

A WaterAid Briefing Paper



Boiling Point: Issues and Problems in
Water Security and Sanitation

Eric Gutierrez
August 1999

Introduction

Over the last few years, serious international efforts have been launched to address the problem of food security -- the ability of states and the international community to sustain the supply of food to meet the requirements of growing populations. However a related and equally important problem, has still to find its appropriate place on the agenda of development policy and debate. This is the problem of *water security* – providing the resource, fundamental to human survival, that experts believe is set to become the “oil of the 21st century.”¹

The concept of water security is not simply about dwindling supplies. A comprehensive definition goes beyond *availability* to issues of *access*. Access involves issues that range from a discussion of fundamental individual rights to national sovereignty rights over water. It also involves equity and affordability, and the role of states and markets in water’s allocation, pricing, distribution and regulation. Water security also implies social and political decision-making on *use* – the priority to be accorded to competing household, agricultural or industrial demands on the resource.²

Availability is thus principally a physical and technical problem. Problems on access and use, on the other hand, are brought about by political, social and economic factors, and necessarily entail similar responses. Interminably, water policy is linked with other key social concerns like health, pollution, land use and agricultural policy.

This paper discusses the main issues and problems of water security. It presents a global picture on the increasing state of water insecurity and tracks the reasons for such insecurity. It provides an introduction to the evolving concept of Integrated Water Resource Management – a comprehensive response that takes the unique and complex characteristics of water into consideration. This paper also puts forth a recommendation -- that WaterAid respond to the problems and eventually establish itself as a key international advocate of water security.

The State of Insecurity

Despite all the wealth and technological advancements that the world has seen, a basic resource like water and a basic service like sanitation remains inaccessible to huge numbers of human beings. About 1.4 billion people (26% of the world's total) are estimated lack access to safe drinking water while 2.9 billion (54%) do not have adequate sanitation. In most parts of the world these numbers are rising, not falling. In these parts, the lack of water security, inevitably, has become a principal barrier to development.

Africans, mostly women and children, spend an estimated 40 billion hours a year hauling water. World-wide, water-related diseases kill four million children a year. In the poorest countries, this means a total of up to 27,000 deaths each day. (*MWC, 1998; UNEP, 1996*). Some 10 million are estimated to die each year from diseases directly related to poor sanitation. At any time, half of the world's hospital beds are occupied by patients suffering from water-related diseases. (*DFID, 1998*)

Box 1 - Global Warnings

The first clear warning on increasing global water problems were made 22 years ago at the United Nation's 1977 Mar de Plata conference on water. In response, the UN General Assembly declared 1981-1990 as the International Drinking Water Supply and Sanitation Decade (IDWSD). The target of this campaign was to achieve 100% coverage – provide every human being on the planet with access to safe water and sanitation – by 1990. (*Gleick, 1998; DFID, 1998*)

As the eighties passed, however, it became clear that the world would come nowhere near that goal. An assessment was made in 1990 in New Delhi, which recognised the complex nature of water and sanitation management – it was not simply a technical problem but was also a political and social process related to poverty, underdevelopment, gender oppression, and environmental impacts. A more practical "Some for All, Rather Than More for Some" approach became the stated goal for the 90s.

By January 1992, the warnings turned into alarm. The International Conference on Water and the Environment (ICWE) in Dublin announced that water use in many developed and developing countries is *not* sustainable. "The problems are not speculative in nature; nor are they to affect our planet only in the distant future. They are here and they affect humanity now. The future survival of many millions of people demands immediate and effective action." (*The Dublin Statement, 1992*).

Different international organisations have come up with researches to quantify the threat further. In 1997, Population Action International (PAI) reported that 430 million people – eight percent of the world's population – are living in water-scarce countries. By the year 2050, PAI estimates that anywhere from 25% to 60% of the world's population will face serious water scarcity. In 1990, 20 countries were classified as water scarce, 15 of them with rapidly growing populations. By 2025, 15 to 20 more nations will be added to the list (*PAI, 1997*).

