

DRAFT

WMO Strategic Plan
(Revised 16 March 2010)

Foreword

Executive summary

Introduction

- Societal importance of weather, climate and water services
- Purpose and context of the WMO Strategic Plan.....

Strategic thrusts

- Improving service delivery and service quality
- Advancing scientific research and application as well as development and implementation of technology
- Strengthening capacity building
- Building and enhancing partnerships and cooperation
- Strengthening good governance

Expected results, key outcomes and performance indicators

Monitoring and evaluation

WMO Results-based Budget

Conclusion

Appendices

- Appendix I. The organization of WMO
- Appendix II. The WMO strategic planning process

EXECUTIVE SUMMARY

The vision of the World Meteorological Organization (WMO) is to provide world leadership in expertise and international cooperation in weather, climate, hydrology and water resources, and related environmental issues, thereby contributing to the safety and well-being of people throughout the world and to the societal and economic benefit of all nations. The strategic direction of WMO for the period 2012-2015 and beyond is based on five Strategic Thrusts that address the following Global Societal Needs:

- Improved protection of life and property (related to impacts of hazardous weather, climate, water and other environmental events and increased safety of transport on land, at sea and in the air);
- Poverty alleviation, sustained livelihoods and economic growth (in connection with the Millennium Development Goals) including improved health and social well-being of citizens (related to weather, climate, water and environmental events and influences); and
- Sustainable use of natural resources and improved environmental quality.

The World Meteorological Congress recognizes that societies all over the world are affected by extreme weather, climate and water events, and the increase in the intensity and frequency of these events due to climate variability and change is a big challenge to nations especially the developing and least developed. The choice of the three broad societal needs and priority areas of focus take into consideration the interest of all nations to protect the lives and property of their citizens, to improve their well-being through sustainable use of natural resources and to protect environment.

The Strategic Plan for 2012-2015 builds upon a long-term planning process that has enabled World Meteorological Congress to respond to the changing needs of its Members and society in general. It is forward looking in the medium- and long-term, anticipating new needs as well as expected technological advances. Based on the synthesis of all relevant factors and financial realities, the Plan outlines the achievable expected results and outcomes focusing on the period 2012-2015 and beyond.

The five strategic thrusts lead to eight expected results together with a set of key outcomes and performance indicators. Within the Five Strategic Thrusts and eight Expected Results are five priority areas of focus:

- Disaster Risk Reduction
- Global Framework for Climate Services
- Implementation of the WMO Integrated Global Observing System
- Advancing Seamless Weather, Climate, Water and related Environmental Prediction
- Capacity Building

The eight expected results and a set of key outcomes together with the

associated performance indicators form the basis for the development of Operating Plan, Secretariat Implementation Plan and Budget, and the Monitoring and Evaluation.

This Strategic Plan provides a clear way forward for the Organization to address the critical global societal needs, agreed upon by Members. It under-scores the importance of improving the interactions between the providers and users of weather, climate, water and related environmental products and services to facilitate the generation and application of user targeted information and products for the benefit of societies worldwide.

INTRODUCTION

Societal benefits of weather, climate and water services

The societal benefits of weather, climate, water and related environmental services are derived from the improved capabilities to protect the safety of life and property, and to mitigate economic losses from weather events and natural hazards. The influences of weather, climate, water and related environmental conditions continue to shape the cultures, traditions and development paths of societies worldwide. Societies have used weather and climate information over generations to design shelters, clothing, and many other life supporting systems.

Recent statistics from the Centre for Research on the Epidemiology of Disasters for the period 1980 to 2007 reveal that, over 90 per cent of the disasters related to natural hazards, 71 per cent of casualties and 78 per cent of economic losses, are caused by weather-, climate- or water-related hazards such as tropical cyclones and storm surges, droughts, floods, or health epidemics and insect infestations.

