

Towards secure and sustainable living: outcomes of the WMO international conference

The International Conference on Secure and Sustainable Living: Social and Economic Benefits of Weather, Climate and Water Services, organized by WMO, was held in Madrid, Spain, from 19 to 22 March 2007, under the gracious patronage of HM Queen Sofía. The Conference was hosted by the Environment Ministry and the National Meteorological Institute of Spain and attended by some 450 participants from 115 countries.

The Conference provided a vital forum for dialogue among the producers and end-users of weather-, climate- and water-related information. It is thus an opportunity for the National Meteorological and Hydrological Services of WMO's 188 Members to learn more about how their products and services are appraised and actually used, as well as what improvements might be expected from them, in

order to increase their effective value to the community. Equally important, the Conference rendered a rare opportunity for users to better understand the current capabilities of the National Meteorological and Hydrological Services, as well as their present limitations.

It is noteworthy that the Conference was a significant event. In the past, WMO had already addressed some of the important socio-economic issues involved. In particular, it is important to recall two major antecedents of the present Conference: firstly, the WMO Conference on Economic and Social Benefits of Meteorological and Hydrological Services, held in 1990; and secondly the WMO Conference on the Economic Benefits of Meteorological and Hydrological Services, which took place in 1994. However, both conferences suffered

from insufficient involvement of the user communities and weak participation of developing countries. This, then, was an important basis for steering the Madrid Conference towards ensuring a more fruitful dialogue among providers and users of weather-, climate- and water-related information for a better understanding and application of the products and services that the National Meteorological and Hydrological Services provide to their societies.

The purpose of the Conference was thus to contribute to secure and sustainable living for all peoples of the world by evaluating and demonstrating and hence ultimately enhancing the social and economic benefits of weather, climate and water services. It sought to assemble authoritative feedback



Madrid, Spain, 19 March 2007 — HM Queen Sofía of Spain (centre) speaks at the opening ceremony of the WMO International Conference Secure and Sustainable Living: Social and Economic Benefits of Weather, Climate and Water Services.

from the users of these services in order to:

- Inform governments and stakeholders generally of the immense societal benefits that flow from their investment in the global meteorological and hydrological infrastructure that supports the provision of meteorological and related services at the national level in every country;
- Foster increased awareness in both the current and potential user communities of the availability and value of the full range of existing, new and improved services;
- Initiate and promote new approaches to the evaluation of the social and economic benefits of meteorological and related services in the research, education and applications communities;
- Provide the basis for greatly strengthened national and international partnerships in the provision of meteorological, hydrological and related services;
- Guide the priorities of the National Meteorological and Hydrological Services (NMHSs) for infrastructure investment, service provision and service delivery.

In order to effectively deal with wide ranging socio-economic issues that are particularly relevant to the work of WMO, as well as those of the users of weather-, climate- and water-related information, it was ensured that the programme comprised seven plenary sessions and seven main focus events. The main programme-sessions covered agriculture, water resources, and the natural environment; human health; tourism and human welfare; energy,

transportation and communications; urban settlement and sustainable development; and economics and financial services. The discussion and information exchange at the Conference also benefited greatly from the series of seven regional and subregional preparatory workshops organized by WMO over the period November 2005 to February 2007 in the Philippines, Mali, Brazil, Kenya, the United Republic of Tanzania, Kuwait and Croatia. Outcomes of the programme sessions and those of the regional events were knitted together during the seventh plenary session.

Additionally, seven focus events formed an integral part of the Conference by complementing and elaborating many of the issues that emerged in the plenary discussions and regional workshops. Activities during the conference also included the launch by the WMO Secretary-General of the WMO book *Elements for Life*.

Given that a wide range of users and decision-makers, planners, economists and social scientists participated in the Conference, the

Leading up to the Madrid Conference

As part of the preparatory process for the Madrid Conference, the January 2007 *Bulletin* had as its theme "Socio-economic benefits of meteorological and hydrological services". Articles therein covered some of the benefits to be had and included a review of a number of national and regional workshops on the subject, which led up to, and contributed to, the Conference.

outcomes are expected to provide future guidance and to stimulate further partnerships. Consequently, the Conference underscored the need for sustained dialogue between producers and users of meteorological and hydrological information and services, as well as the essence of investing in the modernization of the national meteorological and hydrological infrastructures. The outcome also provided guidance on how to ensure better dialogue and partnership amongst relevant stakeholders in weather-, climate- and water-related sectors.

