INTERNATIONAL ANGLICAN FAMILY NETWORK

WATER AND THE NEEDS OF FAMILIES

Collecting water from Lake Kariba, Zambia. *Photo: Harvest Help.*

EDITORIAL

> We thank you, Almighty God, for the gift of water to sustain, refresh and cleanse all life. Over water the Holy Spirit moved in the beginning of creation, Through water you led the children of Israel from slavery in Egypt to freedom in the promised land. In water your Son Jesus received the Baptism of John and was anointed by the Holy Spirit as the Messiah, the Christ, to lead us from the death of sin to the newness of life.

These words, taken from an Anglican Baptism service, make clear the importance of water both as a source of life and a Christian symbol. For those living in rain-drenched countries, imagination is sometimes needed to grasp the importance of water. But in many parts of the world, water is a matter of hard labour and survival. As articles written by expert contributors from USA show, the global water situation concerns us all. It should particularly concern Christians.

> "Wherever there are water shortages, accessibility problems, or pollution within a country, it is the poor who suffer most." Joanne Green, Public Policy officer, Tearfund.

We all know the importance of water in sustaining our physical bodies, yet in the twentieth century the industrialised countries have come to take it for granted. Although water is a renewable source, we are using it faster than it is being naturally replenished. The reasons for the dramatic increase in water usage in the last century are the enormous population growth, industrial development and the expansion of irrigated agriculture. Water is not only fundamental for our physical bodies it has enabled countries to modernise and improve standards of living. Simultaneously, increased industrial activity has caused pollution of the water supply, although in developed countries this problem is being remedied.

A recent UN Environment Programme report, *GEO – 2000*, stated that "full-scale emergencies" now exist as a result of water shortages, land degradation, tropical forest destruction, species extinction, overfishing and urban air pollution. It argued that in the next 25 years the world would begin to run out of fresh-water and water wars over scarce resources could spread across a wide belt of North Africa, the Middle East and Asia. This theme is echoed in a book entitled *Water Wars*[1], which points out that water is already an important cause of tension. For example, Egypt, dependent on Ethiopia for the source of the Blue Nile, has made clear that it will fight for its interests and much strife in the Middle East is rooted in water. The author suggests that there are some signs of hope:-

- America has reduced its overall water consumption by 35% since 1950 and by 9% between 1980 and 1995.
- Israel now reuses 70% of its sewer water, while the Florida town of St Petersburg recycles 100%.
- Desalination is a further option – expensive, but a scheme to supply fresh water to 100,000 people costs only as much as a fighter plane.
- Population control as women choose – and are able – to have fewer children is another way forward.

In almost every country, projects have been undertaken to deal with the scarcity and better use of water. Most of the main international aid and support agencies, such as the World Bank, the World Health Organisation and the Food and Agriculture Organisation of the United Nations, are involved in assisting countries in the developing world to improve water and sanitation. In addition, many charities are making water one of their greatest priorities and many churches have made donating to such charities a cornerstone of their Christian giving. In March 2000, the World Water Forum, an organisation comprised of governments, NGOs, the UN and

business, will set crucial international targets regarding water resources. It will try to start making the vision of the sustainable use of the earth's water into a practical reality. A vital part of the process is the on-going consultation with regions and local communities via the Global Water Partnership network. It is hoped that this event will help generate the political will necessary for the paradigm shift in the use of water needed to avoid a nightmare scenario.

The understanding of the Christian Church, shared by other world religions, is that water is a gift of Creation. It is a symbol of life and a sign of hope. All of us, in water-rich countries as well as in countries where its importance needs no imagination, must share responsibility for ensuring the wiser use and appropriate conservation of water.

[1] *Water Wars* by Marq de Villiers, (Wiedenfield and Nicholson) information from review by Colin Tudge in *The Times* July 29th 1999.

Some of the information in this editorial comes from articles by Ian Sinclair, Consultant, Severn Trent Water International, and Joanne Green of Tearfund.

If you are interested in joining the consultation process for the World Water Forum please contact: The Vision Management Unit, World Water Council, c/o UNESCO, Div. of Water Sciences, 7 Place de Fontenoy, 75352, Paris, FRANCE

ADEQUATE SUPPLIES OF CLEAN WATER: AN ESSENTIAL FOR A QUALITY LIFE

"All peoples… have the right to have access to drinking water in quantities and of a quality equal to their basic need."

(UN Water Conference, La Plata, 1977)

Unkempt drainage system.

Fresh Water Needs: Humans, Agriculture, Commerce, Industry and Power Generation

The availability of fresh water is essential to life. The fresh water must be sufficient in both quantity and quality. The Earth is a water planet and over 1,360 million cubic kilometres of water are present on this globe. Yet many men, women and children do not have enough clean water to survive. Why?

Even in a temperate climate, human beings require a litre of water each day, or 0.35 cubic metres per year, to sustain life. After five days without water, human life cannot be sustained. For long-term survival an adequate food supply is needed. To grow an adequate cereal diet for one human being for one year requires about 400 cubic metres of water per year. A family also needs water for washing, cooking, sanitation and health. The UN has estimated an adequate water supply for a household is 100 litres per person per day or 35 cubic metres a year. It would seem easy to supply this amount of water for what we call domestic purposes. In Malta, one of the driest countries in the world, rain can provide about 70 cubic metres of water per person per year. Canada, the most water-rich nation on the Earth, can supply almost 122,000 cubic metres per person per year.

Water is needed for more than just the household, however. Water is needed for agriculture, commerce and industry. Hydroelectric power production needs water to drive the turbines. Water is needed in great quantities for cooling purposes when power is produced by coal-fired plants. The water needed for industry and power production is almost four times the amount of water needed for domestic purposes. Livestock and agriculture, which provide the major source of protein for families, require about half the amount needed for domestic use. All told, the UN has estimated that annual water needs around the globe are over 4,430 cubic kilometres per year.

Water for human consumption must be supplied from the freshwater resources that exist in nature, in surface waters, rivers and streams and in accessible groundwater. 97% of the water on the earth is saltwater in the oceans. Much of the rest of the water is locked in glaciers and therefore inaccessible water deep in the ground. Therefore only about 40,000 cubic kilometres of fresh water is available to meet human needs. While that is a little less than 100 times what is needed, one would assume that finding sufficient amounts of fresh water for everyone should not be a problem.