The scarcity of freshwater, according to a UN survey, now ranks as the world's *second* most pressing concern, next to population explosion in developing countries. In every continent except Antarctica, groundwater use is increasing dramatically even as the quality of supplies is being degraded because of urbanisation and pollution. The hydrological cycle has also become seriously affected by human activity, "in ways that the scientific community is only beginning to understand." (*Gleick, 1998: 2*)

The spectacular growth of "mega-cities" is threatening a global sanitary crisis as well. "The coincidence of acute human poverty, overcrowding, poor housing, lack of investment in civic infrastructure, job shortage and environmental stress in many fast-changing settings are the ingredients of the sanitary crisis facing urban Asia and Africa." One effect is now seen in Latin America, where "cholera reappeared during the 1990s for the first time this century." (*Black, 1994 and 1996: 4*)

As early as 1977, warnings have been raised on the gravity of the global water problem. Standards were set, money was raised and different international efforts were organised, yet these have largely failed. It is precisely these failures that show increasing water insecurity. (*See Box 1*) New water-related conflicts have also arisen – like those in Central Asia and in the Near East, and even in the tropical region of Southeast Asia (conflicts between Singapore and Malaysia). The resources available for addressing the problem have not been maximised. In 1998, the water supply and sanitation sector received the smallest proportion of the World Bank's total lending, at only 2% compared to 11% for education, 10% for agriculture, or 7% for health, nutrition and population. International campaigns have successfully made food security a high profile and popularly-understood problem. Water security, in contrast, lags well behind.

Water Scarcity and Stress

Water stress and scarcity explain problems of availability. As a country's water demand increases, the stress on its available supplies increases. When supplies can not be replenished to meet demands, scarcity sets in.³

The United Nations Environmental Programme (UNEP) estimates that there are 37 million cubic kilometres of freshwater on the planet. Some 8 million cubic kilometres is stored underground in the form of groundwater. "Excluding water locked in the polar ice caps, groundwater constitutes some 97% of all freshwater that is potentially available for human use on or beneath the Earth's surface. The remainder is stored in lakes, rivers and swamps." (UNEP, 1996: 6)

Access to groundwater resources is extremely uneven. There are physical constraints – many communities are found in arid or semi-arid areas: the Middle East, for instance, has always been a water-scarce region. There are economic and political constraints as well: countries like Angola and Cambodia, for example, have relatively abundant supplies of freshwater resources. But poverty and political instability make it difficult for people in these countries to find water security. The unevenness extends *inside* national boundaries: Kenya has areas where supplies are abundant, and areas with extreme scarcity.

The over-abstraction of groundwater has become the major concern in water security. There is no authoritative estimate of world groundwater use, although some 1.5 billion people are thought to depend on it for their drinking water supply. Most areas in East and South Asia, including the two most populous countries – China and India – derive anywhere from 50 to 100% of their water needs from groundwater. Countries like Barbados, Denmark and the Netherlands are almost entirely dependent on groundwater. More than one-third of water use in France and the United Kingdom is supplied from aquifers while the United States is 50% dependent on groundwater. (UNEP, 1996)

Over-abstraction results primarily from population growth and urbanisation. Water tables under many of the world's cities have declined rapidly because of heavy demand. This causes not only reduced yields, but also more problems like seawater intrusion and sinking land. Water quality in the capital regions of Indonesia and the Philippines has deteriorated sharply because of seawater intrusion. In the first half of the 20th century, similar declining water tables of up to 30 metres were experienced in London, Liverpool and Birmingham. These water tables only went up again after heavy industries closed down or moved away from the city centres. (UNEP, 1996: 20). Rural areas are not immune from over-extraction. Water tables in the central plains of China and India -- which together produce food for roughly one billion people – have steadily falling water tables. (UNICEF, 1998).

Some water-scarce but financially- sufficient countries have resorted to the mining of fossil groundwater -- water stored in aquifers thousands of years ago. Since August 1991 Libya, at a cost of about US\$ 25,000 million, has been pumping up to 730 million cubic metres of water a year from underneath the Sahara. Saudi Arabia, likewise,

uses fossil groundwater to supply up to 75% of its needs, averaging more than 5000 million cubic metres a year. (UNEP, 1996: 8-16)

Pollution is another major issue that impacts on availability. Once polluted, "groundwater is extremely difficult to purify on account of its inaccessibility, huge volume and slow flow rates." Groundwater pollution is caused by agriculture, urbanisation and industrial activity. (UNEP, 1996: 22). Examples can be found from all over the world. An irrigation system built in 1972 in the Yao Ba oasis lying east of the Gobi desert in China has given the area a thriving economy based on the production of wheat and other cereals. But over-abstraction has caused saline water intrusion from a nearby alkaline lake. In the Gaza strip in Palestine, nitrate and probable pesticide concentrations in the groundwater are very high in areas with intensive agriculture. (Grimble, et.al, 1996: 97-105).