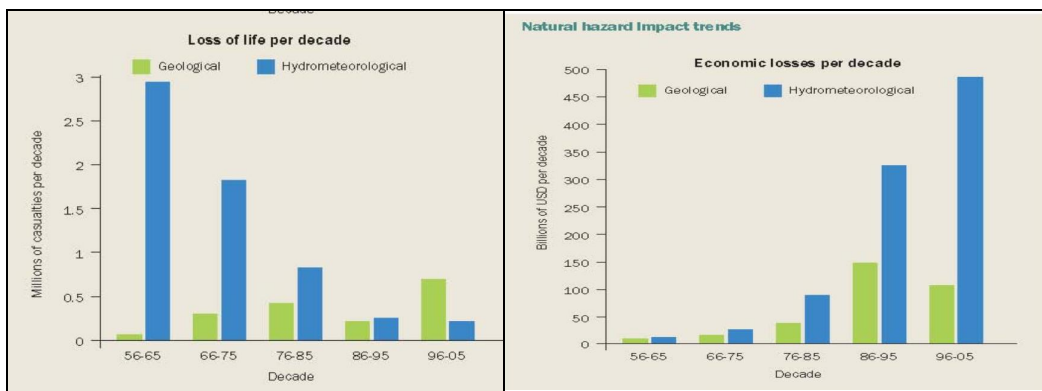


Figure 1a

Figure 1b

Figure 1: Decadal trends in the impacts of natural hazards over the five last decades (1a) loss of life per decade (1b) economic losses per decade over the period 1956-2005¹.

The reduction in the casualties linked to hydro-meteorological hazards during the period 1956-2005 (Figure 1a) is associated with the improvements in weather and climate services together with those in communication and response systems. The warnings formulated from the skilful seasonal forecasts may contribute significantly to mitigation of climate related natural disasters, enhanced productivity in sectors dependent on climate (Meza et al. 2008)² and efficient management of the institutions dependent on weather and climate (Georgakakos and Graham 2008)³. This reduction in casualties is also partly associated with significant research findings on the linkages between outbreak of disease epidemics such as malaria,

¹ Golnaraghi, M, J. Douris, and J.B. Migraine, "Saving Lives Through Early Warning Systems and Emergency Preparedness, Risk Wise, Tudor Rose Publishing, pp 137-141.

² Meza, F. J., J. W. Hansen and D. Osgood, 2008: Economic Value of Seasonal Climate Forecasts for Agriculture: Review of Ex-Ante Assessments and Recommendations for Future Research, J. Appl. Meteorol. and Climatol., 47, 1269–1286

meningitis and Rift Valley fever, and climate that has led to improved management decision-making.

The economic losses have, however, increased markedly (Figure 1b) due to a variety of factors, including increases in property values, and in settlements and economic activities in disaster prone areas such as coastal, river catchments and arid/semi-arid areas. The losses of life, people affected and economic losses (as a percent of GDP) associated with natural hazards are more severe for the developing countries than for developed countries as illustrated in Table 1 representing the impacts of droughts for the period 1900-2010. This provides a cogent argument for improving the weather, climate, water and related environmental services as well as communications and emergency response activities in developing countries to lessen the burden on their economies.

Table 1. The impacts of droughts by region for the period 1900 to 2010⁴

		# of Events	Killed	Total Affected	Damage (000 US\$)
Africa	Drought	259	844,143	290,866,829	5,419,593
Americas	Drought	116	77	65,214,341	20,696,439
Asia	Drought	143	9,663,389	1,597,500,427	28,140,159
Europe	Drought	37	1,200,002	15,482,969	20,061,309
Oceania	Drought	19	660	8,027,635	10,703,000

The advances in our understanding of the global climate system together with its prediction and interactions with the environment and human activities make it possible to provide better weather, climate, water and related environmental services to communities worldwide to improve their wellbeing. Such services would support:

- Agricultural activities to enhance food production, distribution and storage,
- Management of disease outbreaks to enhance the wellbeing of society,
- Design, management and operation of water resources systems
- Design, development and management of urban settlements,
- Design and development of renewable energy systems such as wind, solar and hydro-power
- Management of risks and opportunities associated with climate variability and change to reduce the related natural disasters.
- Design, development and management of infrastructure for air, land and water transport.

As predictions on a seasonal time scale and beyond are further improved (Figure 2), the benefits from these forecasts would spread to more countries and into more economic sectors, with increased value for each sector.

³ Georgakakos, K. P., and N. E. Graham, 2008: Potential Benefits of Seasonal Inflow Prediction Uncertainty for Reservoir Release Decisions, *J. Appl. Meteor. and Climatol.*, 47, 1297–1321

⁴ Source: "EM-DAT: The OFDA/CRED International Disaster Database www.em-dat.net - Université Catholique de Louvain - Brussels - Belgium"(Regions do not represent WMO Regions).

