WORLD METEOROLOGICAL ORGANIZATION

Role of National Meteorological and Hydrological Services in

MAINSTREAMING CLIMATE SERVICES FOR ADAPTATION AND SUSTAINABLE DEVELOPMENT

WMO POSITION PAPER PREPARED TO SUPPORT

NATIONAL METEOROLOGICAL AND HYDROLOGICAL SERVICES FOR

UNFCCC SEVENTEENTH CONFERENCE OF PARTIES (COP 17)

(Durban, South Africa, 28 November–9 December 2011)

CCA-7

DRAFT WMO POSITION PAPER

UNFCCC SEVENTEENTH CONFERENCE OF PARTIES (COP 17)
(Durban, South Africa, 28 November–9 December 2011)

Role of NMHSs in MAINSTREAMING CLIMATE SERVICES FOR ADAPTATION AND SUSTAINABLE DEVELOPMENT

Executive Summary

Implementation of the Global Framework for Climate Services will help generate better understanding of the climate system; fill information gaps at global, regional national, and local scales; enable use of such information in various socio-economic sectors and help in climate risk assessment and develop mitigation and adaptation measures.

Learning to adapt to present weather and climate variability helps develop capacity to adapt to future climate change. Authoritative and credible climate services based on the latest scientific knowledge at various levels from global to regional, national and local at various time-scales are fundamental to the design of effective adaptation policies and climate risk management.

NMHSs of the WMO Member countries enjoy the capacity, where appropriate; to provide technical support and guidance at national level, respecting the country-driven approach, with a view to facilitating the implementation of adaptation activities.

Efforts need to be made to ensure that observations crucial to our understanding of terrestrial systems, including the hydrosphere, biosphere and cryosphere, are moved from the largely research-driven funding base to a secure, longer-term monitoring network that fully adheres to the Global Climate Observing System and Climate Monitoring principles.

Role of NMHSs in MAINSTREAMING CLIMATE SERVICES FOR ADAPTATION AND SUSTAINABLE DEVELOPMENT

1. Introduction

Scope

1.1 This Position Paper is a policy neutral document to provide guidance to the Directors and senior managers from National Meteorological and Hydrological Services (NMHSs) at COP 17 on the role of meteorological and hydrological services in climate services for adaptation and sustainable development.

Overview

1.2 NMHSs and WMO, through implementation of the Global Framework for Climate Services (GFCS), will enjoy the right vehicle to participate in collective actions at national, regional and international levels to guide and add value to adaptation and technical capacity building efforts.

1.3 Climate services depend on good knowledge of how the climate system works as well as on quantitative data on the climate. In turn, both of these requirements depend on systematic observations and monitoring. Climate observations provide a picture of what has happened in the past as well as recent trends, along with offering the input needed to make predictions and projections on what is likely to happen in the future.

1.4 Climate information at various time scales, and projections of future climate at regional, national and local scales, form the essential knowledge base for adaptation. Availability of climate information and its effective use by converting information into applicable knowledge helps prevent disasters that can result from climate extremes and support wise long term adaptation and mitigation strategies.

1.5 NMHSs of the WMO Member countries enjoy the capacity, where appropriate, to provide technical support and guidance at national level, respecting the country-driven approach, with a view to facilitating the implementation of adaptation activities. The Global Framework for Climate Services (GFCS) will facilitate and will enable a globally balanced mode of operation, systematically built to enable all countries to manage climate risk effectively.

2. Global Framework for Climate Services (GFCS)

http://www.wmo.int/hlt-gfcs/downloads/HLT_book_full.pdf

2.1 Climate change is a global phenomenon, and understanding of climate systems requires partnership across geographical, political and disciplinary boundaries. Given the complexity of, and requirements for, climate services addressing the immense variety of user needs is beyond the capacity of any single country and within each country beyond the means of a single institution. Accordingly, the GFCS as proposed by the World Climate Conference-3 and adopted by the Sixteenth WMO Congress serves as a long-term cooperative arrangement through which the international community will work together to facilitate generation and access to operational climate services at all levels.