In Japan, water pollution comes mainly from chlorinated solvents from industries (UNEP 1996: 27). In Jakarta, Bangkok, and Manila, indiscriminate dumping of liquid effluents and solid wastes has led to outbreaks of cholera, typhoid and other water-borne diseases. (Foster, et. al. 1996: 106-114). In developing countries worldwide, it is estimated that as much as 90% of wastewater is discharged without treatment. This led the Asian Development Bank (1998) to list water pollution, which adds increasingly to water scarcity, as the most serious environmental problem in Asia.

Problems of Access

Groundwater is commonly regarded as public property. But when water becomes scarce, issues of equity emerge. **When water tables fall, the poor are first to suffer.** Those who can afford to sink deeper boreholes are in a better position to cope with conditions of stress. In a 240,000 hectare canal irrigation system in Southern India, for example, rich, large farmers cultivate water-intensive crops like rice and sugarcane, while their small, poor neighbours plant 'dry' crops like sorghum, cotton and millet. (Mollinga and Van Straaten, 1996: 243-250). What makes it even more ironic is that as conditions of water stress and scarcity are prolonged, water becomes more expensive for those who are less-privileged. From rural communities in Angola, to the shanty towns of Port-au-Prince in Haiti, it is not unusual for the poor to pay as much as 100 times more than those with regular water connections. (Unicef, 1998).

Problems over access can also spark conflicts between countries, which is a much more serious issue. Bangladesh is a country, whose waters originate or pass through India before they reach it. When India, faced with increasing food security problems in the '70s, unilaterally decided to divert the flow of these rivers into its irrigation systems, Bangladesh was left dry in the lean seasons -- its entire western half faced becoming a desert. Traditional land use patterns also changed due to the dryness. Salinity from the sea intruded deep into its groundwater resources. It was only in December 1996, after a change of governments in both countries, that a Treaty on Water Sharing was finally signed to end the long-standing dispute. (Haque, 1996: 13-20; Gleick, 1998: 206-209)

The India-Bangladesh conflict is replicated many times on a lesser scale between upriver and downriver communities within national boundaries. Academics and other NGOs warn of the potentials for conflict over freshwater. "Many freshwater basins – estimated to be more than 300 – lie on or across international borders. The risk of conflict grows as population and degradation pressures accelerate. So far, only limited fact-finding and even less concrete planning has been systematically carried out to analyse this dangerous potential." (*GCI, 1997*)

Competing Uses

What makes the problems of household water availability and access worse, is the increasing use of freshwater by agriculture and industry. (*UNCSD, 1997*). Irrigation is the world's largest water user, utilising up to 70% of freshwater supplies. It is projected to have a 50 to 100 percent increase between 1995 and 2025 to feed the world's growing population. Since 1960, global water withdrawals for irrigation have increased by more than 60 percent. Per capita withdrawals for irrigation in the 1990s, however, have been declining -- indicating greater efficiency in water use. About 70 percent of the world's 253 million hectares of irrigated land are in Asia. (*ADB, 1998*)

Water-scarce countries in the Middle East have decided to "close" water use to agriculture. Meagre supplies are devoted primarily for household use. **Food requirements are then imported, which essentially allows these countries to import "virtual water" – the water used to grow the food and grains in the countries from where they originated.** Experts are now looking into "virtual water" as a solution for scarcity problems.

Closing water to agriculture, however, whether completely or partly, is an extreme and politically stressful measure that could not be applied widely. In many developing countries, agriculture is often not only the biggest employer but also the chief life support system. Reducing water supplies for farmers so it can be channelled for more profitable use in growing cities or industries has been decried as anti-poor. In rice-eating Thailand and the Philippines, pressures to convert water-consuming rice lands into more profitable golf courses, residential subdivisions or industrial estates have become politically explosive. When implemented in an unplanned and profit-driven manner, it could create massive social dislocations and enhance inequitable economic relations.

