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Editorial

During the past two decades, the world has witnessed many changes in the fields of science and technology. In fact, all the current trends indicate that the changes during the next 20 years are likely to be even more extensive than those witnessed during the past 20 years. It is highly likely that a historian of the 22nd century, looking back, will probably classify the 21st century as the century of change.

Past and present experiences are unlikely to shed much light on the expected future turbulent environment. Diversified societal groups, reflecting different ideologies, interests and views, are likely to jockey for power, resources, privileges and visibility, as never before in human history. Issues such as globalization, free trade in agricultural and industrial products, rapid technological changes, and the continuing information and communication revolution will collapse the borders between scientific disciplines as well as between countries. The challenge facing human society will be how to harness the potential released by these seemingly disparate forces so that the overall quality of life of the world's population can be improved, peace and regional stability can be assured, social harmony can be maintained and the environment can be preserved.

In the area of natural resources management and environmental conservation, a revolution is now taking place, even though the participants and the observers of this revolution may not be aware of it. In its wake, long-held concepts, management processes and societal models are likely to evolve further in an accelerated manner, and some will disappear altogether.

Water management is an integral component of this global change. It is changing in many ways, some of which are predictable while others are not. It is essential that the water profession identifies the main drivers behind the changes and then take appropriate steps to anticipate and manage those changes for the overall societal benefit. The current trends indicate that water management practices are likely to change more during the next 20 years than in the previous 2000 years.

The Autonomous Community of Aragon is a part of the global system, and, like the rest of the world, it is also witnessing major changes. Many of the earlier concepts of water management are disappearing, and these are being replaced by newer concepts. Among these changing concepts are the following.

- Water can no longer be considered to be a free good, but an economic and social good. Consumers will have to pay a realistic price for access to reliable water supply and wastewater treatment systems.

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- Historically, the two main areas of water management were restricted to technical and economic considerations. However, social, environmental and cultural factors have had to be added in recent years. This is making efficient water management an increasingly complex process.
- Quantity and quality were the primary considerations earlier. To this has had to be added dialogue between all the various interest groups.
- The public sector traditionally looked after water management and provided the necessary investments. This has now been restructured to public–private partnership in order that the management talents of the private sector and its fund-raising capacities can be harnessed.
- Earlier, it was primarily the agricultural water users who participated in the planning and decision-making processes. Now, by contrast, the whole population is getting involved in different ways.
- Ecological uses of water did not receive much attention before. Now, they are considered to be legitimate uses, and must be provided for in terms of water allocation.

What is heartening is to note that Aragon is aware of the conceptual and societal changes that have taken and are taking place, and it is giving them effective consideration within a new and evolving planning and management process. This volume outlines the important water-related issues Aragon has faced in recent years, and demonstrates the impacts of the new steps it has taken to manage its water resources under these changing conditions in a timely, cost-effective, socially acceptable and environmentally friendly manner. An objective assessment of the developments in Aragon since 2003 indicates the rapid and most remarkable progress it has made during this short period.

If water quality management is considered, even as late as the mid-1990s, only wastewater from the city of Zaragoza was treated. This meant 60% of the people of the region did not have access to wastewater management, and even the 40% who did were facing crumbling infrastructure because of years of poor maintenance and inadequate management.

As late as the end of 2002, the region had only 22 wastewater plants. Yet, during the past three years, the landscape has dramatically changed, with 50 wastewater plants in operation, 120 under construction, 17 out to tender and 20 under design. When all these become operational in 2007 and 2008, 90% of the wastewater will be treated, which will very significantly improve the water quality conditions of two-thirds of the lengths of all the rivers in the region. This can be considered to be most remarkable progress under any conditions.

The new financial model devised to make this accelerated treatment possible was through public–private partnership, where the private sector has 20-year concessions for these treatment plants under the regulatory control of the public sector. This innovative financing plan has raised an estimated €1.062 billion, €619 million for construction and €443 million for operation and maintenance. The magnitude of these funds can be realized from the following inter-comparisons:

- The national budget of Spain for wastewater management for the 1995–2005 period was €1.14 billion. Funds raised for Aragon are equivalent to 93% of the total Spanish expenditure for the past 10 years, but Aragon will be spending this in only 5 years up to 2006.

- The budget for the Plan represents nearly 22% of the annual budget of the entire Autonomous Community of Aragon.
- The infrastructure construction cost alone is nearly twice that of the European Union's entire LIFE programme for 2005–2006, and is equivalent to 85% of the amount EU has budgeted for its internal environmental policies for 2006.

In addition to the health, environmental and aesthetical benefits of vastly improved water quality conditions in Aragon, each euro spent for wastewater management is expected to generate €4.7 in the local economy. Through its innovative public–private partnership programme, Aragon has shown to the world that it is actually more economically efficient to live in a clean environment, compared to a dirty one, and given an enlightened and forward-looking management, the investments needed are available.

Another noteworthy solution that Aragon has successfully implemented is the establishment of a Water Commission, with the participation of the broader society. When the Water Commission was established in 2003, complete paralysis had set in because of confrontations between the proponents and opponents of water development projects. The 65-member commission has brought to the table representatives of the regional and municipal governments, major water users, water specialists, ecologists, NGOs, academics, and representatives of communities affected by the water projects, political parties and three river basins.

The results of the Commission so far have confounded its initial sceptics. For example, there were four projects on which no progress was made for some two decades because of considerable disagreements between different interest groups. By initiating and promoting a societal dialogue through the Commission, by taking the views of the different interest groups seriously, and by making dialogue a part of the decision-making process, Aragon has shown to the rest of Spain, and the world in general, that complex and controversial water problems can be successfully resolved when political will and enlightened leadership exist.

As the world moves into the 21st century, a clear vision of the future, and of how this vision can be achieved in the best way possible to serve society, is needed. It is important to discern what societies value most, which will determine and drive their unique vision of the future. This is not an easy task, but the Aragon experience indicates that it is a doable task.

The analyses in this issue show how Aragon has successfully managed to 'reverse the tide' of inertia and incremental progress within a very short period of about three years. The rest of Spain, and in fact the entire world, can learn much from this 'can do' attitude of Aragon, which I hope will be rapidly infectious.

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