Water Availability: Quantity and Quality of Fresh Water

Sufficient supplies of fresh water are a problem of both quantity and quality. Water is unevenly spread around the globe and much of it is polluted and made unclean by the activities of the very people that need it. While having less than 6% of the earth's population, South America has almost 25% of the world's accessible fresh water, providing almost 35,000 cubic metres of fresh water per person each year. Asia also has 25% of the world's water, but has 58% of the population. In Surinam, almost 500,000 cubic metres of fresh water is available for each person per year; in Jordan, only 160 cubic metres is available for each person each year. It is clear that, while water is abundant for some people, others do not have enough to survive.

The problem of the availability of fresh water is compounded because much of the water is polluted and made unfit for human consumption. The pollution comes from many sources. The pesticides and fertilisers used in agriculture are washed into the rivers and streams by rain. The rain on city streets pours oil, metal compounds and other debris into the rivers. Poor or non-existent domestic sanitation is a significant problem in the developing world and human excreta pollutes much of the available freshwater. Unfortunately, the worst pollution of fresh-water occurs in the developing world that has the least amount of water available to its families. A few examples should suffice. An estimated 80% of all diseases and over one-third of deaths in developing countries are caused by the consumption of contaminated water, and, on average, as much as one-tenth of each person's productive time is sacrificed to water-related diseases. Despite a decade of UN effort to change

the problem, one in three people in the developing world lack safe drinking water and sanitation. The non-availability of water supplies of suitable quality is also a significant limitation to livestock production in many countries; improper disposal of animal waste can result in pollution of water supplies for both humans and animals.

Solutions: Responsible Stewardship of the Earth's Waters

The solutions to the problem of insufficient quantities of clean fresh-water are jointly shared by government and by the individual. Everyone has a responsibility. Government's role was clearly defined in 1993 at the UN Conference on Environment and Development in New York. The Conference recognised that "Water is needed in all aspects of life. The general objective is to make certain that adequate supplies of water of good quality are maintained for the entire population of the planet…". Among the many responsibilities of government, both at the national and local level, all nations should:

- adopt measures for the protection and conservation of potential sources of fresh-water supply with land-use planning, forest resource utilisation, protection of mountain slopes and riverbanks;
- establish protected areas for sources of drinking water supply;
- when the money is available, construct and expand sewage treatment facilities and drainage systems;
- establish programmes for the control of waterborne diseases;
- provide broad-based education programmes, with particular emphasis on hygiene.

Water and Human Activity

Individuals can help by their own actions. Most importantly, they should take responsibility for the sanitary disposal of domestic excreta and sewage. Often governments cannot provide appropriate sanitary facilities, either because of the lack of financial resources or the remoteness of parts of the population. If that is the case, innovative measures by the individual and village can provide the same result. In one part of Africa, a compost toilet was introduced for individual use. Costing pennies a day, these compost toilets eliminated the disposal of sewage into the river and had the added benefit of providing fertiliser for agriculture. The individual could sell his waste and actually earn more money while protecting the river. Innovative ideas by individuals sometimes can be the most effective solution. Farmers can keep their livestock away from rivers and streams to keep the animal waste to a minimum; water can be brought to the animals rather than bringing the animals to the water. Natural vegetation acts as a filter for water, removing most pollution from the water before it reaches the river or stream; the natural vegetation on the edges of rivers and streams for about 20 metres should not be cut even when it provides marginally more land to farm.

Water and Leadership by Religious Institutions

Religious institutions can also play a significant role in ensuring adequate supplies of clean water are available. First and foremost, Churches and Christians must help to educate the people by word and deed. They must show their members what they can do to protect themselves and the people who use the sources of water after them. Using the network of religious institutions, from the village place of worship to the Province, an entire country's water can be partly protected by individual actions. The religious institution can also be a strong advocate to influence government in meeting its responsibilities of stewardship of water sources. The Churches, with their moral authority, must make the needs of the people known to the leaders of the nation and insist that proper water protection policies be put in place.

World Water Needs and Human Survival

Where water scarcity exists, special care must be taken to ensure the family's needs are met. This means using the water wisely and taking every possible measure to conserve the water. It also means disposing of waste and effluent wisely and taking every possible measure to keep water clean. Responsible stewardship of the world's water takes the concerted effort of governments, individuals and religious institutions to make that a reality. Human survival depends on a worldwide commitment to hold God's waters in trust for the world's people.

Contact Person: Dr Stephen Draper, Transboundary Tasking Committee, American Society of Civil Engineers, Atlanta, Georgia, USA.

WATER FOR FOOD

Growing the food needed for a nutritious but low-meat diet for one person for a year takes about 1,100 cubic meters (nearly 291,000 gallons) of water. In humid climates, rainfall delivers virtually all this needed moisture to the soil. But in less humid regions and in those with distinct wet and dry seasons, a portion of the needed moisture must be supplied by irrigation. If 40% of the water required to produce an acceptable diet for the 2.4 billion people expected to be added to the planet over the next 30 years has to come from irrigation, agricultural water supplies would have to expand by more than 1,750 cubic kilometres per year – equivalent to roughly 20 Nile Rivers, or 97 Colorado Rivers.

It is not at all clear where that water could come from on a sustainable basis. Over the last five years, certain constraints have become more pronounced. Per capita irrigated area, for example, has continued to decline, having fallen 7% from its 1979 peak as population growth outpaced the spread of irrigation. As much as two million hectares of irrigated land – an area a bit larger than Kuwait and equal to nearly 1%

Water-hole where, until the provision of wells, villagers would share the water with the cattle. *Photo: Christian Aid/Jean Robinson.*

of world irrigated area – comes out of production each year because of waterlogging and salinisation of soils. With additional irrigated land being lost to urbanisation, it has been concluded that "the net growth of irrigated area in the world has probably become negative."