It is not far-fetched to imagine 'water riots' from breaking out, like when a state authority closes water resources to farmers during a period of prolonged drought. But ultimately, says Gleick, there will be growing pressures to take water from agriculture and put it to use in other economic sectors. **"One million cubic metres of water in Southern California can produce 13,000 jobs in high-tech industries; the same amount of water used to grow grass for livestock creates only six jobs."**

Competing uses also pose many problems at the local level, sometimes pitting local communities against each other. In tropical countries, expanding a watershed's protected zone to improve the security of water supply may encroach on the land claims and lifestyles of indigenous upland communities. The opening of an irrigation system beneficial to an upstream farming community may endanger the drinking water supply of a downstream community. In Sri Lanka, concrete linings introduced to reduce seepage

losses in irrigation canals ironically lowered the water table beyond the reach of hand pumps that people used for drinking water. (*Van der Hoek, 1999*)

The Development Debacle and Its Impact on Water Security

The activities during the International Drinking Water Supply and Sanitation Decade (1981-1990) focused attention on the problems of the sector. Water supply projects were built, national water and sanitation institutions were restructured and campaigns were organised. These efforts were able to provide 1,300 million people with access to adequate water supply and 750 million with sanitation. (*DFID, 1998; Gleick, 1998*) Yet, these were still far short of the stated goal of achieving 100 percent coverage by 1990.

Apart from a net increase in world population there are at least two key reasons that explain the failure – the traditional reasoning of “thinking big” in providing for water supply, and the nature and character that the development process has taken.

Throughout the 20th century, water security has been a pre-requisite for development. As populations grew, industries developed and agriculture expanded, the need for water rose dramatically. The “twentieth-century paradigm” of meeting this need was to focus on engineering solutions and simply plan for more and more supply. Ensuring water security meant building dams by the thousands, drilling more wells, or attempting to manipulate weather cycles. The water management problem was simply an exercise in coming up with ways of bridging the gap between supply and demand by building to exploit more sources. This thinking “usually makes no attempt to identify common goals among conflicting stakeholders, or to seek agreement on principles to resolve conflicts over water.” (*Gleick, 1998: 5-33*)

This thinking resulted in massive water infrastructure projects all over the world. Over \$400 billion are estimated to have been spent in the United States for its more than 80,000 dams and reservoirs, nearly 90,000 megawatts of hydroelectric capacity and more than 15,000 municipal wastewater treatment plants. Similar patterns were seen in the former Soviet Union, China and India. Because huge investments were needed, only governments had the sufficient resources to build the projects. Dams and big water projects became important components of national security. (*Gleick, 1998*)

These big water projects soon faced local opposition because of its impact on local communities and the environment. Organised opposition to dams in the United States goes back nearly 100 years, when John Muir “led the first national battle to prevent the construction of the Hetchy Hetchy Dam in Yosemite National Park in California.”⁴ (*Gleick, 1998: 80-81*). Environmental and anti-dam movements emerged all over the world, like those which opposed the Kariba Dam on the Zambezi, the Southern Okavango Project in Botswana, the Narmada Dam in India, the Lesotho Highlands Project in southern Africa and the Three Gorges Dam in China.

There is an added dimension to the opposition to big water projects in developing countries. In the Philippines, for instance, the Chico River Dam Project was implemented in the 1980s with World Bank financing in order to provide the water and electricity that

would "attract foreign investments into the country". But the project meant the displacement of over 80,000 upland families as well. Their ancestral lands will be submerged and their rich cultural heritage sacrificed in the name of "economic growth." They soon accused their government of giving priority to the needs of foreign capital before its own people.

"Development" became a politically charged concept, capped by the slogan "Development for Whom?" The concept of "development aggression" emerged to describe projects that disregard the political, economic and social rights of communities that are deemed "dispensable." As explained later by studies on these debacles, the social and environmental impacts of dam projects have been routinely and seriously underestimated. As a result, "the frequent disregard for the civil rights of people affected by *some* dam projects has led to the widespread distrust of all dam projects." (Gleick, 1998: 77, 80-81)

But perhaps most crippling on the capacity of governments to provide for water and sanitation services was the global debt problem of the '80s. What is clear though, is that by the middle of the '80s until today, many of the poorest countries were using up to more than 70 percent of their annual national budgets to pay for only the interest charges on their debts. This made it impossible for developing countries, where most water and sanitation problems are found, to allocate and spend their resources on needed public services. There is still a lot of debate on why and how the debt problem emerged, and who are to blame for what is obviously the world's principal development debacle. **"In Nairobi, capital expenditures for water and sewerage fell by a factor of ten from \$27.78 per person in 1981 to under \$2.50 in 1987".** (Gleick, 1998: 42; Christian Aid, 1999)

As a result, money that could have been used on water and sanitation projects disappeared. "In Zimbabwe, 25 percent of village water pumps failed when government cut maintenance funds by more than half. In several countries in Africa, the percentage of the population with access to water services fell dramatically during this period. Dysentery rates in Kinshasha soared in 1995 when funds for water chlorination ran out, and cholera cases and deaths throughout the continent now far exceed those reported in the 1970s." (Gleick, 1998: 42; Christian Aid, 1999)

Contributing to debt problems was corruption. The '80s were a period when corrupt and petty dictators were tolerated despite their excesses. This legacy is felt until today – examples of corruption in the water and sanitation sector are not difficult to find. In water-scarce Jordan, the water authority figures prominently in corruption cases investigated by the anti-corruption department. In Papua New Guinea, a special Independent Anti-Corruption Commission had to be set up to investigate controversial deals entered into by the State, most notably in the Port Moresby water deal in August 1997. There are many other cases worth millions of dollars and involving international corporations, concessionaires and civil works contractors that have been documented by the Berlin-based Transparency International. (TI, 1997).