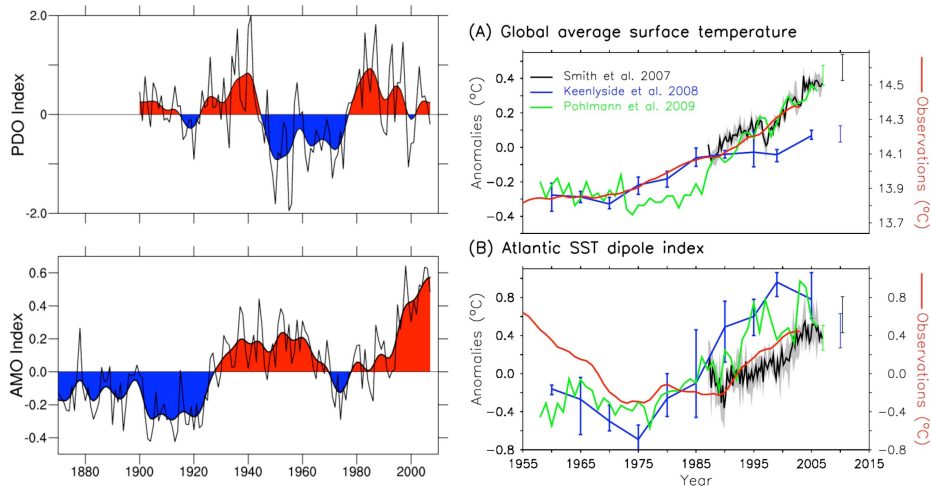


Figure 2: Observed decadal climate variability in the Pacific and Atlantic sector (left) and first attempts to make decadal predictions (right) (Adapted from WMO/TD No-1499).

The estimated economic benefits of climate forecasts related to El Niño – Southern Oscillation (ENSO) events for the agricultural sector alone range from US\$450 to \$550 million/year (minimum) for world agriculture, of which \$200 - \$300 million/year is for US agriculture⁵.

The weather, climate, water and related environmental services have been, and will continue to be, essential inputs to decision-making on environmental management and sustainable development issues and allow stakeholders to tackle new and emerging challenges such as enhancing economic development, poverty reduction, food production, health and water availability as formulated in the goals set out in Rio, the Johannesburg Implementation Plan of the World Summit on Sustainable Development (WSSD), the 2000 Millennium Development Goals and other international agreements.

⁵ Adams, Richard M., Chi-Chung Chen, Bruce A. McCarl, and Rodney F. Weiher. "The Economic Consequences of ENSO Events for Agriculture." *Climate Research* 13: 165-172, 1999.

WMO Strategic Plan 2012-2015

Purpose and Context

THE VISION OF WMO

To provide world leadership in expertise and international cooperation in weather, climate, hydrology and water resources, and related environmental issues, and thereby to contribute to the safety and well-being of people throughout the world and to the economic benefit of all nations.

Within the framework of the WMO Convention and a set of Global Societal Needs, identified by its 189 Members, WMO is committed to achieving its vision of providing world leading expertise and international cooperation in weather, climate, hydrology and water resources, and related environmental issues, and thereby to contribute to the safety and well-being of people throughout the world and to the economic benefit of all nations.

Global Societal Needs

- **Improved protection of life and property (related to impacts of hazardous weather, climate, water and other environmental events and increased safety of transport on land, at sea and in the air);**
- **Poverty alleviation, sustained livelihoods and economic growth (in connection with the Millennium Development Goals) including improved health and social well-being of citizens (related to weather, climate, water and environmental events and influences); and**
- **Sustainable use of natural resources and improved environmental quality**

Through its Strategic Plan, the WMO focuses its programmes and activities, especially those of the National Meteorological and Hydrological Services (NMHSs) on achieving results that will provide the best possible services that would contribute to the safety and welfare of its Member countries and to meeting global societal needs, including enhancing the global economy and addressing global environmental issues.

The WMO occupies a unique “niche” within the international system of the UN and other agencies. Over its long history, WMO has been most effective in facilitating the development of NMHSs in almost all countries of the world and in developing an unmatched system of global cooperation in weather, climate, hydrology and water resources, and related environmental issues, thereby contributing to the safety and well-being of people

throughout the world and to the economic benefit of all nations. It further has been a leader in addressing emerging climate and environmental issues in cooperation with other international and national partners. These achievements include, inter alia, the following:

- **Free and Unrestricted Exchange of Meteorological and Related Data and Products** - essential for real time weather services, for climate prediction, for climate change detection and for a broad range of global environmental programmes;
- **International Standards for Meteorological and Related Observations** – ensuring the intercomparability of data – a vital feature for detecting climate change and developing global weather and climate models and related services
- **Capacity Building** - in NMHSs throughout the world, thereby making an invaluable contribution to the safety of life and mitigation of property losses.
- **Promoting Science and Technology** – with an unchallenged reputation of excellence in transforming leading edge research into operational products and services;
- **International Leadership** - recognized leader amongst the UN organizations for its capacity to promote the assessment of the Earth system and environmental problems, and the prediction of its future evolution e.g., drawing the world's attention to the issues of stratospheric ozone depletion and climate change, and for comprehensive monitoring of the Earth system including through remote and space based systems.