Groundwater overpumping – another unsustainable practice – continues to plague future food production in some of the world's most important crop-producing regions, including the US High Plains, California's Central Valley, the north China plain, and portions of India. In India's Punjab, for example, where a highly productive rice-wheat cropping pattern has turned the region into the nation's breadbasket, water tables are falling 20 centimetres annually over two-thirds of the state. According to researchers at Punjab Agricultural University, "questions are now being asked as to what extent rice cultivation should be permitted in the irrigated Indo-Gangetic Plains, and how to sustain the productivity of the region without losing the battle on the water front."

Agriculture is also losing some of its existing water supplies to cities as population growth and urbanisation push up urban water demands. Worldwide, the number of urban dwellers is expected to double, to five billion, by 2025. Pressure to shift water from farms to cities is thus bound to intensify as is already happening in China, the western United States, and other water-short areas.

Casting a disturbing shadow over all these trends is the fact that limited water supplies combined with population growth appear to be eliminating the option of food self-sufficiency in more and more countries. At runoff levels below 1,700 cubic metres per person, food self-sufficiency is often highly problematic, if not impossible. Of the 28 countries in Africa and the Middle East that are at or below this benchmark, 19 already import at least 20% of their grain. As populations grow, more countries will join the water-stressed list, and those already on the list will acquire more people. Thus, dependence on grain imports is likely to deepen and spread. By 2025, Africa and the Middle East alone will have more than 1.3 billion people living in water-stressed countries, up from 380 million today. In Asia, India will join the list by 2025, and China will only narrowly miss doing so by then.

All told, as many as 3.6 billion people could be living in countries where water supplies are too limited for food self-sufficiency. This raises some important questions. How much grain will these countries collectively need to import? Who will supply that grain, and at what price? Will importing countries, particularly those in Africa, be able to pay that price? With more than one billion people living in acute poverty and some 840 million people lacking sufficient food even in today's world of 5.8 billion, avoiding these issues could have severe repercussions in a world of 8 billion.

An all-out effort to raise the water productivity of the global crop base – both irrigated and rained – is urgently needed. This will take more widespread use of conservation technologies and methods – from drip irrigation to soil terracing – which will only come about with changes in policies and incentives. Urban wastewater could become an important supply for agriculture, since it will be one of the few sources that is both increasing and reliable. Treated wastewater now accounts for 30% of Israel's agricultural water supply, for example, and this figure is expected to rise to 80% by 2025. Better matching of crops to varying qualities of water and the breeding of new varieties that are more salt-tolerant, water-efficient, or drought-resistant, will be critical to sustaining crop production in the new era of water constraints, especially if the "wild card" of climate change brings on more drought. The development of new grain varieties will not happen overnight, however, or without stepped-up public-sector commitment.

Many countries still do not have a clear picture of water-food linkages, and thus are not taking the actions needed to secure their agricultural bases – whether this be limiting the construction of golf courses, as Vietnam and China have done; rehabilitating salinised soils; improving the efficiency of irrigation systems; or moving to secure equal land and water rights for women, the lack of which is thwarting human development and agricultural productivity in many parts of the world.

Contact Person: Sandra Postel, Director, Global Water Policy Project, Amherst, Massachusetts USA (Reprinted by permission from "Last Oasis, Facing Food Scarcity", *Worldwatch Institute*)

Fighting Waterborne Diseases

Around the world, millions are threatened by little-known illnesses because they lack access to health education and simple treatment methods.

For more than a decade, the Carter Center, USA, has worked to eradicate or control certain diseases in Africa and other regions. Guinea worm disease (dracunculiasis), which causes painful skin sores and possible crippling, is one dramatic example. People become infected with this parasitic disease by drinking stagnant water contaminated with tiny crustaceans carrying Guinea worm larvae. Once ingested, the larvae develop into adult worms as long as 3 feet. A year later, threadlike worms emerge through painful blisters on the skin. People can prevent the disease by filtering their drinking water, treating it with a non toxic larvicide to kill larvae, or drilling bore hole wells for fresh drinking water. To date, the Center and its international partners have wiped out 95% of all cases of Guinea worm, which will soon make it the only disease besides smallpox to be eradicated.

Building upon its success with fighting Guinea worm, the Center is tackling a second waterborne disease – schistosomiasis. The Center's battle against

A boy with Guinea Worm. *Photo: The Carter Center.*

schistosomiasis recently began with a pilot project in Nigeria. Often called "snail fever," it is the "second most important parasitic disease in tropical countries, after malaria, because of its impact on rural economies and public health," explained Dr Don Hopkins, associate executive director of The Carter Center. "People become infected when bathing or swimming in water contaminated with parasitic larvae that emerge from certain snails. These larvae then penetrate the skin. During its lifetime, the parasite lays thousands of spiny eggs that tear and scar human tissue in the intestines, bladder, liver and lungs." The result is chronic debility and sometimes premature death. Children aged 5-14 are often victims of the disease. Experts estimate that half of the 200 million people infected with schistosomiasis live in Asia. However, more than 70 countries are affected, including regions of Asia and South America. Fortunately, schistosomiasis can be treated with one annual oral dose of medicine called praziquantel. Controlling the disease, therefore, depends on first acquiring the drug, and then helping remote villages implement effective health education and drug distribution programmes.

The success of our existing health programmes gives the Carter Center a firm foundation upon which to build our new public health efforts," said former U S President Jimmy Carter. "Each new programme also will work with governments, health workers, and villagers to establish community-based health education and treatment programmes. Carter Center field staff will continue to emphasise training and supervision of local village health workers."

Contact Organisation: The Carter Center, Atlanta, Georgia, USA

UGANDA

Rev'd. Charles Biryatwita at one of the protected springs he has helped to set up in Kigezi Diocese, Uganda. *Photo: Ann Smitham.*

According to an evaluation report and the subsequent basic line study carried out in the diocese of Kigezi, it was revealed that 70% of the diseases affecting the people in the area are preventable. There is lack of knowledge of good health practices, overcrowding and inadequate income in many families, and inadequate clean water sources and poor sanitation in many homesteads.

It is with this background that the Diocese has encouraged Primary Health Care Programmes in seven Government Parishes to extend its service to other areas.