Towards Water Security: Integrated Water Resources Management

The big challenge for the 21st century is to rethink water use and management in ways that would not repeat the mistakes of the past. The Dublin Conference in January 1992 called for fundamental new approaches. It enshrined four principles, now widely recognised, that seek to ensure water sustainability. These are: a holistic management; a participatory approach; women as key players; and water as an economic and social good. These four principles became the premises for Chapter 18 of the *Agenda 21* document signed at 1992 Rio de Janeiro Conference on Environment and Development.

Agenda 21 enshrined the concept of *sustainability* in the development agenda. It also set forth fresh goals for the international community. The standard Basic Water Requirement (BWR) for drinking, cooking, cleaning and sanitation was set at 40 litres per person per day. A universal water supply for all human beings should be in place by 2025. Specific targets were written down for the year 2000. These are: a) to provide all urban dwellers with 40 litres of water per day; b) provide 75% of urban dwellers with sanitation; c) to have in force standards for the discharge of municipal waste; and to have 75% of solid urban waste collected and recycled or disposed of in an environmentally safe way. There were two other, more general goals: to ensure that rural people everywhere have access to safe water and sanitation; and to control water-associated diseases extensively.

International financial institutions soon followed suit. In 1993, the World Bank announced a new approach, at the core of which is "the adoption of a comprehensive policy framework and the treatment of water as an economic good, combined with decentralised management and delivery structures, greater reliance on pricing, and fuller participation by stakeholders." In August 1996, the Bank initiated the creation of the Global Water Partnership (GWP) in Stockholm, with a mission to transform the Dublin Principles into practical tools for solving water problems at the regional and local level. In August 1998, the Asian Development Bank came out with a policy paper that "fosters an integrated approach to water services delivery and water resource management" through seven policy objectives.

Development planners today now use measures of *vulnerability* rather than just scarcity and stress in approaching water problems. Vulnerability is a more important indicator, because there are countries which may be water-scarce but are less vulnerable to water problems because they have the environmental, financial, technological or human resources to deal with the problem. Conversely, there are countries with abundant water supplies but are unable to tap or utilise these resources for many reasons. There are also countries that are better prepared to meet or mitigate the impacts of water disasters, like a prolonged drought or aquifer poisoning, than others. The UN Commission on Sustainable Development measures vulnerability by comparing levels of water scarcity with a country's income.

Approaches in planning are also changing. The river basin, rather than political boundaries, is now seen as the ideal water planning and implementing unit. For instance, within a country, efficient irrigation management can *not* be done independently by different communities sharing the same river

basin. Among countries connected to one river system, co-operation delivers better results. This was proved in practice in the 1996 India-Bangladesh agreement, as well as in the conference and joint planning of the different countries connected to the Nile River basin in Africa. The International Water Management Institute concludes that, "water resources can be effectively managed only at the river basin level." (*Van der Hoek, 1999*)

At the same time, projects have been organised to promote "tri-sectoral partnership" in water and sanitation. This approach is based on government, business and civil society working together in common cause to resolve the more intricate and complex water and sanitation problems. The Business Partners for Development, with World Bank support, has started to compile ground level experiences that show how tri-sectoral partnerships can achieve that crucial balance between financial sustainability, social responsibility and political accountability.

Box 2: IWRM – An Evolving Concept

Integrated Water Resources Management is guided by the notion of an "integrated approach": market solutions, technical solutions, policy reforms or regulatory solutions to water problems should be implemented in cohesion and should complement each other. It is also based on the concept that programmes are to be guided by gender, social development, health, environment, economic, financial, institutional and technical perspectives. (*DFID, 1998*)

Guidelines for best practice have been well elaborated. There are the eight principles enumerated by Black in her 1996 paper on water and the urban poor. The UK's Department for International Development has come out with a comprehensive outline of Principles and Practices in 1998.

