REPORT

WATER MANAGEMENT IN 2020 AND BEYOND

8-10 November 2006
Monasterio de Rueda, Zaragoza, Spain

Ministry of Environment, Government of Aragon
International Centre for Water (CIAMA-La Alfranca)
Aragon Water Institute
Third World Centre for Water Management, Mexico
Sasakawa Peace Foundation, USA

The Workshop

The international experts meeting *Water Management in 2020 and Beyond* was organised in 8-10 November 2006, Monasterio de Rueda, Zaragoza, Spain by the Ministry of Environment, Government of Aragon trough its International Centre for Water (CIAMA-La Alfranca), with the support of the Aragon Water Institute, and in collaboration with the Third World Centre for Water Management in Mexico and the Sasakawa Peace Foundation in United States.

The objectives of the newly established International Centre for Water will include looking at the long-term development scenarios of the water sector. This meeting was one of its first activities.

World's leading experts in the fields of water, population, development, economics, agriculture, energy, and health, among other fields, were looking at possible future scenarios in water management in 2020 and beyond. The meeting included 15 invited lectures on the various aspects of the theme, as well as rich discussions and working group deliberations.

These included consideration of how developments in seemingly unrelated processes and sectors such as globalisation, free trade, energy, information and communication revolutions, diseases such as HIV/AIDS, as well as emerging developments in sectors that are linked more conventionally to water, such as population growth, urbanisation, agriculture, infrastructure, energy, management of water quality and ecosystem health, are likely to affect water management in the future.

The expert meeting primarily focused on the future water development scenarios beyond the post-2020 period. An objective of the meeting was also to formulate a research and action agenda for the organising institutions, as well as other institutions interested in developing programmes on the world´s water future. This Report summarises the major findings of this meeting, and gives recommendations on how the International Centre for Water could find a unique niche among global water institutes.

Main findings

The task for the expert meeting was exceptionally challenging, as water has many fundamental and very different facets and functions in human societies. Therefore, the future of the water sector is difficult to predict under the best of circumstances, since this sector affects most sectors, and, in turn, is affected by other sectors.

Water is intertwined in the daily life of humans in countless ways. The importance of water as a driver for health, food security, energy, and overall quality of life, and as a pillar for economic development is unique. As water affects human lives, the mankind also effects the hydrological cycle, in all dimensions from the local to the global scale. Food production accounts for 90% of water use in developing countries. Hydropower production has generated conflicts. Sustainable energy production is among cornerstones of economic development. The social and economic costs of floods and droughts are escalating. The human impacts on ecosystems often have been catastrophic in immeasurable ways. Water is largely a political good since majority of the mankind lives in river basins shared by two or more nations.

These complexities were approached in the expert meeting through an analogy. The evolution of the water sector a few decades ahead in a situation in which the drivers for change can be expected to be very diverse, and increasing, and at the same time in complex interrelation and difficult to foresee.

This general setting can be compared to a voyage, which does not have a specific end objective. Instead, a direction, or *route*, must be found which to take. This analogy has five components, which are the *Route* which to take after each choice situation, the *Traveller*, the *Equipment* which must be practical and useful and protect the *Traveller* in variable and unpredictable conditions, the *Rules* that must be followed and which may also change depending on where to go, and finally the *Weather* which can be foreseen with certain precision only a few days in advance, but of course the seasonality is known. The following table summarises the priority areas that were identified during the expert group meeting, and their functions within the travel analogy.

Travel analogy	Water sector correspondence	Priority areas identified
Route	Desired development direction	Security (water, food, energy, ecosystems…), adaptivity, welfare
Traveller	Actor	Society, stakeholders, administration, individuals, households, traditional communities, corporations
Equipment	Policy tools and approaches	Technology, governance, capacity building, leadership, management, organisation, communication, coordination, awareness
Rules	Water institutions	Institutional development, ethical and moral codes, laws, customary laws, commitments, human rights, participation
Weather	Externalities	Globalisation, climate change, demography (migrations, urbanisation, aging), diseases, health, political changes

It was noted that the number of priority areas was exceedingly high, but the developed structure (through the travel analogy) was particularly useful in organising the high number of important and diverse research topics. The most evolved prioritization took place in the case of the *Route* topics, as the expert meeting ended up recommending three topics for the International Centre for Water, to consider within this category. They are related to (1) security, (2) adaptivity and (3) welfare; as an obvious response to the expectations of the experts that the future is closely interwoven with high degrees of uncertainties. In this uncertain environment, where rapid, radical, unpredictable and irreversible changes may take place, the sector must develop strategies that are more adaptive than today. Only an adaptive approach can ensure efficient water management in the future.

The other end, the *Weather* variables, is another clearly identifiable starting point. The water sector has been perennially too isolated from and immune to global development activities and trends, which are analogous to the *Weather* conditions of the present similie. In the globalising

environment, it is imperative to include these issues intrinsically to the water sector deliberations, and it is desirable to consider the unconventional combinations of *Weather* topics in relation to the listed topics within *Rules* and *Equipment* categories. The *Traveller* category will most obviously be then easy to incorporate in water management activities according to the case-specific needs. These unconventional combinations should accord with the attributes defined in the table below.

Attribute	Definition
Out of the box	Water should be seen more broadly than done these days, because
New dynamics	the world is experiencing rapid development towards complexity and dynamism.
Interconnections	Water must be interconnected far more deeply,
Unconventional links	and new relevant links must be found
Non-predictabilities	in order to reduce uncertainties and provide more insight into the growing number of surprises.
Non-linearities	This is particularly important in pursuing to detect thresholds that the mankind should not pass.

It was generally agreed that water forms a complex system of cause and effect relationships with other natural resources and development activities. Within these interlinkages and dynamic interrelationships, the future of water development and management will be shaped. They increase by many orders of magnitude both the potential for conflict and the need for cooperation, within and between countries. It is not in any of these resources (water, energy, food, raw materials, etc.), but in their continuous interactions the future of mankind will be shaped.

A common denominator in virtually all responses to the future water problems of the world must include more capital, more technology and more cooperation, which must result in better and more efficient management practices. Within this overall context, the future water concerns may merge with the important issues of war and peace, globalisation, monetary and trade relations, human development, environmental conservation, and social cohesion. Each affects and is affected by others. The system of interrelationships often extends well beyond national boundaries, and often becomes global in scale. This does not mean that these global problems can be met with global solutions, since there are very few global solutions, either for the water sector or any other sector. However, they can often be understand and dealt with in a global framework, within which there could be a wide away of international, regional, national and sub-national responses. In the water sector, experience has taught us that one size does not fit all.

What is necessary is a determined effort to understand the main drivers which are likely to affect water management in the future. *Ad hoc* efforts, or extension of present solutions to solve the emerging water problems of the future, are likely to fail. Future will not be an extension of the past: it will be enmeshed in an inescapable web of interdependencies. The water profession needs to approach the solutions to the future water problems with the context of this web of interdependencies. Solutions that are sector-specific or *ad-hoc* are likely to be of limited use.

The papers that were specially commissioned for the workshop, and its conclusions, are now being edited for publication by a major international publisher.

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