

## Backgrounder

### Freshwater: Action on the Ground

Water is essential for life – to drink, bathe, cook, clean, grow food, fuel engines, support ecosystems. But water is not easily accessible to all. For some of the poorest people in the world, a drink or a pot of soup means getting up before dawn and walking, often for miles, to fetch a bucket of water. Over one billion people share that plight. Without ready access to safe water, the poor – especially women and girls – spend much of their time scavenging for it. In some places water scarcity is accompanied by deteriorated water quality due to pollution and environmental degradation. Poor water supply and sanitation lead to high rates of water-related diseases, limited economic development options and political and civil tension. In short, without water, growth is stunted.

There is a strong and increasing recognition of the crucial role of water in sustainable development, but meeting competing demands will require coordinated action and considerable funding. To respond to needs, governments, international organizations, local communities, civil society and businesses around the world are working on innovative projects that prove that these obstacles can be overcome. The challenge is often how to generate the funding and know-how, with the right combination of outside support and local participation, to bring these efforts to scale. In addition to providing policy guidelines, technical advice and a forum for sharing lessons learned, the United Nations is a key partner in many of these projects. Following is some of the action on the ground.

#### **Rainwater Harvesting: Empowering Women in Kenya**

Masai women have joined a pioneering new anti-drought initiative that promises to dramatically reduce the time spent finding and collecting sufficient clean and healthy water supplies. The project involves harvesting rainwater using special low-cost containers and digging mini-reservoirs or “earth pans”. It allows women to collect fresh and unpolluted water on their doorsteps rather than being forced to trek many frustrating miles.

The project is part of a wider international initiative funded by the Government of Sweden and is carried out by EarthCare Africa, which has developed the project on behalf of the UN Environment Programme (UNEP). Similar projects are underway in Nepal, India and Bhutan and on the Pacific island of Tonga.

So far, facilities capable of holding over 520,000 litres of harvested rainwater have been installed at three locations in Kenya. Future spin-offs from the project include kitchen gardens, as the availability of moist soil around the mini-reservoirs makes ideal conditions for growing small plots of crops.

The project also underlines important changes in land tenure that have been affecting the lifestyle of nomadic herding communities like the Masai. In the Kajiado District, traditionally the people living there, mainly Masai, have been pastoralists who have used the land mostly for grazing their cattle. But now the land is being divided into individual and

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group ownership plots. These land tenure changes mean that the community must adopt a more diversified lifestyle, which is increasing the pressure for a reliable local water supply.

### **Finding a Better Way to Irrigate Crops: From Bangladesh to Zambia**

Bangladesh has one of the highest concentrations of the poorest people in the world, and suffers from acute resource pressures. In the early 1980s, thousands of farmers in Bangladesh began using treadle pumps – a simple but ingenious foot-operated device that draws water up from wells, shallow aquifers or surface water — to irrigate small plots of homestead gardens instead of lugging heavy buckets of water.

#### **WATER AND AGRICULTURE: SOME FACTS**

- ◆ Almost 70 per cent of all available freshwater is used for agriculture.
- ◆ Overpumping of groundwater by the world's farmers exceeds natural replenishment rates by at least 160 billion cubic metres a year.
- ◆ It takes an enormous amount of water to produce crops: one to three cubic metres to yield just one kilo of rice, and 1,000 tons of water to produce one ton of grain.
- ◆ As their income rises, people consume more pork, poultry, beef and eggs, requiring more feed grain. It takes four kilograms of grain to produce one kilogram of pork, and two kilograms of grain to produce one kilogram of chicken. More grain needed means more water needed.

The Food and Agriculture Organization (FAO) was convinced that this technology could help African farmers if it could be adapted to local conditions and produced locally. In cooperation with the International Fund for Agricultural Development and with the assistance of International Development Enterprises, a non-governmental organization, in 1996 local manufacturers in Zambia were trained to produce and sell the pumps. Soon a network of retailers spread across the country and over 1,000 pumps were sold at a cost of \$75-\$125. Similar ventures with local manufacturers have started in Burkina Faso, Malawi, Senegal and the United Republic of Tanzania.

### **Public-Private Funding Brings Water to West African Villages**

The West Africa Water Initiative, worth nearly \$41 million, is a public-private partnership to provide potable water and sanitation to rural villages in Ghana, Mali and Niger. The initiative is a partnership between the Conrad N. Hilton Foundation (providing \$18 million over 7 years), USAID, World Vision, UNICEF, WaterAid, the Lions Club International Foundation, the Desert Research Institute, Winrock International, Cornell University's International Institute for Food, Agriculture and Development and the World Chlorine Council.