But further research also needs to be undertaken. More reliable data is needed on both the quality and quantity in aquifers and on how they are changing as a result of human activity. Some researchers have stressed the need for research on the temporal and spatial dimensions of water, as well as on net effects, not just economic efficiencies, of the evolving new approaches (*Webb/Iskandarani, 1998*). Greater study is likewise needed when looking at systems of water rights that seek to refine relationships over a resource that is a common resource to which all have fundamental rights. (*UNICEF, 1998*)

Integrated water resources management is the new approach evolving from these advances in thinking. In the 1998 Global Freshwater Agreement, the definition of IWRM was expanded with the restatement that "the priority to be accorded to the social dimension is of fundamental importance." This meant that goals should be "aimed at achieving truly people-centred sustainable development in accordance with their local conditions." **IWRM therefore, has become an instrument to fight poverty as well.** (UNCSO, 1998).

There are, however, components of IWRM that remains subject to intense debates. Among the hotly debated are the issues of devolution, privatisation and subsidies. But perhaps the most problematic is the Dublin principle stating that water is an economic commodity. While often cited and quoted, experts have very little agreement on what it actually means. Economists, environmentalists or development managers have different, sometimes competing, notions about the concept.

Water is traditionally and widely regarded as public property. Hence, governments decide on access and use, and take responsibility for building and managing expensive distribution systems. But it is primarily this system which makes water “typically under-priced and used wastefully.” Under such systems, “the infrastructure is frequently poorly conceived, built, and operated, and delivery is often unreliable.” Furthermore, these systems also tend “to favour the relatively wealthy.” Wealthier farmers, most often, are those with easier access to water rights and who usually pay only a small fraction of the cost. Similarly, city residents who can afford connections enjoy access to cheap, municipally supplied water, while the poor “must resort to very expensive private water truckers to meet their daily needs.” (Thobani, 1995)

Privatisation is thus fast gaining ground, deemed as the most efficient way of reducing government burdens and mobilising the private sector. Already, requirements that government privatise water utilities are being written into the terms of multilateral loans. Investments in water will therefore increasingly come from the private sector. But investors need substantial assurances that there can be returns on their investments.

Economists argue that finding the “true cost” of water is the best way of ensuring and conserving supplies. True cost is the sum of “use cost” (incurred in financing and operating the abstraction, transmission, treatment and distribution of water) and “opportunity cost,” or the amount imposed on others as a result of use of water. (Briscoe, 1996) When water is given a tradable property right, it will be endowed with an implicit value or opportunity cost. For instance, rather than waste the surplus water he gets for his farm, a farmer with access and trading rights will conserve it, and sell the water he conserves to a nearby city, or another user, at a price that includes opportunity cost. The creation of water markets, as shown by the experience in Chile, Mexico, some states in Australia, and the United States “can lead to voluntary conservation and increases in the productivity of water without having to increase water charges.” (Thobani 1995).

True cost, however, is often distorted by government subsidies to the water sector. In fact, subsidies -- to national water systems, for growing water-intensive crops in arid regions, or for hydropower -- have been identified by leading scholars as the most important barrier to better water planning. “Subsidies undermine the economic approach” and consequently, the potential of eliminating wasteful practices and encouraging increased efficiency and conservation. (Gleick, 1998)

But some are worried as well about the consequences of the economic approach. The UNICEF (1998), for instance, is concerned that **privatisation and tradable property rights may mean that access to water will no longer be regarded as a right, but merely as a function of economic markets.** Markets, of course, generally operate on the cast iron logic of profit. This may be both good and bad, depending on the situation or whose point of view is being taken.

UNICEF underscores the difficulty and complexity of finding the true cost. “If users are required to pay the true cost of water, the biggest bills would be paid by industrial and large-scale agricultural consumers.” But it is “the public sector (that) often picks up the lion’s share of the tab.” UNICEF maintains that if “across-the-board subsidies are removed, specialised measures should be added to ensure that the poor have access to water.”

It is in developed countries where water is most heavily subsidised, for the simple reason that they can afford subsidies. The European Union, for instance, has nearly \$50 billion budget for the Common Agricultural Policy in 1999. (EC 1999). The result is that European farmers and agri-businesses can sell cheaper because of low water costs. But needless to say, the removal of these subsidies is extremely stressful politically. Not only will farmers protest, but European consumers will be hit hard by rising food prices.