The Conference reiterated that, among others, the role of NMHSs is to provide the information and services that enable governments and other stakeholders to minimize the costs of natural disasters, protect and strengthen the weather-, climate- and water-sensitive sectors of the economy and contribute to the health, welfare and quality of life of the population. This role is carried out through the operation of national meteorological and hydrological observation and data-processing infrastructure. In many countries, NMHSs, in partnership with academic and private sector service providers, provide a wide range of information and advisory services, including: historical climate data and products; current information (weather, climate, air quality, streamflow, etc.); weather, climate, air quality, river and ocean forecasts; warning services (for all forms of meteorological, hydrological and oceanographic hazards); projections and scenarios of future human-induced climate change; scientific advice and investigations.

In conclusion, the Conference resolved to draw to the attention of decision-makers everywhere, the large and growing impact of weather, climate and water influences on community safety and well-being around the world, and the enormous potential benefits to be gained from improved and enhanced use of meteorological and hydrological services in decision-

Madrid Action Plan

The overall objective of this Action Plan is to achieve, within five years, a major enhancement of the value to society of weather, climate and water information and services in response to the critical challenges represented by rapid urbanization, economic globalization, environmental degradation, natural hazards and the threats from climate change.

Action 1—Review the institutional framework governing meteorological and hydrological service provision in order to strengthen partnerships with different sectors of the economy.

Action 2—Lead a quantum change in the way that weather, climate and water information and services are produced, used and communicated by identifying, confirming and responding to the rapidly increasing and evolving needs of multidisciplinary stakeholders for appropriately timed and scaled weather, climate and water information and services.

Action 3—Embark on capacity-building endeavours through the creation of education and training opportunities for both users and providers of weather, climate and water information in order to increase awareness of users to the opportunities afforded by weather, climate and water services, and to assist the providers of these services to understand more fully user requirements.

Action 4—Foster increased recognition by governments and other stakeholders of the contribution that National Meteorological and Hydrological Services (NMHSs) and their partners are making to secure and sustainable living.

Action 5—Adopt the following steps to meet the growing demand for weather, climate, water and related information and services:

- Strengthening of observational programmes, and the associated research and development;
- Development of the next generation of climate and Earth system models with resolutions of 10 km or finer, and the corresponding data assimilation systems;
- Significantly strengthening multidisciplinary research programmes required to develop the understanding underpinning the development of these models;
- Improving delivery and distribution systems, including early warning systems, to allow NMHSs to meet the needs of institutions, agencies and the general public; consolidating existing and, when appropriate, creating new regional operational centres to mutualize competencies and resources.

Action 6—Develop analysis of the urban environment as a critical ecosystem requiring targeted observation, research, and meteorological and hydrological services.

Action 7—Facilitate and strengthen dialogue and collaboration between providers and users of weather, climate and water information and services through international, regional and national platforms and programmes, and through the development of appropriate tools and methods.

Action 8—Strengthen existing, and develop and implement new, multidisciplinary programmes that will define and improve ways and means to generate and deliver those weather, climate and water services, which address the developmental, societal, economic, environmental and health concerns of the countries.

Action 9—Strengthen existing, and establish new, operating partnerships between users and providers of weather, climate and water services to share responsibility for effective delivery of services, and evaluate their performance.

Action 10— Facilitate and strengthen the ability of NMHSs to effectively communicate weather services and products, through all forms of media, in such a manner as to maximize the benefits provided to society by the meteorological and hydrological community.

Action 11—Encourage the NMHSs and the social science research community to develop knowledge and methodologies for quantifying the benefits of the services provided by NMHSs within the various socio-economic sectors, in particular:

- Develop new economic assessment techniques including especially techniques of economic assessments for developing and least developed countries;
- Develop WMO guidelines on operational use of economic assessment techniques;
- Train national staff on the use and practical application of economic assessment of the benefits of services provided by NMHSs;
- Present results of economic assessments to governments and donors or international financial institutions with the goal of modernizing the infrastructure of NMHSs and strengthening their service delivery capacity.

Action 12—Encourage the free and unrestricted exchange of meteorological, hydrological and related data to support research and improve operational services.

Action 13—Build on the earlier WMO work on the development of a comprehensive economic framework for meteorological service provision.

Action 14—Develop, as a matter of urgency, the implementation plan to give effect to the actions set out above.

Action 15—Monitor and report every year to key partners on progress with the implementation plan, and organize a further, more broadly based, conference in five years to take stock of achievements under this Action Plan.

making in virtually every social and economic sector and every country.

Furthermore, it behoves those government agencies of Members responsible for overall national social and economic development, to closely

involve their NMHSs in identifying and enhancing the opportunities for achieving the benefits of national and international meteorological and hydrological services in the public interest. In order to ensure adequate follow-up to important issues that

emerged, the Conference agreed to the Madrid Action Plan (see boxes above).