2.2 The Framework is conceived to have five major components: Observation and Monitoring; Research, Modelling and Prediction; a Climate Services Information System; a User Interface Programme and Capacity Building, with the objective to:

> ***"Enable better management of climate risks due to climate variability and change and adaptation to climate change at all levels, through development and incorporation of science-based climate information and prediction into planning, policy and practice."***

2.3 The components of the Framework are shown in Fig. 1:

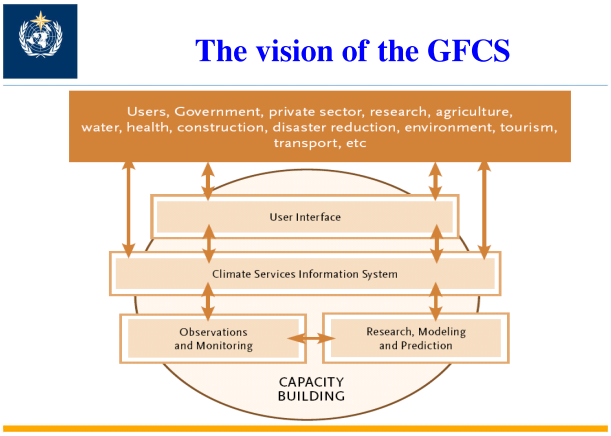


Fig. 1 Components of Global Framework for Climate Services

(i) The User Interface Platform will provide a means for users, user representatives, climate researchers and climate service providers to interact, thereby maximizing the usefulness of climate services and helping develop new and improved applications of climate information;

(ii) The Climate Services Information System is the system needed to protect and distribute climate data and information according to the needs of users and according to the procedures agreed by governments and other data providers;

(iii) The Observations and Monitoring component will ensure that the climate observations necessary to meet the needs of climate services are generated;

(iv) The Research, Modelling and Prediction component will assess and promote the needs of climate services within research agendas;

(v) The Capacity Building component will support systematic development of the necessary institutions, infrastructure and human resources to provide effective climate services.

2.4 The Framework is being designed to be an effective, efficient and economically viable mechanism for the generation, delivery and application of climate services. It will build on and strengthen existing local, national, regional and global networks of climate observation, monitoring, research, modelling as well as operational structures and service programmes.

2.5 To meet its objectives, the Framework would require extensive collaboration among national and local governments, agencies, non-governmental organizations, civil society, the private sector, as well as universities and research institutions around the world and outreach to communities in all socio-economic sectors benefiting from the application of climate services in planning, policy and practice. Implementing and operating the Framework will therefore require continuation and enhancement of the broad collaboration and partnerships, centred around these entities, which underpin and improve on its technical strengths. As such the Framework will be supported at the global level by the entire United Nations system and other organizations.

2.6 Implementation of the Framework will require capacity building through: strengthening and aligning institutional arrangements; strengthening of existing and, where required, establishment of new infrastructure and systems; and development of human skills and training. At the same time it will require an improvement in the infrastructure within countries to ensure the systematic collection of high-quality climate observations, undertake research and establish the operational elements. Maintaining the observation networks over long periods is critical, and developing countries need financial and technical support to undertake this responsibility.

3. Climate Change Adaptation

3.1 The National Meteorological and Hydrological Services (NMHSs) of WMO's 189 Members have a key responsibility in the climate variability and change adaptation strategy, in particular by provision of the most reliable data and facilitating a broader use of climate information, products and services for adaptation, a perspective which has gained considerable recognition since the adoption of the Bali Road Map at COP 13.

3.2 From the outset, WMO has actively participated in adaptation initiatives such as the Nairobi Work Programme on Impacts, Vulnerability and Adaptation to Climate

Change (NWP) and follows up post Cancun developments by refocusing its climate programmes to even more optimally sustain the climate observation, data collection, prediction, research, and service provision functions of the NMHSs in support of decision-making.

3.3 There is a strong demand for climate services to deal with climate change and adaptation, particularly at the local level. NMHSs can streamline this process by combining climate change projections with local climate data and knowledge. Such information can then be used to suggest adaptation strategies for avoiding, preparing for and effectively responding to the changing patterns of extreme events.

3.4 Many decisions taken under the United Nations Framework Convention on Climate Change speak directly to the need for climate information and climate services and set out specific expectations of the Convention Parties regarding systematic observations, research, capacity building and adaptation. Addressing these effectively will require much better international cooperation and frameworks for information exchange and service provision. The requirements of the Convention process therefore present a major area of demand for the Global Framework for Climate Services. Already, the need for the Global Climate Observing System and for action to fill the gaps in its coverage is recognized by the Parties.

3.5 WMO and NMHSs in partnership with relevant global and regional institutions add value to raw climate data through devising sector specific tools with applications to adaptation through:

(a) Strengthening data, information and knowledge systems, education and public awareness;
(b) Operational climate monitoring and prediction services as well as early warning systems; and
(c) Improving climate-related research and systematic observation for climate data collection, archiving, analysis and modelling in order to provide decision makers at the national and regional levels with improved climate-related data and information; technology and capacity-building, consistent with relevant provisions, of the WMO Convention, to implement urgent, short-, medium- and long-term adaptation actions, plans, programmes and projects at the local, national, subregional and regional levels.