To achieve these results, WMO has relied on Members, their NMHSs and national scientific institutions; other partners, e.g., ICSU, UNESCO and UNEP, ;other professionals from universities and the private sector; and national financial support to provide the scientific, programmatic and infrastructural support necessary to implement a cost-effective international cooperative system.

Given the escalating global societal needs, WMO must continue to make improvements in weather, climate, water and related environmental information and services. Climate variability and change, as evidenced by frequent and intense extreme events, are creating intense new social and economic stresses, especially given population growth in environmentally vulnerable regions, such as marginal (arid and semi-arid) lands, continental coastlines and lowlands and Small Island Developing States(SIDS). These stresses are exacerbated by an apparent increase in the intensities and frequencies of some climate extreme events in recent years. In response, WMO recognizes that the organization as a whole must take a number of fundamental strategic actions, including:

- Providing more timely, accurate and cost-effective products and services that are useful to decision makers in government and the business-sector;
- Enhancing the relevance and utility of weather, climate, water and related environmental information and services in response to

users' changing needs;

- Assisting the international community in dealing with the challenge of climate change adaptation by providing the best science based climate information and products and ensuring their appropriate use;
- Enhancing the effectiveness and lowering the costs of providing information and services by promoting partnerships at national and international levels, in light of the increasing cost and complexity of new science and technology;
- Providing enhanced visibility to its Members and their activities by participating more fully in international programmes and conventions;
- Assisting countries in translating commitments, particularly those agreed within the framework of global conferences, summits and international conventions, into effective and practical measures.

The Structure of the WMO Strategic Plan 2012-2015

Starting with the three Global Societal Needs (GSNs), the WMO Strategic Plan⁶, defines five Organization-wide strategic thrusts (STs) and eight (8) Expected Results to achieve its vision (Table 2).

The Expected Results are further supported by Key Outcomes (KOs) and their associated key performance indicators. The measurement of progress in achieving the expected results requires detailed targets and baselines as captured in the WMO Operating Plan, and Secretariat Implementation Plan and Budget.

The Strategic Plan, while directed at the financial period 2012–2015, takes into consideration longer term social, economic and technological issues that the Organization will be facing. The Strategic Plan also serves as the foundation for the WMO Operating Plan, and Secretariat Implementation Plan and Budget together with the performance monitoring and evaluation activities. The WMO Operating Plan⁷ and Secretariat Implementation Plan and Budget define the detailed deliverables, activities, performance metrics and the allocation of resources to achieve the expected results.

⁶ Appendix II describes the WMO strategic planning process.

⁷ Additional information on the WMO programmes discussed in this section can be found at: <http://www.wmo.int/>

Table 2: Schematic representation of the structure of WMO Strategic Plan 2012-2015

		5 Strategic Thrusts	8 Expected Results
WMO Strategic Plan 2012–2015	3 Global Societal Needs	Improving Service Quality and Service Delivery	1. Enhanced capabilities of Members to deliver and improve access to high-quality weather, climate and water and related environmental predictions, information and services in response to users' needs and to enable their use in decision-making by all relevant societal sectors
			2. Enhanced capabilities of Members to reduce risks and potential impacts of hazards callused by weather, climate and water and related environmental elements
		Advancing Scientific Research and Application as well as Development and Implementation of Technology	3. Enhanced capabilities of NMHSs to produce better weather, climate, and water and related environmental information, predictions and warnings to support in particular climate impact and adaptation strategies
	4. Enhanced capabilities of Members to access, develop, implement and use integrated and interoperable Earth-and space-based systems for weather, climate and hydrological observations, as well as related environmental observations, based on world standards set by WMO		
	5. Enhanced capabilities of Members to contribute to and draw benefits from the global research capacity for weather, climate, water and environment science and technology development		
		Strengthening Capacity-building	6. Enhanced capabilities of NMHSs, in particular in developing and least developed countries, to fulfill their mandates
		Building and Enhancing Partnerships and Cooperation	7. New and strengthened partnerships and cooperation activities to improve NMHSs' performance in delivering services and to increase the value of the contributions of WMO within the United Nations system, relevant international conventions and national strategies
	Strengthening Good Governance	8. An effective and efficient Organization	