On the other hand, the removal of such subsidies can boost Third World agriculture, which always finds it difficult to compete with cheaper European products. The paradox is that within developing countries, where basic water needs are yet unmet, the elimination of subsidies is equally controversial, but for different reasons. These ranges from problems of access, ownership and control over water management systems to the notion that water service should remain a public trust.

Thus Integrated Water Resources Management, is very much a work-in-progress; an evolving concept whose shape and direction will depend on how the different voices will intervene in the debate and how different advocacies will come into play.

Recommendations for WaterAid

Meeting water security in the 21st century entails a thorough review of past experiences. Much has been done in terms of documenting and measuring the state of insecurity. An integrated and comprehensive response to these conditions, however, is still in the early stages of development. Despite the warnings and alarms raised at international conferences, it is mostly water sector professionals who are involved in efforts to analyse the issues and find solutions. There is a need to draw greater, wider attention to the problems of water security.

WaterAid has a rich experience in initiating and managing small-scale water projects and is a pioneer of best practice methods in the field. It is therefore in a best position to conduct an international advocacy programme that will place water security squarely on the agenda of development policy and debate. In the next few years water security and its related problems should gain greater attention from the media, parties and politicians, European institutions, development agencies, NGOs and networks.

The framework for advocacy can be modelled upon disaster preparedness – it is always better to be pro-active and pre-emptive, rather than reactive, in addressing the diverse, complex problems of water security. The balance sheet, after all, favours such activity – the amounts to be spent in achieving certain levels of water security will always be significantly less than what will be needed on health programs and hospitalisation costs resulting from the outbreaks of water-related diseases. The goal is to increase awareness on vulnerabilities to water problems and, consequently, to help in moving resources that can be used to reduce these vulnerabilities. Ultimately, such an advocacy will deal with the promotion of IWRM.

Advocacy can focus on the application of standards. WaterAid's experience allows it to recognise that standards are context-based. A 40 or 50 litres/person/day

basic water requirement may be applicable for most city residents, but may be totally unrealistic and preposterous in many small, impoverished water-scarce rural communities. Advocacy likewise should lead into the mobilisation of wider participation to meet the goals set forth in Agenda 21. It should lead to specific activities and campaigns that will make water security a high profile issue that is not only the concern of water professionals. It can lead to more resources being channelled to meet water security problems; or more fact-finding on potential conflicts over water; more research into availability and accessibility problems; and the creation of better, more comprehensive databases that will provide the necessary technical and social data needed to guide decisions.

WaterAid already hosts the secretariat of the Business Partners for Development. An advocacy programme can gain a wider audience – amongst business, government and civil society -- for the best practice experiences of BPDs focus projects.

Being a key international advocate of water security necessarily entails certain requirements. For instance, WaterAid may need to maintain a resource centre that can provide quick and user-friendly technical and social data services. Journalists or parliamentary researchers who may decide to look into issues of water security are often in a hurry and need pre-processed or summary information translated from highly technical language.

WaterAid can also think in terms of network-building – how to set up links and connections that can prove useful to make information flow or resource transfers faster and more efficient amongst those involved in addressing water problems. Links and connections can also be built with small community organisations or local governments whose involvement will be critical in attaining water security in their areas.

Overall, meeting the challenge of security appears to be an important and most-suited task for WaterAid in the future.

References:

Webb, P. and M. Iskandarani. Oct. 1998. Water Insecurity and the Poor: Issues and Research Needs. University of Bonn ZEF (Center for Development Research) Discussion Papers on Development Policy. Zentrum für Entwicklungsforschung, Bonn.

Gleick, P., P. Loh, S. Gomez and J. Morrison. 1995. California Water 2020: A Sustainable Vision. Pacific Institute Report. Pacific Institute for Studies in Development, Environment and Security, Oakland, California.

Department for International Development. 1998. Guidance Manual on Water Supply and Sanitation Programmes. WELL (Water and Environmental Health at London and Loughborough), London.

ICWE, 1992. "The Dublin Statement." Accessed through www.wmo.ch/web/homs/hwrphome.html of World Meteorological Organization, Geneva, Switzerland.

United Nations Commission on Sustainable Development. 1997. "Comprehensive Assessment of the Freshwater Resources of the World." Report of the Secretary-General. Department of Policy and Sustainable Development. (accessed through www.worldbank.org)

United Nations Commission on Sustainable Development. 1998. "The 1998 Global Freshwater Agreement."

United Nations Conference on the Environment and Development (UNCED). 1992. "Agenda 21". Cited here are paragraphs 18.6 and 18.8 of chapter 18.