3.6 WMO builds on this strength and continues to work closely with its Members and partners to develop regional and national climate adaptation strategies, as well as a full integration of NMHS services and deliverables in the context of socio-economic development, including the alleviation of climate-related hazard impacts. This is an objective which will demand efficient communication and sustained fundraising efforts through financial mechanisms envisaged for adaptation under the Cancun Agreements.

4. Capacity building in developing countries

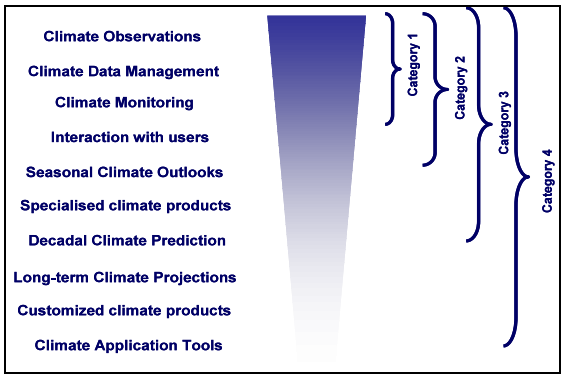
4.1 NMHSs are on the supply side of data and scientific information of climate change activities. Capacity building efforts will have to address the secure archival of data and the production of climate information as well as its conversion into action. A comprehensive capacity building initiative will have to include stakeholders in climate product generation and delivery, advice and decision options as well as preparation and use on the demand side.

4.2 The Global Framework for Climate Services aims at creating the scientific and technical foundation for enabling mechanism. The concept envisages national and international coordinated actions through the implementation of the Framework to provide operational climate services. The level of services provided by NMHSs can be categorized as follows:

Category 1: Providing basic climate services;

Category 2: Providing essential climate services;
Category 3: Providing full climate services; and

Category 4: Providing advanced climate services.



4.3 Capacity-building for development is a major WMO activity that helps developing and Least Developed Countries enhance their capability, knowledge and resources in order to serve the needs of their weather and climate services. Providing this assistance to developing and Least Developed Countries in turn helps WMO develop worldwide integrated information and observing systems that improve the accuracy of global forecasts, and that help protect life and property through timely warnings of impending weather- and climate-related disasters around the world.

4.4 The global sharing of knowledge and data – one of the goals of WMO capacity-building activities – enhances the quality and availability of data and forecasts worldwide. Unified standards and the assurance of data quality enable us to make better predictions about weather and climate now and in the future. Better predictions in turn help such sectors as disaster preparedness, health and agriculture and food security, among many others, to improve people's lives. Early warnings and risk reduction for weather- and climate-related natural disasters and disease outbreaks are prominent examples of the intended results of WMO capacity-building efforts.

4.5 NMHSs, through implementation of the GFCS, can play a key role in the context of the Cancun Agreements for strengthening institutional capacities and enabling environments for adaptation, including for climate-resilient development and vulnerability reduction. However, there is a need to enhance capacity building efforts in the research sector in developing countries. It is essential to improve the rate at which research results flow to services, and to enhance the quality and relevance of climate services, particularly in the developing world.

5. Technology

5.1 Weather, water and climate know no borders and effective services to users; economic sectors and the public at large depend on the exchange of all available information. WMO is strongly committed to the promotion, coordination and support of implementation of Information and Communication Technology (ICT) for improving the global, regional and national production, exchange and distribution of information and warnings on weather, climate and water, and will pursue actions for the development of the WMO Information System towards the achievement of the Millennium Development Goals. The availability of information technology has therefore a key role to play in enabling and fostering access to weather, climate and water information and services for the safety of life and property and promote the sustainable development for the benefit of humanity.

5.2 WMO's co-sponsored programmes such as the Global Climate Observing System (GCOS) ensure a long-term, user-driven operational system capable of providing the comprehensive observations required for monitoring the climate system and detecting and attributing climate change. On the other hand the World Climate Research Programme (WCRP) facilitates analysis and prediction of Earth system variability and change for use in an increasing range of practical applications of direct relevance, benefit and value to society.

6. Public Awareness Raising

6.1 Good policy and planning depends on good evidence and efficient public dissemination of information. Climate information is critical for major decisions concerning, for example, new water supply reservoirs, plans and infrastructure for expanding settlements and sectoral economic policy targeting climate-sensitive industries, e.g., tourism, renewable energy or aquaculture. Policymakers also acknowledge the need for publicly-available data and knowledge to support research, innovation and education. Increasingly they want better insight into, and preparedness for, an uncertain future in order to protect people against global threats such as climate change.

