Managing water resources sustainably : challenges and solutions for the new millennium

— Gestion durable des ressources en eau : défis et solutions pour le nouveau millénaire —

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Supplying everybody with healthy water, protecting the environment and being conscious that water is an economic good, here are some challenges for the new millennium to solve through partnerships.

I ■ INTRODUCTION

As the dawn of a new millennium approaches, there is growing recognition that one of the biggest challenges confronting humanity is the need to better manage the earth's precious water resources. It is therefore fitting that the French Republic is hosting an "International Conference on Water and Sustainable Development" – a "Water Summit" – that is bringing together the various stakeholders concerned with water issues. It is from meetings such as these that consensus will develop and a broad 'coalition of the caring' will emerge that can tackle this complex and compelling problem.

Water permeates society, and its availability impacts all facets of human endeavour, be it economic, ecological, or social. Indeed, freshwater is essential for all life and just beginning to be recognized as a scarce resource.

Worldwide, demand for water is increasing, driven inexorably by population pressure, rapid industrialization, and agricultural intensification. In this century alone global water withdrawals have risen tenfold, with an increasingly larger share going to industrial and domestic uses.

Increasing water scarcity on a per capita basis is a global phenomenon, but most severe in the Middle East and North Africa (MENA) region, home to five percent of the world's population and only one percent of the world's annual renewable freshwater. Per capita availability in MENA at 1,250 cubic meters per year is one of the lowest in the world, and is predicted to fall by another 50 percent by the year 2025. Sadly, population pressure is most severe where water is scarce. Thus the better endowed regions, such as Latin America (with per capita availability of 23,103 cubic meters) or North America (18,742 cubic meters) are not facing pressures of population such as those confronting Asia with 3,283 cubic meters per capita per year.

It is important to recognize that regional data can mask huge disparities in water availability within countries. For example, per capita water availability in China, the world's most populous country, was 2,333 cubic meters in 1995, a figure well above the commonly-used 1,700 cubic meter benchmark for chronic water stress. But that number masks the severe water shortages gripping the North China Plain where demand for water has already

Partout dans le monde, la demande en eau augmente sous la pression des populations, de l'industrialisation et de l'intensification de l'agriculture. Comme d'énormes disparités existent entre les régions ou les pays, il serait bon de considérer la gestion de l'eau de façon plus globale. La première priorité est de fournir à tous une eau saine.

Au niveau international, on constate un consensus sur les mesures à prendre, résumées dans les principes de Dublin : une gestion sociale et économique de l'eau qui ne néglige pas la protection de l'environnement, une organisation institutionnelle qui évite la fragmentation, la reconnaissance de la valeur économique de l'eau. L'amélioration des connaissances, la sensibilisation du public, les partenariats, sont les valeurs à défendre.

outstripped supply, or in the capital city of Beijing where authorities are considering drawing water, at enormous expense, from a source that is more than 1,000 kilometers away.

In addition to quantity of water, quality is very important. Pollution of scarce water supplies reduces the usable water even more. Thus, India, the world's second most populous country, is experiencing water shortages in many places, a trend that is exacerbated by water pollution problems arising from discharges of untreated or poorly-treated sewage and industrial waste effluents particularly heavy metals and toxic chemicals.

Closely tied to scarcity and pollution is the issue of fragmentation in the water sector. In many developing countries, fragmentation in decision making characterizes the management of this scarce resource. Frequently, decisions on water use are made by at least six sectoral authorities (eg. agriculture, energy, environment, industry, mining, and municipal), and in extreme cases, 20 sectoral authorities are involved.

Fragmentation also exists at the international level because 40 percent of the world's population lives on rivers that are shared by more than two countries. Nature, however, does not recognize political boundaries. River basins and watersheds are the natural units of management. Thus, when one looks at the Nile river with 10 riparian countries, the Mekong with six, and the Danube with 12, it is clear that all these countries, whether upstream or downstream from one another, have to work together for better of the river basin.

Finally, fragmentation exists at the international institutional level, where multiple agencies are active in the water sector – International Water Resources Association, Food and Agriculture Organisation, United Nations Environment Programme, United Nations Development Programme, World Bank, and World Health Organization – to name a few, and all of whom deal with different aspects of the water problem.

The net result of this fragmentation, at the local, national, regional, and international levels has been problematic in terms of managing water resources sustainably, and it has become very difficult to evolve a cohesive agenda that brings people together on the water issue.

Dar El Salam Port and Town in Kenya.
(Photothèque EDF - photo P. Evrard)

II ■ WATER : THE UNFINISHED AGENDA

Consider the magnitude of the task in terms of unmet needs in the water and sanitation sector. Today, over a billion people live without clean water, and 1.7 billion live without sanitation. The human and environmental costs of this unmet demand are devastating, particularly in terms of human health. Where water is scarce, people, particularly the poor, are forced to rely on unsafe water with deleterious consequences, both to their health and productivity.

Microbial diseases – costing millions of lives and causing countless and debilitating illnesses – are endemic in the poorest parts of most cities of the developing world. When water sources are contaminated and sanitation facilities are minimal or nonexistent, cholera, dysentery, and typhoid abound, and are among the principal scourges of the poor.