Kigezi is endowed with a lot of water in all its valleys. The region experiences high rainfall (about 950mm per year). Some people live up in the mountains far away from water sources.

Investigations have revealed that many people are using contaminated water which is a risk to their health. Most preventable communicable diseases in rural areas are often water-related. Provision of clean water resources such as protected springs and wells, as well as harvesting rain water, would redress the health situation. Gravity water schemes are the main goal of this plan.

The provision of clean drinking water is not enough. Communities must also live in clean environments with proper pit latrines with concrete water disposal. These can combine to attain a desired level of safe water and good health.

Objectives of the Programme

- To provide safe water within a minimum walking distance and readily accessible.
- To save valuable time and energy spent in travelling long distances in order to use this energy in other profitable ventures.
- To improve sanitation and hygiene for maximum health benefits.
- Improvement of nutritional status.

Justification for implementing the programme

Water here is not a problem, the problem is how to make it safe and bring it nearer to the people. Gravity water flow is feasible in this region. However, some people live in the mountains far away from water sources. The solution to this would be rainwater harvesting at a communal level and in individual households: thus the provision of tanks and rainwater jars.

Many diseases acquired from our environment are due to lack of clean drinking water and an unhygienic environment. Community Health Workers, through home visiting and health education and mobilisation of community efforts, will provide clean drinking water by digging wells, protecting water sources and teaching people to boil water from unprotected sources. The Health Workers educate people to improve their homesteads and waste disposal in order to improve hygiene. Since sanitation is still generally poor, a lot of health education at village level is a necessity.

Contact Person: Rev Charles Biryatwita, Co-ordinator Health Services, Diocese of Kigezi, P.O. Box 3, Kabale, UGANDA

NDEEBA SLUM: "WATER FOR THE THIRSTY" PROJECT

Ndeeba slum community in Kampala City, Uganda, has numerous sanitation problems of which a major one is lack of access to safe water sources. Because of this unpleasant environment, Our Lord's Children's Mission initiated a "Water for the Thirsty" project to help these God's people in Ndeeba slum community get safe piped water for their families. The Project is at its infant stage and needs continued support from all God's people on Earth to make it complete. This project was started in accordance with Our Saviour Jesus Christ's message in John 4:14 and the dire need for water in these slum families.

Many children in this slum die of so many waterborne diseases which are preventable once the community is supplied with safe water sources. The project is striving to set up eight water stand pipes for the first phase. The entire community needs 20 stand pipes to help with obtaining safe water.

As you read, you, or someone you know, is the person we need today to help us continue volunteering our efforts towards improving the poor living conditions of Ndeeba slum people. A visit to our community is welcome.

Contact Person: Nurse Jane Nakitende – Kigono, Project Manager, PO Box 30362, Kampala, UGANDA, Fax (00) 256 41 236114.

ETHIOPIA

Scratching the Earth for Water

Kawesa Kusse has to walk for two hours to the dry river for water. When she gets there, she and her friends spend the whole day patiently scratching the riverbed for water which they know will eventually seep through the sand. She has been doing this for months now, because the region in Ethiopia where she lives is experiencing a severe drought.

Konso, in southern Ethiopia, is a beautiful place. The Konso people are well-known throughout the country for the terraced landscapes which sculpt the hillsides. People from far and wide come to learn how to conserve water the Konso way, through methods of terracing handed down through generations.

Photo: Christian Aid/Sophia Mwangi.

Waiting for water in dry river bed, Ethiopia.

Today there is no water to conserve, and the terraces are parched. Drought and crop failure has devastated the land and the people. In 1997, the rains on which the Konso people depend from February to March came late and the crop failed. Torrential out-of-season El Nino rains followed, and destroyed the terraces. In 1998 there was no rain, and the crops failed again. There have been few crops in the past three years.

Yet the Konso people still have faith and everywhere I travelled I saw men and women clearing the dead sorghum and maize stalks and preparing the land "just in case it rains".

If there is rain at the beginning of next year, then they can expect a harvest in June. Until then they will have to rely on food aid, and children like Kawesa will have to continue scratching the river bed for water.

Contact Person: Sophia Mwangi, Christian Aid, P.O. Box 100, London SE1 7RT, ENGLAND (Extracts from article first printed in Church Times, Sept 17 1999)

WATERAID

Editorial Note

Early in the 1980s, the water industry in Britain started the charity WaterAid to foster better water supplies and sanitation in developing countries. It is supported by water customers, by individual churches and other groups, and by the Government.

WaterAid works to help the world's poorest communities in Africa and Asia provide themselves with a safe, clean water supply and improved hygiene and sanitation.

Water is life's most precious resource. But a quarter of the world's population does not have safe water to drink. Every minute, 10 people in developing countries die from water-related diseases. There are two billion people in the world who lack adequate sanitation. It is estimated that at any one time half of the world's hospital beds are taken up by people suffering from disease associated with dirty water and poor sanitation.

But disease is only part of the problem. Throughout the developing world women and children can spend hours every day collecting water weighing up to 20 kg – the equivalent to an overseas luggage allowance. They carry these containers on their heads causing back and neck problems. This task is not just exhausting, it uses up valuable energy and leaves little time to do any other work or to go to school. There is no time off from this task. If a woman is pregnant or unwell, she still has to collect water, as without it her family will die from dehydration. She can only hope that the water she does bring home does not contain the diseases that kill over five million people a year.

Since its conception, WaterAid has been providing sustainable solutions to the problem of the lack of safe water and effective sanitation. It uses low-cost technologies appropriate to local conditions, and involves communities in the planning and construction of their new water supplies.

Appropriate technology is most often a traditional hand-dug well. These are usually constructed by members of the benefiting community with the help and supervision of WaterAid's partners. A basic hand pump is then used by the villagers to access the clean water.

WaterAid does not implement the work themselves. They empower partner organisations in the countries they work in. These partners can be local governments or Non-Governmental Organisations (NGOs) like the Ethiopian Orthodox Church. The Church is an extremely influential organisation in rural Ethiopia.

Initial contact with a community is often made first through the local church. Members of the clergy then act as facilitators for WaterAid.