6.2 WMO's regional projects recognize that awareness and training are important for implementing climate change initiatives and thus they include a comprehensive climate change awareness raising programme for key stakeholders, including the media. The interaction of different users and providers of climate services through the various Climate Outlook Forums which are supported by these projects also provide a platform for sharing knowledge and for building stronger networks. Through implementation of the GFCS, climate information will be disseminated to end users throughout vulnerable regions by way of existing networks, along with print and electronic media including community radio stations broadcasting in local languages.

6.3 To meet the many challenges associated with "the last mile", the following actions should be undertaken:

- Further development of community and sector-relevant information products and services, including translation of climate outlooks and weather forecasts and warnings into local languages and their subsequent dissemination via a widely acceptable medium such as community radio broadcasts timed for maximum audience impact using local languages and addressing specific local needs;
- Improve risk awareness in vulnerable communities through effective public outreach programmes, including targeting the youth through the introduction of curricula at rural schools;
- Harmonize information management systems to enable efficient information and data sharing;
- Develop a network of intermediaries such as government institutions, non-governmental organizations (e.g., International Federation of Red Cross and Red Crescent Societies), community-based organizations and the media, that can take the climate-relevant information from centralized agencies such as the NMHSs;
- Enhance capacity building, particularly in the area of communications infrastructure and local risk assessment skills.

7. Conclusions and Recommendations

7.1 Climate information is on the crossroads of adaptation, mitigation, technology development, capacity building and finance. It plays a crucial role in national development planning, for managing development opportunities and risks and for mitigation and adaptation. Recent advances in science and technology offer the prospect of further improvements in quality of climate information and prediction provided by NMHSs.

7.2 In order to provide a globally balanced mode of operation, the Global Framework for Climate Services (GFCS) will be systematically implemented to enable all countries to manage climate risk effectively. Current capacity building activities to support climate services need to be scaled up and better coordinated. A comprehensive capacity building initiative is needed to strengthen existing capabilities in the areas of governance, management, human resources development, leadership, partnership creation, science communication, service delivery and resource mobilization.

7.3 Development of knowledge and tools for making decisions related to adaptation to climate change can be best achieved through close collaboration among the climate service providers and users in these sectors. These partnerships need to be extended to other sectors to build capacity of NMHSs to provide sector specific climate services in close partnerships with various UN agencies and programmes.

7.4 In view of the great advantage that the WMO community has in networking and information sharing, it can further join efforts that are made by other intergovernmental agencies to facilitate capacity building in the developing countries. Nevertheless, the funding mechanisms under the UNFCCC should broaden their scope to support capacity building in provision of climate services to the users at the institutional and individual levels.

7.5 Most users deal with weather and climate information in a seamless manner, and it greatly helps them to meet all their weather and climate information needs through a 'single window'; NMHSs can

effectively provide such a single window working in close partnership with academia, research institutes and government agencies amongst others.

7.6 Atmospheric science and technology are critical for climate change not only for mitigation but also for adaptation. Weather forecasts and climate predictions and projections should be made readily accessible to all enabled users, through a global framework integrating predictions, information, communications, observations and research.

7.7 NMHSs are encouraged to coordinate with the WMO Secretariat in identifying major thematic funding windows for submission of timely and relevant application to funding sources and benefit from a share of new multilateral funding for adaptation , particularly, the Green Climate Fund.

7.8 NMHSs are strongly encouraged to coordinate with their national delegations to encourage the inclusion of the GFCS in the country statements as well as strengthening calls in the SBI for financial support to the scientific basis for adaptation measures through implementation of the GFCS. The delegates from NMHSs have the capacity to support the negotiations by providing information on data, observations and research.

References:

- The Report of the High level Taskforce for the Global Framework for Climate Services - WMO/TD-No. 1065
- Role of National Meteorological and Hydrological Services in Mainstreaming Climate Services for Climate Risk Management- Position Paper No. CCA 6, COP 16, 2010
- Role of NMHSs in Adaptation to Climate Variability and Change (Analysis Report of a Survey) – WMO/TD-No. 1562, 2010
- Report of the Conference of the Parties on its sixteenth session, held in Cancun from 29 November to 10 December 2010: http://unfccc.int/resource/docs/2010/cop16/eng/07a01.pdf#page=2
- IPM, Informal Planning Meeting, Voluntary Cooperation Programme, Doc. 5, Geneva, 11-12 April 2011
- Report of the UNFCCC Subsidiary Body for Implementation on its thirty-fourth session, Bonn, June 2011