Strategic Thrusts

Strategic Thrusts are broad directions for WMO, its Members and Partners in addressing the GSNs

STRATEGIC THRUSTS OF WMO

1. Improving service quality and service delivery;
2. Advancing scientific research and application as well as development and implementation of technology;
3. Strengthening capacity building;
4. Building and enhancing partnerships and cooperation;
5. Strengthening good governance

Strategic Thrust 1: Improving Service Quality and Service Delivery

WMO has facilitated the development of systems and standards for gathering, processing and sharing of weather, climate, water and related environmental observations to provide services for protecting life and property and spur socio-economic development. Despite improvements in understanding and the prediction of the global earth system, societies, especially in developing and least developed countries, are still vulnerable to severe weather and extreme climate conditions. Hence, there is much more for WMO to do to assist communities worldwide to benefit from improvements in the quality of weather, climate, water and related environmental services and their delivery.

Weather, climate, water and related environmental information can only be of benefit if it reaches the users on time and in an understandable and usable form, to support decision-making. This requires collaborative efforts involving the providers and users of information to ensure that the needs of the users are integrated in the development of the products and to enhance feedback between the providers and users of information for further improvement. Upgrades in telecommunications and other technologies for transmitting information from providers to users are required to increase the speed and volume of information provided and to reduce costs.

Those who provide the information must better understand the users' needs and how information is applied in decision-making, and new techniques will need to be developed to provide it

This strategic thrust is aimed at accomplishing the following tasks:

- Enhance the delivery of services by improving the speed, volume and cost-effectiveness of telecommunications systems to ensure timely and cost effective delivery of information and products for use in planning,

policy formulation and decision-making;

- Enhance the ability of the NMHSs to address user needs by implementing procedures for receiving inputs and feedbacks from users (e.g. rolling review of users' needs and feedbacks), making them more aware and capable of responding to the users of their information and services.
- Develop climate services within the NMHSs and at regional centres for multiple users, including those in hydrology, agriculture and fisheries that are essential to sustain water and food security.
- Increase the provision of weather, climate, water and related environmental information to various planners and policy makers for sustainable development practitioners.
- Expand the provision of weather information needed to improve aviation safety and air traffic management.
- Improve the operational oceanographic and marine meteorological services that many Members provide by delivering more specific and targeted marine products to users, and
- Enhance capabilities and capacities of NMHSs with respect to disaster risk reduction in the weather, climate and water domains, with strengthened appropriate mechanisms at the national and international levels; in partnership with other international organizations,
- Bolster the effectiveness of multi-hazard early warning by augmenting capabilities and capacities to produce and deliver warnings related to a broader range of environmental hazards, including tsunamis, accidental nuclear releases, volcanic eruptions and other environmental events.

Strategic Thrust 1 has two Expected Results (ER1 and ER2) together with their key outcomes and performance indicators and one priority area.

Expected Result 1(ER1):

Enhanced capabilities of Members to deliver and improve access to high-quality weather, climate, water and related environmental predictions, information and services in response to users' needs and to enable their use in decision-making by all relevant societal sectors

In the past, weather services predominated and were supply driven, largely limited by the time constraints on what products could be sent to clients prior to decision making in the weather sensitive sectors. Increasingly the requirements for services have broadened to include weather, climate, water and related environmental services and less time-critical decisions. Furthermore the variety of information available has expanded substantially, and continues to expand, requiring the service provider to understand the use of the information in order to tailor the information to the needs of the user. While the requirements differ from sector-to-sector, the common need is for integration of weather, climate, water and related environmental information and products within a single (seamless) service. Noting that needs change over time and new service clients emerge, an effective rolling review of client needs is required to plan the development, production, application and distribution of new products.

The Key Outcome under ER1 addresses the rapidly changing paradigm for the provision of weather, climate, water and related environmental services.