They help to mobilise the community members for planning meetings and later encourage people to contribute their labour, time and money to the scheme.

Pouring safe water. *Photo: WaterAid/Caroline Penn.*

By training villagers in repairs and maintenance, as well as working in partnership with local organisations who are best placed to understand the villagers' needs, WaterAid is able to provide long-term solutions.

It is also important that people understand hygiene and sanitation practices. There is no use in people having clean water if they do not know the importance of handwashing and disposing of faeces safely. That is why all WaterAid projects are integrated with water, sanitation and hygiene promotion.

Through these integrated projects WaterAid, to date, has helped over five and a half million people achieve lasting health improvements and a better quality of life.

WaterAid's vision is of a world where all people have access to safe water and effective sanitation.

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TANZANIA

Paying for clean water. *Photo: WaterAid/David Walker.*

Water Supply Partnerships in Tanzania

WaterAid works with partners in Tanzania to improve water, sanitation and hygiene. Its partners include local government, voluntary bodies such as the Tanzania Home Economics Association (TAHEA) and KINNAPA (with the Maasai people) and the development departments of the Anglican Diocese.

For example, a recent programme implemented by the development department of Tabora Diocese covers integrated water supply, sanitation and hygiene education for 32,000 people in eight villages. For a typical village, this might include eight projected boreholes with handpumps, 150 latrines, and the training of 50 hygiene promoters. WaterAid provides all the imported materials and pays for management and training. But this is the outcome of the following process.

First, a representative village water committee has to define its needs to the Church development team. It will appraise these needs with the community on the ground and put a proposition to WaterAid, who will check the technical aspects and will wish to see an on-going maintenance agreement. WaterAid will supervise outside contractors and will support the training programme. Led by the development team, the village people will carry out the unskilled construction work, and through their own water fund will meet the cost of pump maintenance.

For years, people have asked whether the same spirit of self-help can be developed in the peri-urban communities which surround many cities, where families can find only a shack, and unity and compatibility are inevitably less. Now the opportunity to answer this question has arisen in Dar es Salaam, where several emergency boreholes have remained untapped.

With support from the UK Government, and district government in Temeke, Tim Ndezi of WaterAid's Tanzania team started work 12 months ago to facilitate community water supplies from unused boreholes. This first involved the appraisal of needs and detailed planning with local people, especially the women who are more familiar with the existing problems. District government workers and local artisans did the skilled construction work, local people shifted materials and dug trenches, and Water Aid paid for cement, pipes and fittings. The outcome, so far, is that three communities with a total population of 15,000, for the first time have safe and continuous water supplies. Three elevated storage tanks and fifteen standpipes have been provided at a cost of about £30,000.

The effectiveness of hygiene promotion has already been demonstrated by the clearance of garbage from drainage ditches, pump and tap maintenance programmes have been worked out, and another 20,000 people will benefit soon. Thus the people of Temeke have demonstrated the same spirit of self-help as village people.

As in other places, the continuing provision of a healthy environment will depend on effective partnership, involving enthusiasm of local people, support from government and encouragement from outside friends.

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Diocese of Western Tanganyika

The normal sources of water in our diocese are rivers, swamps, shallow wells, springs and Lakes Tanganyika and Rukwa. Most families get their water by draw and carry system, except for urban people who get relative services of piped water. Even in towns there is no reliable water supply system and it is quite common to find dry taps. When such a shortage of water occurs in towns, people fetch their water from the above mentioned sources. It is the duty of women and the youth to provide water for the families. In the dry season, water is clean but unsafe. During the rain season, water is both unsafe and soiled.

There is a national water programme to provide water for all by the year 2000! In our Diocese, the goal is to provide clean drinking water within 400 metres of each household by 2000. But the goal seems unachievable since only about 45% of the programme has been done for the last 15 years.

The need of water in homes for families practising improving dairying is increasing. A family of five to ten people, keeping about two dairy cattle, may need 300 to 500 litres of water per day. Improving housing schemes which encourages people to make bricks has also increased water needs. Brick (adobe) making needs about 3,000 to 5,000 litres of water per day for an average family.

Environmental degradation brought about by rapid deforestation, climate change and reduction in rainfall, are some of the factors contributing to conspicuous water shortage. Soil erosion is an apparent cause of pollution of our rivers and other sources of water. We think that the encouraged continuous use of chemical fertilizers might well be polluting our water. Treatment for waterborne diseases is expensive which makes people live in poor health conditions. Families with poor health do not cultivate sufficient land to grow food.

The Diocese works with the Government and other organisations to train people in primary health care, particularly the boiling of drinking water before use. We also encourage people and their children to attend health centres for check-ups and treatment. The Diocese is fully involved in an environmental rehabilitation and protection campaign by training people in the importance of planting trees to protect water sources: so that the precious water continues to be available to God's creation.

Contact Person: Mrs Margaret Mpango, Mothers' Union Diocesan President, P.O. Box 13, Kasulu, TANZANIA

ZAMBIA

St Michael's and All Angels, Kitwe is a Cathedral ministering right in the middle of the bustling heart of Zambia's second city. A major transformation has happened to St Michael's and All Angels through the supply of one basic resource – water. Until about four years ago, the Cathedral relied on the City Council for its supply, but this was at best erratic. The pressure was always low as the town centre, where St Michael's is placed, is at a comparatively high level. So the nursery school which operated from the Cathedral was in danger of closing as the toilets could not be maintained and the gardens around the church withered to become dust bowls. At around the same time, the Cathedral began to host the growing numbers of street children in the city twice a week for feeding. Without water, the only means of feeding the children was to offer snacks and soft drinks. It was also difficult for the resident priest. His house is adjacent to the church and water for washing and cooking had to be collected in containers almost on a daily basis.

Reliable water was not far away. The Cathedral is in close proximity to a mining township and the mines had a good supply. Unfortunately, the township is on the other side of the railway line and the Council could not give permission for a pipe to pass under the tracks.

Then in 1994, at a meeting of the Zambia Anglican Council, it was agreed that some assistance would be provided to the Cathedral and also to the Bishop's residence. Contractors began work to install a bore hole, pump and water tank. Since then the Cathedral has been blessed with water. The water has always been there deep under the surface. Kitwe experiences heavy rains between November and April, but in the dry season the water remains only hidden, never available. Today that situation is reversed.