By 2008, the partners expect to have provided Ghana, Mali and Niger with a minimum of 825 new water boreholes, 100 alternative water resources and 9,000 more latrines, reaching more than one-half million people. In addition, thousands of adults, children and teachers will be instructed in safe hygiene and sanitation practices.

### **Preventing Floods on the Yangtze River**

In 1998, devastating floods on the Yangtze — Asia's largest river with a length of 6,300 kilometres — affected an area of 25.78 million square kilometres, killing 3,656 people. The floods swept away 5.7 mil-

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lion homes and damaged a further seven million, led to the relocation of nearly 14 million people and cost up to \$31 billion in economic losses to industries such as agriculture. UNEP identified three key environmental factors that significantly aggravated the impacts of heavy rains: sharp declines in the water-retaining capacity of forests and grasslands due to deforestation and overgrazing; decreases in water-storing capacity in the middle and lower reaches of the river due to loss of lakes and wetlands; and silting up of the rivers and wetlands in the Yangtze basin as a result of rising rates of erosion.

A \$10 million project, coordinated by the China State Environmental Protection Administration (SEPA) and UNEP, aims to restore thousands of lost lakes and natural drainage systems so that the river, whose banks and basins are home to 400 million people, can cope better during times of heavy and prolonged rains. The project, which has completed its pilot phase and will enter its main phase in mid-2003, also plans to restore natural forests, grasslands and other key habitats in the upper and middle reaches of the Yangtze to reduce soil erosion and soil sweeping into the river. Experts believe such schemes will not only increase the volume of water the Yangtze can hold, but may help fight global warming by absorbing carbon dioxide from the atmosphere.

Some important actions have also been taken since the floods of 1998. In Sichuan Province a logging ban was introduced and loggers were re-employed to plant trees and cultivate forests. The scheme has targeted land degraded by deforestation and inappropriate agriculture on steep mountain slopes that are most prone to erosion. Farmers have been compensated for loss of income.

### **Engineering Wetlands in Egypt**

Sediments and pollutants from municipal, industrial and agricultural sources in Egypt are worsening the water quality of the Nile, threatening the health and livelihood of millions of people as well as the

### **WATER CONSUMPTION: SOME FACTS**

- ◆ There is a wide gulf between the rich and the poor in terms of water use. People in the industrialized world use an average of 400-500 litres of water each day. People in developing countries are considered to have access to freshwater if they are able to obtain 20 litres of water per person a day within one kilometre walking distance from the household. In many areas, people have to live with less.
- ◆ One flush of a toilet in the developed world uses as much water as the average person in the developing world uses for a whole day's washing, cleaning, cooking and drinking.
- ◆ People living in the Kibera slum in Nairobi, Kenya, pay up to five times more for a litre of water than the average American citizen.

Mediterranean Sea ecosystem. The Lake Manzala engineered wetlands project uses an affordable, relatively simple and efficient technology that traps the sediments and pollutants in a two-acre area. The \$4.5-million project is supported by the United Nations Development Programme (UNDP) and the Global Environment Facility (GEF).

### **Recycling Water in Sugar Factories in Mexico**

Sugar production from cane can use large quantities of water. At the San Francisco Ameca plant in the State of Jalisco, Mexico, as many as 111 cubic metres of water were used for every ton of sugar produced. After an intensive review – under the CLEANSUGERTEC programme run by the UN

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## SANITATION FOR A HEALTHY FUTURE: SOME FACTS

- ◆ In China, India and Indonesia, twice as many people die from diarrhoeal diseases as from HIV/AIDS.
- ◆ Diarrhoeal diseases have killed more children in the past ten years than all the people lost to armed conflict since World War II.
- ◆ Of the 200 million people in the world infected with the worm that causes schistosomiasis, some 20 million suffer severe consequences. The disease is still found in 74 countries. Studies show that the disease has been cut by 77 per cent in some areas through providing better water and sanitation.
- ◆ To serve the additional 5 billion people expected to live on the planet by the year 2050, there is a need to provide sewerage facilities to 383,000 new customers every day.