Key Outcome	Key Performance Indicators
<p>KO 1.1 improved access to seamless weather, climate, water, and related-environmental products and services (e.g., warnings, forecasts and supporting information)</p>	<ul style="list-style-type: none"> • Analyses showing the social and economic benefits of the improved services; • Increase in users with timely access to an increased number and range of products • NMHSs with regular access to products provided by global and regional centres

Expected Result 2 (ER2):

Enhanced capabilities of Members to reduce risks and potential impacts of hazards caused by weather, climate and water and related environmental elements

The challenge for the NMHSs is to work with relevant sectors to develop products and information to support their specific needs for decision-making in responding to extreme climate, water and related environmental events.

The products and information should meet the long-term needs for planning, development and public education, and for risk reduction measures immediately prior to the onset of and during any potentially hazardous event.

Disaster risk reduction is a priority area due to the negative influence of natural disasters on the achievement of the GSNs. Weather, climate and water related disasters continue to result in very high human and economic costs, and displacement of large populations in many countries, particularly in developing and least developed countries. By developing a set of contingency measures based on weather, climate, water and related early warning systems, including environmental information and services, nations can save more lives and reduce economic losses associated with natural disasters.

Increasingly countries and donor agencies are drawing a strong link between disaster risk reduction and climate change, since they are recognizing that climate change can lead to the increased frequency and possibly intensity of certain types of extreme events, such as storm surges, heat waves and forest fires as well as floods, droughts, and tropical cyclones. Cost-effective adaptation measures require close working relationships between the NMHSs and other development agencies within countries, particularly in developing and least developed countries to develop and implement disaster risk reduction strategies nationally and regionally.

The two Key Outcomes under ER2 address the cooperation among NMHSs, national development agencies and national disaster management agencies for the reduction of the impacts of natural hazards.

Key Outcomes	Key Performance Indicators
<p>KO 2.1 Multi-hazard early warning systems are, implemented.</p>	<ul style="list-style-type: none"> • Increase in the number of NMHSs with multi-hazard early warning systems; • Number of NMHSs integrated into national emergency management systems • Developing country Members providing disaster risk reduction products and services.
<p>KO 2.2 National integrated flood management plans are developed.</p>	<ul style="list-style-type: none"> • Number of Members establishing flood management plans • Number of regional hydrological forecasting systems established in transboundary basins.

Strategic Thrusts 2: Advancing scientific research and application as well as development and implementation of technology

Past advances in scientific research and applications as well as technology development and implementation have made significant contributions to the improvements in weather, climate, water and related environmental information and services. These improvements include better warning lead times, more accurate predictions and new products and services, such as air quality alerts, seasonal climate outlooks and other environmental products. However, many challenges still remain or have been exacerbated by population growth, greater use of marginal land areas, and human activities generally.

Advances are needed in key scientific and technological areas to increase further the scope, accuracy and lead time of weather, climate, water and related environmental information and services. Further actions are needed to increase the availability of data from comprehensive and robust information networks for improving the quality of services.

This strategic thrust is designed to accomplish the following tasks:

- Implement and maintain integrated weather, climate, water and related environmental observing networks with improved resolution, accuracy, reliability, and timeliness to meet user needs.
- Implement and maintain information systems enabling timely data exchange, analysis and management to improve the quality and timeliness of weather, climate, water and related environmental information, products and services;
- Develop and implement enhanced capabilities to significantly enhance the accuracy and lead time for very short-range (one to six hours) forecasts and warnings for meteorological and hydrological conditions;

- Improve storm track and intensity forecasts to reduce the errors that in turn increase the overall cost of disaster mitigation activities, and, in worst case scenarios result in communities not being warned of hazardous weather events.
- Provide quantitative measures of information certainty and/or uncertainty to increase the utility of weather, hydrology and seasonal climate information in decision-making, with a specific focus on ensemble prediction systems.
- Improve the utility of weather, seasonal climate, marine and hydrology forecasts to allow advance planning in social and economic sectors, such as development, disaster risk management, transport, infrastructure, tourism, agriculture, fisheries, health and energy, which could generate significant socio-economic benefits.
- Develop and implement better operational air quality and air chemistry capabilities needed to support governmental and other national initiatives aimed at enhancing the quality of life and protecting the environment.
- Expand the use of scientific models and techniques in producing environmental information and services. In particular, it is planned to develop further and implement the capability to forecast many components of the environment simultaneously.
- Improve the operational use of climate science to support societal needs to adapt to climate change and variability.

Strategic Thrust 1 has three Expected Results (ER3, ER4 and ER5) together with their key outcomes and performance indicators and three priority area for 2012-2015.

Expected Result 3 (ER3):

Enhanced capabilities of Members to produce better weather, climate, water and related environmental information, prediction and warnings to support in particular climate impact and adaptation strategies.