Grass and flowers have been planted in the Cathedral grounds and there are plans to position benches so that people can enjoy sanctuary and peace in the midst of the city. Food for the street children is now cooked on site – as many as 250 children come during the week. Letting the church hall is easier now that water is available. And the priest no longer has to take a drive to have a bath.

Contact Person: Father Andrew Wickens, St Michael's and All Angels, Kitwe, ZAMBIA

Harvest Help
Ipongo Development Project.

This project has two themes: promoting sustainable farming and a well-building programme to provide much needed clean water for both humans and animals.

Work with the local association has managed to help more than 400 farmers at Ipongo reduce the risk of harvest failure. Funding from churches and others has enabled the team to build up storage bins on farms and introduce new crop varieties which need less rain.

Photo: Harvest Help.

Clean Water

Four wells were built last year and another nine are planned. Each well brings safe, clean water to hundreds of families who previously had to use water from rivers and streams. River water carries disease, and young children are particularly vulnerable to water-borne infections. More water also leads to improved diet as farmers, especially women, are able to irrigate vegetable gardens and provide a greater variety of food for their families, even in the dry season.

The wells are dug by hand, until the water table is reached. On one occasion this was 100 feet down. Cement is brought in and moulds are used to make the lining. A concrete apron is built around the well, to drain spilt water into a lower circular cattle trough. A wooden fence keeps the animals away from the main area to stop them fouling the water.

Visitors describe the scene at the Chinwangoba club well, near Ipongo: mothers with babies strapped to their backs were drawing clean water; other women had filled large drums of water and were resting and took the load on their heads before they walked home. Some men were also there, allowing their cattle to drink from the water trough. Children played nearby.

At the small Health Centre near Ipongo, water from another well was being used to wash blankets from the clinic after a small (but none the less tragic) cholera outbreak.

Masaiti Project

At Masaiti, several wells have been completed. The people of the nearby village had been drinking water from the stream and from contaminated shallow drinking holes.

The position worsened when charcoal burning was introduced in the area in the 1980s. Most of the forest cover was cut down to produce charcoal for sale. This resulted in the stream drying up before the next rainy season and the water table went further down, which meant deepening the water holes. Once water was found in this area, it was shared with animals such as goats and pigs, giving rise to health problems. A project was set up with the Ndola Rural Technician and Smallholder Farmers Association, Harvest Help and others, to supply safe drinking water to the village and water to support the communal forest nursery which the local people wanted to establish. This would grow seedlings such as fruit trees and local trees which are renowned for water retention, for reafforestation within the village.

In 1996 two local nursery groups were chosen to benefit from a wells programme. They organised a skilled two-man team to dig the well. The group worked hard: the well-liners were cast and cured; charcoal burning in the area was monitored and money raised by requiring charcoal burners to buy seedlings to plant at their farms and villages to replace those cut to produce charcoal. The income from this paid the well-diggers. The chair of one nursery group wrote:

> "In previous years we had been struggling with the great task of drawing water from the stream to water our nursery… Now, with your great help, we have put up this well which will strengthen our progress".

Contact Organisation: Harvest Help, 3-4 Old Bakery Row, Wellington, Telford, TF1 1PS, ENGLAND

LATIN AMERICA: Clean enough to drink!

In Latin America, Christian Aid supports a number of organisations concerned with water provision, health care, sanitation and the environment: two such organisations are in **Nicaragua** and **Peru**. The Office for Advice and Consultation on the Environment (OACA) in Peru helps communities in the Lurìn Valley to increase their access to clean water and sanitation facilities. In Nicaragua, the Community Movement of Matagalpa (MCM) helps communities repair and rebuild water systems damaged or destroyed by Hurricane Mitch. Both organisations emphasise the importance of providing education and training on water systems and sanitation as well as providing practical support, such as latrines, water systems and tree nurseries. They both meet the needs of families through work which includes the whole community.

Peru

The community of Rio Seco in the Lurin Valley live in an arid and impoverished area just beyond the shanty towns which surround the capital, Lima. Many people travel into Lima each day to work in the informal sector, selling sweets or cleaning cars at traffic lights. Despite all these difficulties, Rio Seco inhabitants are keen to carry out community-based labour in order to improve their village.

Over the past few years, OACA has identified water, sanitation and environmental needs of communities in the Lurìn Valley and looked for ways to meet those needs. The work includes supplying water and sewage facilities and providing education programmes to ensure that people understand the health implications and are able to maintain the systems once set up.

OACA provides tools and materials for communities to set up their own water and sewage systems: the community provides the labour for free. Working six-hour days in the blazing sun during their free time, the whole community gathers together to build what is necessary. In one project, everyone rallied together to build toilets and sinks for the local school. They also built a block of showers for which community members pay 50 centimos (10 pence) per shower in order to raise funds for the maintenance and repair of the water systems. A Rio Seco member states; "The local authorities did not provide us with water: they gave us the impression that we did not matter and that we did not deserve anything. But OACA provided us with training workshops; giving us talks on participation and unity."

Christian Aid feels that it is equally important to fund education and training work as well as infrastructure and training: after all, without the latter, the former cannot be maintained. By improving local knowledge and consciousness of the importance of adequate sanitation, and of domestic and personal hygiene, not only health but also the living standards of the communities are improved. Thus the focus is on health and hygiene as well as the provision of water services.

Nicaragua: Hurricane Mitch

In Nicaragua, another community-based approach to water provision is taking place. Hurricane Mitch hit Central America at the end of October 1998. In Nicaragua, Mitch killed approximately 4,000 people and left half a million homeless; infrastructure was damaged and 80% of agricultural production lost.

One of the most affected areas in Nicaragua was Matagalpa. When Hurricane Mitch struck, people didn't see the sun for seven days and it rained consecutively for four days and nights. Whole areas disappeared – three districts within the city were almost entirely evacuated. In the immediate aftermath of the hurricane, the MCM was quick to respond – buying and distributing basic food supplies to the local population and organising medical and health care for people forced out of their homes.