Gleick, Peter H. 1998. The World's Water: The Biennial Report on Freshwater Resources, 1998-1999). Island Press, Washington, DC.

Asian Development Bank. August 1998. The Bank's Policy on Water, Working Paper. ADB Interdepartmental Water Policy Group (IWPG), Manila.

Water Supply and Sanitation Collaborative Council. (undated) "Vision 21: A Shared Vision for Water Supply, Sanitation and Hygiene."

Population Action International. 1997. "Sustaining Water, Easing Scarcity: A Second Update." From the PAI website (www.populationaction.org)

Green Cross International. 1977. "International Freshwater Conflict: Issues and Prevention Strategies. From the GCI website (www.gci.ch)

UNEP. 1996. Groundwater: A Threatened Resource. United Nations Environment Programme, Nairobi.

WWC. 1998. Water Policy. Official Journal of the World Water Council, Paris.

Mollinga, PP and CJM Van Straaten. 1996. "The Politics of Water Distribution," in Howsam and Carter (eds.) Water Policy: Allocation and Management in Practice. E and FN Spon, London.

Grimble, RJ, et. al. 1996. "Groundwater Resource Degradation: A Framework for Analysis, With Examples from China and Palestine" in Howsam and Carter (eds.) Water Policy: Allocation and Management in Practice. E and FN Spon, London.

Foster, SSD, et. al. 1996. "Urban Groundwater Resource Management: Priorities for Developing Cities" in Howsam and Carter (eds.) Water Policy: Allocation and Management in Practice. E and FN Spon, London.

Haque, MI. 1996. "Water Policy Formulation and Implementation in Bangladesh" in Howsam and Carter (eds.) Water Policy: Allocation and Management in Practice. E and FN Spon, London.

Black, Maggie. 1996. Thirsty Cities: Water, Sanitation and the Urban Poor. A WaterAid Briefing Paper. WaterAid, London.

Black, Maggie. 1994. Mega-Slums: The Coming Sanitary Crisis. A WaterAid Report. WaterAid, London.

World Bank. 1998. World Development Indicators. Washington D.C.: World Bank

Transparency International. Various dates. Clippings from various newspapers, posted in its website at www.transparency.de .

Christian Aid. 1999. "The Debt Crisis: Questions and Answers." A Campaign Pack on Women and Debt. Christian Aid, London.

Freedom from Debt Coalition. 1999. "The Philippine Deep." A Primer on the Philippine Debt. Freedom from Debt Coalition, Manila.

UNICEF. 1998. "Groundwater: The Invisible and Endangered Resource". Pamphlet. UNICEF, Geneva.

Van der Hoek, V. "What is the most appropriate level to manage water". E-mail message from the International Water Management Institute, Colombo, Sri Lanka.

Thobani, Mateen. 1995. "Tradable Property Rights to Water: How to Improve Water Use and Resolve Water Conflicts." Public Policy for the Public Sector. Posted on www.worldbank.org.

Briscoe, John. 1996. "Water as an Economic Good: The Idea and What It Means in Practice." Readings of the Water Resource Management Course. Posted on www.worldbank.org.

European Commission. 1999. "The Common Agricultural Policy in Transition." A Handout from the EU Information Office.

ENDNOTES:

¹ The quote came from Dr. Richard Jolly, the head of the Human Development Index project of the United Nations Development Programme.

² This definition is condensed from the discussion of water security in Webb and Iskandarani, 1998. (See references)

³ Four categories of water stress have been defined by the UN. Countries with *low water stress* are those that use less than 10 percent of their available freshwater. Those with *moderate water stress* use up 10-20 percent, indicating that availability is becoming a limiting factor. This is because on average, "a country can only capture about one third of the annual flow of water in its rivers using dams, reservoirs and intake pipes." *Medium-high water stress* are experienced by those with 20-40 percent withdrawals. In these countries, there will be "a need to resolve competing human uses and management of demand and supply is required to ensure that the uses remain sustainable. Those using over 40 percent are in *high water stress*, indicating serious scarcity, and usually an increasing dependence on desalination and use of groundwater faster than it is replenished. There is an urgent need for intensive management of supply and demand and water scarcity can become the limiting factor to economic growth.

⁴ Muir called the proponents of big water projects as "devotees of ravaging commercialism who lift their eyes to the almighty dollar." Muir and his allies lost that battle, but the well-publicised fight led to the creation of the largest environmental organisation in the United States, the Sierra Club, and laid the groundwork for later, more successful public opposition to major dam projects.