Global Framework for Climate Services is a priority area under **ER3**.

The Heads of State and Government, Ministers and Heads of Delegations at the World Climate Conference-3 decided to establish a Global Framework for Climate Services (GFCS) "to strengthen the production, availability, delivery and application of science-based climate prediction and services." The Framework will benefit from and contribute to the achievement of the outcomes of other ERs.

In addition to the pillars of observations, and climate research, modelling and predictions, Climate Services Information System and Climate User Interface Programme are the two new components of the Framework (Figure 3). An important feature of the Framework (Figure 3), is the close interaction between users and providers of climate information and products, (i.e., Climate User Interface Programme), with the value of the service being judged on its ability to improve decision-making. The Climate Services Information System (CSIS) will develop better climate information and prediction products from operational NMHS systems and disseminate them more effectively to meet user needs. The progress made and systems developed over the years under the World Climate Programme through Members and their NMHSs will form the foundation for developing the CSIS.

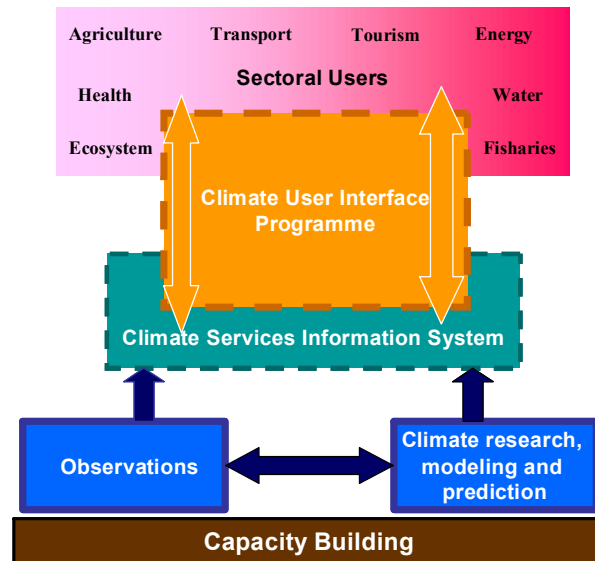


Figure 3: Components of the Global Framework for Climate Services

To achieve ER 3, and make climate information, products and services more useful to society and relevant in day to day decision-making for impact studies and adaptation strategies, the mechanisms established under the World Climate Programme (e.g., Climate Information and Prediction Services (CLIPS)) would be strengthened, expanded and operationalized based on the existing Global Producing Centre (GPC)–Regional Climate Centre (RCC)–Regional Climate Outlook Forums (RCOF)–NMHS framework. WMO will continue to mobilize resources to expand the RCC capabilities in vulnerable regions. CSIS will facilitate regular and effective flow of climate information from global to national levels. Widespread social, economic and environmental benefits are expected through more effective climate risk management and increased capacities for adaptation to climate variability and change. Greater emphasis on sectoral applications, such as those in agriculture, water resource management, energy and disaster risk reduction, will be necessary.

The priority in generating hydrologic information and products will be on enhanced, quality efficiency and effectiveness. Among the initiatives will be to prepare guidance materials to be utilized to increase the capacities of the NMHSs, particularly in developing and least developed countries, to improve hydrological forecasting, water resources assessment and management, and adaptation to climate variability and change. WMO also will seek to mobilize resources for the improvement of hydrological networks in developing and least developed countries.

The three Key Outcomes under ER3, together with the key performance indicators, address improvements in long range predictions, climate information and products and hydrological information and products.

Key Outcomes	Key Performance Indicators
<p>KO 3.1: Improved Long range forecasts and long-term projections.</p>	<ul style="list-style-type: none"> • Number of standardized products (e.g., monthly and seasonal predictions, climate watches) provided by Members; • Number of Members providing standardized products.
<p>KO 3.2: Climate information and prediction products for climate adaptation and risk management are improved.</p>	<ul style="list-style-type: none"> • Number of operational Regional Climate Centres providing inputs for the National Climate Centres • Number of Members with formal National Climate Centres, accessing global and regional products, using the guidance materials and transmitting climate products for national needs • Number of Members interacting with users while providing climate services, through formal mechanisms including National Climate Outlook Forums, in support of adaptation and climate risk management in key socio-economic sectors
<p>KO 3.3: Hydrological information and products, including water resource assessments, are improved.</p>	<ul style="list-style-type: none"> • Number of Members having established a Quality Management Frameworks for Hydrology using current guidance materials for hydrology and water resource management; • Number of regional hydrological data bases developed in transboundary river basins.