One of the priorities was to restore a clean water supply to affected areas to help prevent the spread of disease. But this was made difficult by the amount of rain that had fallen during the storm. It proved impossible to dig trenches because the land was so waterlogged; reconstruction was also hampered by thick mud. Originally, the repairs were provisional – in Apoyo al Combatiente, pipes were laid on the surface of the ground since it was impossible to dig into the deep mud. However, repairs have not only been completed now, but water systems improved in order to withstand future hurricanes. The MCM used higher quality materials for the repairs – galvanised pipes that could be dug much deeper into the soil. The new water systems were more costly than those damaged by the hurricane, but much better in the long term.

When Mitch struck, approximately three kilometres of tubes were destroyed and other pipes clogged up with debris. Christian Aid provided funding to buy better steel and PVC pipes and strong glue in order to ensure a clean water supply to communities. The reparation and cleaning was completed in just 12 days: 15 people worked on it every day to get it cleaned up as quickly as possible.

There is an enormous amount of work to be done in the wake of Hurricane Mitch. The key to the rebuilding efforts has been the organisation and mobilisation of the Nicaraguan people themselves. By providing them with essential basic equipment and supplies, the people of Matagalpa have been able to play an important role in the reconstruction of their own communities.

Through its work, the MCM mobilises the poorest and most marginalised sectors of Nicaraguan society to address a wide range of issues, such as health, employment, land rights, housing, education and children's welfare, through programmes of community self-action. For many communities, the MCM is the sole means of access to advice, information and services which ordinarily would be the responsibility of state institutions. Through encouraging the active participation and self-management of people in community development, the MCM injects a powerful dynamic into the neighbourhoods of Nicaragua. The breadth and scale of its activities makes it the key community-based organisation in the country.

Aftermath of Hurricane MItch, Honduras. *Photo: Christian Aid/Max Hernandez.*

> Sergio Sanez Lopez of the MCM says: "The water is much cleaner here: that's why I came here to live. Many people said to me, but what are you doing, Sergio? – there's nothing in Apoyo al Combatiente, why don't you stay in Matagalpa city? But I told them I wanted to live right in the community and with a clean water supply. The water is so clean here that even foreigners drink it!"

Contact Person: Judith Escribano, Communications Officer for Central America and the Andes, Christian Aid, P.O. Box 100, London SE1 7RT, ENGLAND

The struggle for clean, safe water often falls to women in developing countries. *Photo: Salvation Army, Australia.*

The Salvation Army Australia has been involved in a number of community water programmes in the last ten years in various countries throughout the world. The main aim of the community water programmes is not simply to provide the community with clean water, but to highlight the link between clean water and community health, and the use of water to promote sustainable agriculture. Two areas where this concept has been successful are in China and Indonesia.

The Sulawesi Integrated Development Programme in **Indonesia** aimed to tap into remote mountain springs and to pipe water directly to storage tanks in the community. By piping the water, the programme reduced the burden on women to walk long distances to obtain water and reduced the chances of the water supply being contaminated by other communities and/or domestic livestock. The communities involved also received training on how clean water would reduce the incidence of waterborne diseases and how to maintain the clean water supply.

The Salvation Army Australia has funded over 30 water programmes in the **People's Republic of China** in selected provinces. The strength of the projects in China was that they used simple technology and local expertise, which was already in existence in the community. The community was keen to participate since they understood what was taking place and they understood the direct benefits a clean water supply would have on their lives. They also contributed financially towards the costs.

The implementation of these programmes reduced the workload of women in gathering water and provided an opportunity to devote more time to raising livestock and planting crops and other personal development opportunities such as literacy and vocational training. Another success of these programmes was that each community agreed to contribute money towards the maintenance and upkeep of the facilities. Most communities relied upon peer pressure and goodwill not to waste water and to pay the agreed fees.

The environment was also a benefactor from these water programmes, in that erosion was prevented through the construction of concrete cisterns to store water in dry months and the construction of terraces to facilitate water retention. This increased the crop yields and created the opportunity for education on water management and erosion prevention techniques.

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DROUGHT IN AUSTRALIA

Water… Life-giving water which most of us, especially in Western societies, take for granted. As I write this, the area in which my family and I live is experiencing the fourth consecutive year of drought. We live on a sheep property in the rangerlands of South Australia where we normally run a flock of 8,000 sheep. At the moment we have under 6,000 sheep due to the lack of water and food. This impacts on our livelihood, our ability to employ workers, and eventually the possibility of having to leave the property. Our lives are dominated by the lack of rain: it affects our relationships – with each other, our extended family, our friends and our neighbours.

All the water we use on the property we have to collect from the rain that falls during the year; there is no underground water that is suitable for use, it is nearly as salty as the sea. Each building has at least one large rainwater tank, to collect the run-off from the roofs. In the paddocks, water is collected through a series of drains (channels) and stored in large earthen dams that are usually 20 feet or more deep. The sheep, as well as the native animals such as kangaroos, use these dams for their water. We use them for our garden and our bathing. The tank water is used for the household drinking and cooking.

In this area, we are used to dry periods – we know that we have to conserve water, because our average annual rainfall is about 18 inches per year. In the 30 years that I have lived here, this is the most prolonged period of drought. Even some of the trees, which are adapted to dry conditions, are dying. It is a stark reminder. The dam that supplies the houses went dry for the first time since 1963 when there were three families using it – now there is only one family using water from that dam. To keep our fruit trees alive, we have collected water from the laundry tubs and bath tub by the bucket-full.

We listen to the weather forecasts on radio and television in anticipation; we watch the build-up of clouds on the horizon; we watch for the signals Mother Nature sends us, to have our hopes dashed again. We forget what it is like to go to bed and listen to the rain falling on the galvanised roof, or we stay awake listening to the light rain that is falling and willing it to be heavier and last all night.

Five weeks ago, we had an inch of rain! It filled some of the dams, the house dam especially, and then, five days later, we had

After the rain..

a dust storm! Oh, the joy of living in the rangelands – a land of contrasts. When we have good rains, then the landscape is transformed. The plants and animals respond and so do the people who live in this wonderful area. I would not choose to live anywhere else – it is part of God's wonderful creation.

