



Southern Sudan, Photo: Sebastião Salgado.

WATER: A CHALLENGE

PROFESSOR FEDERICO MAYOR ZARAGOZA,
DIRECTOR- GENERAL, UNESCO

I should like to take a more optimistic view of the water crisis than the prophets of doom. Certainly water scarcity can be a source of conflict when combined with other factors of political or cultural tension, but it can also be an inducement to co-operation. I believe that human civilization can make water a learning ground for building the expanded sense of community and sharing necessary to an increasingly interconnected world.

I don't underestimate the scale of the challenge facing us. The warning signs are: severe water scarcity in many regions of the world, falling water tables, shrinking rivers and lakes, widespread pollution, creeping desertification. To these we must add the human cost of water shortage — the malnutrition, disease, abandonment of rural areas, swollen urban settlements and the increased burden placed on women in water-scarce environments.

The fact that the demand for water in this century has increased at twice the rate of population growth underlines the point that changes in lifestyle linked to socio-economic development are the principal source of increased water use. Everywhere, water resources development must go hand in hand

with energetic policies for conservation, re-use and the struggle against all forms of waste. Better technical information and the deployment of new technologies have an important part to play in the more rational management of water use. Yet it is doubtful whether technical solutions alone are sufficient to achieve a sustainable relationship between supply and demand.

The water crisis is an aspect of the more general crisis of a development model posited on unlimited, technology-led growth. I am a strong believer in the need to increase scientific input and the participation of scientists in policy formulation at all levels. But we should not entertain the illusion that the solution to problems lies in perfect data. In a world of uncertainty, data are never complete.

One aspect of technological progress that is worth noting is its role in the creation of transboundary networks of cooperation and solidarity, its subtle impact on the dynamics of decision-making in many areas of resource management. New forms of software and visual display are now facilitating the joint creation of water resource models by political and technical stakeholders. Satellite technology gives countries and authorities the ability to build a fairly accurate picture of water flow in other jurisdictions, regardless of the level of data sharing.

This technological capability is in the process of transforming the relationships and negotiations among jurisdictions. Trying to keep such information secret or giving

misleading data will no longer work. All of this technology is being disseminated and democratized faster than anyone could have foreseen.

Civilization, like development, presupposes a dynamic interaction with nature. What is important is that both should be firmly rooted in the idea of partnership — with nature and other human groups. This is the dimension of culture and ethics.

To address the problem at source, we need to promote a new attitude to water — I would go so far as to speak of a new water ethic. Pricing policies and market mechanisms — although they pose some difficult problems of social equity and public accountability — clearly have a role to play in the reevaluation of water and a reduction of demand. But so too does education, understood in its most inclusive sense and as a lifelong process. A civilized response to the global water crisis requires a better understanding of the interconnection between water resources and human behaviour as well as enlightened policies at the national and international level

The problems with which water management has to contend are very complex. They include a whole range of *competing interest groups and established structures of rights, values and priorities*. Reconciling differences and reforming structures to take account of new realities is no easy matter.

The water issue is forcing us to rethink our notions of security and interdependency. Water, in particular, has been one of humanity's historic learning grounds for community building. It is of the highest importance that we should see water as a potential source not of conflict but of agreements that can serve as a paradigm for the constructive sharing of knowledge and resources essential for the transition from a culture of war to a culture of peace.

UNESCO's International Hydrological Programme (IHP) — launched some twenty years ago as the only science and education programme within the UN system devoted to freshwater problems — addresses most of these issues in association with its many governmental and non-governmental partners. Its main concern is with the promotion of technical co-operation worldwide: upgrading hydrological knowledge and research capacities in our Member States; working with bodies such as the World Climate Programme to understand the links between hydrological processes and climate change; studying *with the Man and the Biosphere programme factors of vulnerability in the land— water system*; assessing problems of *groundwater contamination*; *examining hydrological processes in arid zones and the humid tropics*; and supporting postgraduate hydrology courses for participants from the developing world.

In commending this special issue may I finish with an image from that great man of science and culture Leonardo da Vinci, who said that in moments of crisis we should regard ourselves as passengers in the same vessel, threatened by the same rough seas, sharing a common destiny. Such a civilized awareness is essential — I believe — to negotiating the difficult waters that stand between us and our shared goals in the century to come."



SPANISH PAVILION

BY LUIS MIGUEL ENCISO

The theme of this year's International Exposition in Lisbon is the ocean. It is well known that the Spanish and the Portuguese have always been closely linked to the sea. This close maritime connection, which is sociopolitical, economic, artistic and environmental, is powerfully maintained in the present and should be kept alive in the future as a legacy for future generations.

For this reason the Spanish General Commissary for Expo '98 has included in its broad range of activities a *multi-disciplinary scientific encounter entitled Forum and debate on the sea and its problems*. It was held April 20 — 24 in the Calouste Gulbenkian Foundation in the Portuguese capital; the participants included 70 scientists and experts in a wide range of subjects related to the earth's waters. Together and individually they proved the importance of the subject in Spain and Portugal.

Some of the issues addressed were marine sciences, coasts, marine ecosystems and biodiversity, environmental problems, marine traffic, ports, scientific fleets, tourism and marine law. More than 100 university students attended.

All efforts directed toward analysis and reflection of the state of the oceans and the need to improve them is worthy of support. Thus we congratulate the magazine *Allántica*, published by the Atlantic Center for Modern Art of the Cabildo de Gran Canaria, for joining this effort with its project entitled *Agua*, an initiative that has been conceived as an elogy to the vital element. We are convinced that its multidisciplinary contribution will yield important results, and we offer this initiative an affectionate welcome while expressing our wish to the directors that their labors might culminate in success.



WATER

LUIS RICO AND ANTONIO ZAYA

This project is the fruit of an encounter by the water's edge. The seafront cafe smells of salt and sea urchins; beyond the conversations is the rhythmic sound of waves breaking. At the tables surrounding us, others drink and converse. The presence of water invites us to embark upon a voyage: a trip which will take us deep within the very substance of ourselves. It is strange to think and speak of water, given that this element constitutes a large proportion of our brain. Gaston Bachelard says there is a sense of continuity between the language of water and human