Industrial Development Organization (UNIDO) — action was taken to recycle water and minimize waste. The net effect was to reduce water consumption to only 5 cubic metres per ton of sugar, a reduction of over 93 per cent. Further, the pollution entering the water was cut by 20 per cent. This had a significant impact, considering that during the annual harvest season, the plant processes 4,800 tons of sugarcane and produces about 500 tons of standard sugar each day. In between the harvests, a series of technical improvements was made, including: segregating sewage from process waste-water; reducing discharges of oil or grease into drains; and installing cooling ponds to hold water and make it available for recycling.

### A Village in Malawi Invests in Freshwater

To support a broader goal of strengthening local governance, the UN Capital Development Fund

(UNCDF) and UNDP worked with the Government of Malawi to develop pilot projects for participatory planning and financing of district-level capital investment. The development committee of Malizani village, a community in the western district of Mchinji, decided to spend a portion of their resources from the District Development Fund on a new freshwater system. In addition to having access to clean water, life has improved in many ways for the Malizani villagers. “We have fewer diseases, cleaner clothes and happier faces,” said Ellen Sanga, the chairperson of the village’s development committee.

### South Africa’s Success Story

In 1994, when the new democratic government came to power in South Africa, some 14 million people, out of a total population of 42 million, lacked access to clean drinking water. The 1996 constitution declared that access to sufficient water is a human right, and a subsidy was given to local governments to ensure affordable basic water supplies. By 2001, the number of those without access to clean water was reduced to 7 million. If the present targets are met — according to the South African Minister for Water Affairs and Forestry — everyone will have clean water by 2008.

Action on sanitation was not as successful, and a cholera outbreak in 2000 was a wake-up call. Some 49,000 latrines serving 400,000 people were constructed, and an ambitious target of providing sanitation for all by 2010 was adopted. A multisectoral approach was set in place to coordinate efforts in health, education, housing, public works, local government and environmental affairs, backed by a major increase in public expenditure. The women’s movement, NGOs and local businesses were also mobilized. Hygiene awareness and changes in public attitudes are now recognized as essential in preventing the spread of water-borne diseases.

South Africa’s example has inspired others to try to replicate this experience Africa-wide through the New Partnership for Africa’s Development (NEPAD) and regional bodies.

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## SHARING WATER RESOURCES: SOME FACTS

- ◆ There are 263 watersheds that cross the political boundaries of two or more countries. These international basins cover 45.3 per cent of the land surface of the earth, affect about 40 per cent of the world's population, and account for approximately 60 per cent of global river flow.
- ◆ A total of 145 nations include territory within international basins. Twenty-one nations lie in their entirety within international basins.
- ◆ Nineteen river basins are shared by five or more countries. One basin – the Danube – is shared by 17 nations.
- ◆ Despite the potential for conflict, the last 50 years have seen only 37 acute disputes involving violence. In the same period, 157 treaties were negotiated and signed. Disputes are generally between tribes, water-use sectors or states/provinces. In modern times, there has been no war fought over water resources. In fact, one has to go back 4,500 years to find the single historical example of a true "water war" – a dispute between the city-states of Lagash and Umma on the Tigris-Euphrates.

### **The Water, Sanitation and Hygiene (WASH) for All Initiative**

The Water, Sanitation and Hygiene for All campaign (WASH) is a concerted advocacy and communica-

tions campaign to mobilize political awareness, support and action to end the suffering of the 1.1 billion people without access to safe water, and the 2.4 billion without adequate sanitation. WASH focuses on teaching basic sanitation and hygiene to school children and communities with an emphasis on girls' education, as a necessary complement to the success of water and sanitation infrastructure projects. Working in more than 30 countries, WASH is coordinated by the Water Supply and Sanitation Collaborative Council (WSSCC) through the UN Department of Economic and Social Affairs.

### **Sharing the Nile's Waters**

How to allocate the water resources of rivers that run through several countries is a highly complex and politically sensitive issue involving questions of national sovereignty. For the countries that share the Nile River basin, a UNDP-supported project aims to define an acceptable framework for cooperation that will pave the way for equitable and legitimate use of the Nile. This on-going \$3.2 million project started in 1997 with a series of dialogues and workshops. Two study teams were formed – to tackle legal/institutional and data/technical issues – in order to prepare national reports. Important compromises have been made in the draft framework, but some important issues remain unresolved. The key to successfully resolving transboundary water issues, UNDP has identified, is establishing a dialogue, ownership of the process by the countries who must share the resources, and long-term trust of outside institutions involved.

*For more stories about water and sanitation projects, see [www.un.org/works](http://www.un.org/works).*

