each country possessed individually. And they facilitate a more effective exchange of information and research and, often, joint management.

They also bring economic benefits through tourism. The visits of ecotourists are enhanced by providing them with a larger territory and, possibly, with an understanding of past conflicts in the area. TBPAs ensure better cross-border control of problems such as illegal exploitation of timber, fire, pests, poaching, pollution and smuggling. And transboundary mountain areas can help provide a steady supply of high quality water.

But should peace parks be restricted only to transboundary protected areas, as the definition by IUCN–The World Conservation Union (see box) suggests? If so, this eliminates the possibility of creating peace parks for island countries, at least for terrestrial areas, while limiting the possibility for many other countries with only one, very few or small borders with neighbouring countries.

Past conflicts

There are many promising areas in the world that qualify for peace parks, because they were well-known scenes of past conflicts, without being located on the borders of two or more countries. These could include lands with past – and present – conflicts between native communities and recently arrived settlers, particularly in Africa, Kalimantan and Brazil.

One prime example of an ongoing non-transboundary project is Laj Chimel, in central Guatemala. It was triggered by Rigoberta Menchú, the 1992 Nobel Peace laureate, in a magnificent mountain cloud forest, in the Quiché of Guatemala, an area where many Mayan Indians were killed in the civil war less than two decades ago. Mrs Menchú not only aspires to preserve this magnificent forest and create what she calls 'an ecological reserve for peace', but also intends to establish a centre for reconciliation.

I propose the following suggestions for a peace parks programme:

- Organizing an inventory of existing or proposed peace parks. Part of this has been done by IUCN but if peace parks are 'redefined' this may produce favourable new developments. There are many promising initiatives such as the demilitarized zone between the Republic of Korea and the Democratic People's Republic of Korea. Other promising examples may be the creation of one or several peace parks

IUCN DEFINITIONS

Transboundary protected area (TBPA)
An area of land and/or sea that straddles one or more boundaries between states, sub-national units such as provinces and regions, autonomous areas and/or areas beyond the limits of national sovereignty or jurisdiction, whose constituent parts are especially dedicated to the protection and maintenance of biological diversity, and of natural and associated cultural resources, and managed cooperatively through legal or other effective means.

Parks for peace (also sometimes called peace parks)
Parks for peace are transboundary areas that are formally dedicated to the protection and maintenance of biological diversity, and of natural and associated cultural resources, and to the promotion of peace and cooperation.

in Kashmir, as well as possible areas in the Near East.

- Adopting criteria and guidelines for qualification as a peace park. The main work has been done but details have to be finalized.
- Highlighting ways of obtaining the greatest added value when the peace parks are designed and managed. This requires extensive consultation and agreements with populations living close to or within the projected park.
- Attracting other interested stakeholders – including local and international NGOs and funding agencies – to participate in creating and managing peace parks.
- Designing a system of annual rewards for the most successful peace parks.
- Producing curricula, education and teaching materials where biodiversity conservation is combined with the promotion of a culture of peace.

This should have the following results:

- An increase in the number of peace parks and a significant contribution to biodiversity conservation, adding benefits for planned or existing biological corridors.
- Increased opportunities for visitor centres and qualified guides.
- Better possibilities to involve greater cooperation between governmental organizations and NGOs in their efforts to create peace parks, including a welcome participation of potential donors. There is for example a significant initiative between two private conservation organizations in Bolivia and Paraguay to merge two places in the dry Chaco area, where a well-remembered war was fought in the 1930s.
- Propitious scenarios for education, short international courses, research, ecological and cultural tourism, and the promotion of peace as an instrument for reconciliation.
- The creation of marine peace parks, since abating pollution from outside the park could be justified in mitigating or avoiding present and future conflicts ■

Gerardo Budowski is Professor Emeritus, Department of Natural Resources and Peace at the University for Peace, Costa Rica.

Topham Picturepoint

A PEACE PARK FOR THE KOREAN PENINSULA?

The demilitarized zone which stretches across the Korean peninsula has become one of the most valuable wildlife havens on Earth. Nature has flourished in the 250-kilometre long, 4-kilometre wide belt which has been almost entirely untouched by people since the end of the Korean War in 1953. It is believed to be home to some 2,200 species of wild animals and plants, including some highly endangered ones. Surveys suggest that it provides wintering grounds for two of the world's most threatened bird species, the white-naped crane and the red-crowned crane, and supports amur leopards, Asiatic black bears and possibly the last remaining population of the Siberian tiger.