Too often, municipal water and sanitation services that can effectively reduce microbial diseases have been operated on the assumption that the poor could not afford water and sewer lines. In fact, these potential customers are already allocating a high proportion of their household expenses – 20 percent in Port-au-Prince, Haiti – for water supplied from vendors. Many studies have found that such urban families will not only pay the city to bring safe and reliable drinking water to them, but will pay for waste water removal and treatment as well.

The overall picture is clear : most public water utilities in developing countries are high-cost, low quality producers of services. Therefore, from a demand perspective, people must be trusted to choose from a menu of service levels those services they want, and are willing to pay for. From a supply perspective, rigorous attention must be paid to providing households with a particular level of service at the lowest possible cost. It is in this context that successful examples of empowering, people-centered projects – Pakistan's Orangi Pilot Project and Bangladesh's Grameen Bank-financed rural water supply projects – are worthy of replication, because they best address issues of coverage, efficiency, and equity.

Given the constellation of issues we face, their complexity, coupled with the need to act on multiple fronts, one can ask the question : how can we manage the world's precious and dwindling water resources? The answer lies in better balancing :

— human use vs. environmental needs,
— economic concerns and ecological considerations,
— regulations and incentives,
— quantity and quality,
— short term and long term.

The response that we bring to this set of demands and objectives must be placed within a framework governed by the imperative of human solidarity. To see entire regions strangled by drought and shortages, while others reel under the onslaught of floods and monsoons, surely calls for us to reach out to the victims of

both extremes. To reach out to the poor, the destitute and the vulnerable, and especially the women who carry the burden of inequity and uncertainty.

So we all agree that we must act, but how ? That is the question.

Agriculture in Vietnam

(Photothèque EDF - photo M. MORCEAU)

III ■ PRINCIPLES FOR SOUND ACTION

Surprisingly, there is a consensus on how we should act. There is widespread agreement among all the experts on what needs to be done and how to do it. The Dublin Principles, reaffirmed at the Rio Earth Summit, and spelled out in Chapter 18 of Agenda 21, are all agreed among us. So why do we not reflect these principles in our everyday lives, why is decision-making not holistic ? One can summarize three areas of agreement not just in principle but on the approach to action.

First is the need to adopt an ecosystem or holistic approach. The first of three Dublin Principles, the holistic approach calls for linking social and economic management with protection of natural systems. The biggest obstacle to adopting a holistic approach is the fragmentation that governs the management of water, internationally, regionally, nationally, and locally.

Second is the need to look at institutions. We need institutional arrangements that can help overcome fragmentation, and it is gratifying to note that development of institutional capacities is one of three principal themes of the "Water Summit." But this is not easy. The key natural unit that we must work on is the river basin. These watersheds seldom match political or administrative boundaries, and therefore require a special effort on our part to match the need for coherence and overcoming the fragmentation with the need to respect the existing decision-making units. The principle of subsidiarity – which notes that decisions should be made at the lowest possible level – that has worked so well in the effective river basin management schemes from the Murray Darling Basin in Australia, to the French and German experiences, gives indications of how to successfully address this issue.

The key in implementing this is also to philosophically focus on the need to economize on administrative and regulatory effort and rely as much as possible on incentives. They are more likely to produce the desired results than any amount of policing. In particular, the involvement of women, local communities and civil society, in a truly participatory manner, is key to any effective implementation.

Third, is to address instruments. It is essential to acknowledge that water is an economic good in all its competing uses. To recognize the economic value of water is a key to action on rational use and allocation. It is clearly not a trivial question, and we should all recognize that many conceptual and technical problems exist in estimating the economic value of water. And in discussing price, we must not ignore the special needs of the poor. Moreover, price is only part of the equation. Institutional arrangements require not just coherent incentives and prices, but also a proper definition of the roles of governments (national and local), private sector, and civil society. Economists often talk of getting the prices right. I believe that it is just as important to get the roles right.

IV ■ AN AGENDA FOR ACTION

It is time for us to move forward vigorously with an agenda for action, that can be summarized in the following areas.

First : engage in a learning process. We must continuously monitor and learn as we act, so that mistakes are not repeated and experience is shared among practitioners so that the best practices of the few become the standard practices of all.

Second : tireless efforts at education and public awareness. Schools, universities, and the mass media must be the focus of this ongoing educational effort, in order to promote a real revolution in thinking, not just a change in emphasis of existing technical activities. I am very glad to see the Summit's emphasis on 'knowledge' as a precondition for sustainable management of water resources. We must enhance our knowledge, and share it in order to better understand the phenomena we are addressing.

Third : recognize the importance of partnerships. Water management is about bringing together many stakeholders and working in partnership. It is an easy thing to say but a difficult thing to practice. The World Water Council and the Global Water Partnership are efforts at the international level, but we must do much more. We must involve many other organizations so that our efforts are mutually reinforcing rather than scattered.

Finally, it is the values of mutual respect, equality, and common concern that we bring to the tasks that will make all the difference. We must live the faith ! It is these values that must guide our actions. They are values rooted in our common humanity, in the respect of all living things, in our determination to give voice to the voiceless and to think of future generations and act as true stewards of the earth. This earth, which we did not inherit from our parents but borrowed from our children.

Strong in the affirmation of our consensus, inspired by the values of solidarity and equity, we must now move on to action. If we act in this fashion, then indeed there will be enough water for our children and grandchildren in the 21st century. There is no time for complacency. The time for action is now.