Contact Person: Sue Warnes, Box 186, Burra, SA5417, AUSTRALIA

UK

Privatisation of the Water Industry in England and Wales

Editorial Note

In 1989 the UK Government passed legislation to privatise water supply and sewerage, which before had been run as a public service. Many church organisations and Christians voiced their opposition to this policy, regarding water as a gift from God and not something to be controlled by private companies operating for profit and with a priority of pleasing shareholders. The following articles look at the effects of the privatisation policy.

Before the water industry was privatised in 1989, opinion was sharply divided. Politicians of the left suggested that private companies could not be trusted to safeguard our environment. Those of the right responded that only the private sector could fund the necessary improvements.

Ten years later, both arguments look wrong. The separation between private sector provision and public sector regulation has obtained better drinking water, cleaner rivers and coastal waters, and faster response to customers. But the extra money needed has been borrowed, as before, and financed by higher charges to customers.

One unfortunate casualty was the reputation of tap water. In 1994 the Chief Drinking Water Inspector expressed his concern at people buying bottled water which they could not afford. He stated firmly that there is no reason to avoid tap water on health grounds.

Some water supply workers were hurt by unfair criticism. By nature, most water distribution people are determined to keep water on tap 24 hours a day, 365 days a year. Most billing staff regard it as a challenge to negotiate staged payments on behalf of customers who find it difficult to pay. They take a pride in their work. And the water company regulator has promised that, in real terms, average bills in five years time will be no higher than now.

There is a need to balance two moral issues: the wish to ensure that all families can afford ample water; and the belief that the price mechanism can encourage conservation. The great improvements of the 19th century cost ordinary families in Britain more in real terms than we pay now. In the developing world, even for low cost supplies, most families pay more for water than we do in Europe, as a percentage of income.

In this country, the good news is that, thanks to wiser water use (often influenced by children), and thanks to the campaign against leakage, the annual volume of water abstracted in England and Wales is now little more than it was 15 years ago.

Contact Person: David Walker, 14 Weston Close, Dorridge, Solihull, West Midlands, B93 8BL, ENGLAND

More Awareness – an Effect of Privatisation?

In England and Wales, following the privatisation of the water industry, water companies have raised the awareness of their customers to the importance of the work of those companies in supplying piped water and removing sewage. Privatisation brought a dramatic increase in customers' interest in the new companies, and the companies responded with a pro-active communication programme. For example, in the Severn-Trent area (which serves some 8 million customers) six education centres around

The blessing of water.

the region have been set up to explain how water is treated and returned to the system after use. In addition, as appropriate for the technical age, a state-of-the-art Virtual Reality 3D water cycle show operates at the Sea Life Centre in central Birmingham. Greater emphasis is now being placed on seeing that the customer is better informed, as customers are becoming more sophisticated, have rising expectations and want to know more. As the water industry is increasingly opened up to competition, customer satisfaction with improved service is important, and so the water companies are striving to improve further a good and reliable product, a good service and a positive image.

Contact Person: Ian Sinclair, Consultant Severn Trent Water International, 18, White House Way, Solihull, West Midlands, B91 1SE, ENGLAND

Paying for our Water

In 1995 the Government announced that water metering (ie paying for the amount of water used) is, in the long term, the best basis of charging for water and sewerage services. However, it was recognised that this will take time (and substantial investment) to achieve.

Some church organisations were alarmed at the possible impact of water metering. In 1996 the Board for Social Responsibility of the Diocese of Manchester produced a report looking at payment options. This argued that research on properties which had been metered suggested that:

- large households with children and with a person with some medical conditions were liable to receive high bills
- many people with meters were employing water-saving strategies which could jeopardise personal hygiene
- water meters tend to cause greater hardship than water rates (payment linked to value of property) for low income households.

Another important concern is the **environmental issue**. The Report suggested that metering is probably saving water in the wrong ways often affecting the poorest. Friends of the Earth, an environmental lobby group, argue that a £1.7 million investment in water efficient appliances in homes would save as much water as the £4.1 million cost of installing meters.

The Report concluded that "there are strong moral and ethical reasons for the Church backing a taxation-based charging system for water and opposing systems which do not reflect, in some measure, ability to pay".

Some of these concerns have been addressed by recent legislation, making disconnections of water supply for non-payment of bills illegal, and outlawing devices which cut off or reduce water supply. The Government still regards water meters as the way forward for future water charges. New houses are to have them installed, and water companies must supply meters free of charge to those who request them. Regulations will ensure that households which are metered and in receipt of specified social security benefits, and those with high water needs for particular medical conditions, will not have to pay above-average bills.

Concerns are still expressed. One is that the provision for "free" meters will be taken up only by higher income water consumers expecting their bills to be less as a result, whereas lower income users will lose out. The real costs of such meters will have to be met by all.

Many anti-poverty campaigners still argue that payment based on Council Tax property values would be fairer. Those advocating meters point out that people generally make better use of services they pay for, and that all should understand the need to pay for the valuable resource of water.

PRAYER

Lord of all life and power,

we thank you for your creation gift of water,
and for its contribution to every part of our lives;
help us never to take this vital aspect of our environment for granted.

- Be with those who suffer thirst, and strengthen families who have great difficulty in gaining access to safe water.
- Assist us in preserving our water sources from pollution or misuse.
- Sustain scientists, engineers and technicians in making clean water available in the community, and encourage those who provide resources for this work.
- Enable every family to enjoy and to be thankful for the provision of the water that they need.

We ask this in the name of Him at whose well we are invited to receive the spiritual water of life: Jesus Christ our Lord.

Amen.

Revd John Bradford

NEXT NEWSLETTER

The theme of the next newsletter is **Fathers and Families**. We want information about the position of fathers in different cultures and countries, with examples of good parenting by fathers and stories of men not taking responsibility for their families. What are the effects on families of absent fathers? How can the position of fathers be strengthened where it is needed? How is the role of fathers changing? Please help with this newsletter by sending us articles (about 500 words) and information about the situation in your country.
We need to receive articles by **31st January 2000**.

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