In recent years there has been a growing hope that this last vestige of the Cold War could become a symbol of peace. In 2001 former South African president Nelson Mandela proposed that the two Koreas should build a 'peace park' inside the demilitarized zone – to help peace take root in one of the world's last Cold War frontiers. He put the idea to his fellow Nobel Peace Prizewinner, the then President of the Republic of Korea, Kim Dae-jung, who relayed the proposal to the Government of the Democratic People's Republic of Korea to the north.

The Peace Parks Foundation – whose Patron Emeritus is Nelson Mandela – says: 'Dr Mandela's meeting with the South Korean President was very positive on this issue and information from the North indicates that "green" is very important to their culture.'

Transboundary conservation areas, or peace parks, have a long history; the first – the Glacier-Waterton International Peace Park between the United States and Canada – was established in 1932. In more recent times they have long been promoted by IUCN–The World Conservation Union, and the Peace Parks Foundation was set up in 1997. Southern Africa leads with six such parks – including the Great Limpopo Park between Mozambique and South Africa – and 16 potential ones. IUCN has identified 169 potential peace parks spanning 113 nations worldwide.

Nelson Mandela says: 'I know of no political movement, no philosophy, no ideology, which does not agree with the peace parks concept as we see it going into fruition today. It is a concept that can be embraced by all.'

All photos: Ronnie de Camino

Reaching the unheard

SUVECHA PANT

As a young journalist yet to reach 20, I believe that I should act as a bridge between the public and the Government in helping to solve the water and sanitation crises in my country. The media represent a powerful tool, able to pressurize the Government to bring in programmes to address these issues.

Infectious, water-related diseases are the leading cause of morbidity and mortality amongst the poor. Some 1.1 billion people in the world do not have access to safe water and 2.4 billion lack adequate sanitation.

I am angry that some 6,000 children die every day from diseases associated with lack of access to safe drinking water, inadequate sanitation and poor hygiene. The number of children killed by diarrhoea alone in the past decade is greater than all the people lost to armed conflict since the Second World War. Around 88 per cent of the incidence of diarrhoeal disease – itself amounting to an estimated 4.3 per cent of the total global disease burden – is attributable to unsafe water supply, sanitation and hygiene: it is mostly concentrated on children. Meanwhile, projections for 2025 indicate that the number of people living in water-stressed countries will increase sixfold to 3 billion.

Human right

I believe that access to safe drinking water and hygiene is a human right, something we are failing to provide to the poorest people. The world community spends a small fraction of what is needed on water and sanitation. Sanitation facilities are still centred on the wealthy residents in the main cities. Slum dwellers and people in rural areas have to defecate outside without proper sewage systems. There is a need to develop lavatories, and not just 'modern' ones, but those adaptable to the social customs of the people. Just washing hands can reduce diarrhoeal disease by a third.

In my part of the world, South Asia, where almost a third of the world's population lives, access to water is a major problem. Safe drinking water is limited to the rich in the cities. In rural areas people have to walk hours to reach the nearest well, while clean water is considered a luxury by urban slum dwellers.

Grassroots voices

I hope, through my journalism, to bring out the voices of the 'have-nots'. I strive to publicize the problems of those at the grassroots, whose voices may be paralysed or unheard. Often, the needs of the rich city dwellers overshadow those of their fellow citizens living in slums or rural areas. The need for a balanced focus on both the city and villages in terms of water and sanitation can be highlighted through the media.

I believe in taking small steps right now, rather than planning a giant leap for the future, in promoting good practices and innovations for water and sanitation. There are so many simple practical ways of solving the problem. I want to reach the people through writing, and through broadcasting on the radio – which is the most widespread form of media in Nepal. To help just one person to a better life would definitely be worth a lot to me ■

Suvecha Pant is coordinator of the science page and journalist at The Kathmandu Post, *Nepal, and a journalist and English newsreader at national radio station Kantipur FM96.1.*

Eduardo Augusto Mayaert/UNEP/Topham