Expected Result 4 (ER4):

Enhanced capabilities of Members to access, develop, implement and use integrated and interoperable surface-based and space-based systems for weather, climate and hydrological observations, as well as related environmental observations, based on world standards set by WMO.

WMO Integrated Global Observing System (WIGOS) and WMO Information System (WIS) are priority areas under ER4.

Weather, climate, water and related observations, gathered by NMHSs and partners, form the foundations for the delivery of all services provided by NMHSs and for much of the research to improve our understanding of the earth system together with its prediction. The Fifteenth WMO Congress (Cg-XV, May 2007), decided to establish the WMO Integrated Global Observing Systems (WIGOS), a coordinated, comprehensive and sustainable system, to address observational requirements of all WMO programmes and partners, including those of the Global Earth Observation System of Systems (GEOSS) of the Group on Earth

Observations(GEO), in the most cost effective way. The WIGOS will enhance observing capabilities, data and product quality, and interoperability among WMO global observing systems (GOS, GAW and WHYCOS) and other WMO co-sponsored observing systems (Figure 5).⁸ The goal is to provide improved information and products to support decision-making at all levels.

The Cg-XV also decided to develop and implement WIS as a pillar of WMO strategy to efficiently manage and move weather, climate water and related environmental information and products in the 21st century. The WIS provides an integrated approach suitable for all WMO Programmes to meet the requirements for routine collection and automated dissemination of observed data and products, as well as data discovery, access and retrieval services for all weather, climate, water and related data produced by centres and Members in the framework of any WMO Programme. The WIS will reduce the operation costs and enhance the reliability of data communications and provide easier, more user-friendly ways to share data nationally and internationally.

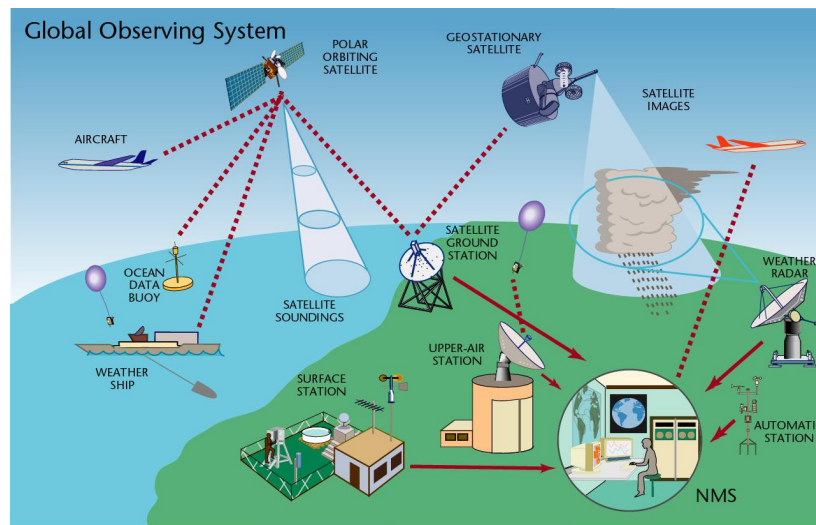


Figure 5: The WMO Global Observing System that form the foundation for establishing WMO Integrated Global Observing System (WIGOS)

- Under ER4, the three key outcomes and associated key performance indicators, address improvements in three systems- WIGOS, WIS and a strengthened co-sponsorship Global Observing System for Climate (GCOS)⁹, which facilitates the improvement the quality of climate data of the total climate system to meet the needs of international, regional and national users of climate data and the derived products.

⁸ The WMO co-sponsored systems include the Global Ocean Observing System (GOOS), Global Terrestrial Observing System (GTOS) and Global Climate Observing System (GCOS).

⁹ The GCOS has the responsibility for setting the requirements of climate observations and related data and products and working with WMO components (NMHSs, Technical Commissions, Regional Associations) and its observing system partners (e.g., GOOS, GTOS, CEOS, GEOSS of the GEO) to improve climate observations for all observing system domains and from both ground-based and space-based systems.

- WIS will be implemented to provide an interoperable system for the collection, exchange and management of observational data, products and information to support all WMO activities. In particular WIS will enhance data access, retrieval, product generation, and data management capabilities to meet WIGOS, disaster risk reduction and evolving requirements of the GFCS and other future needs.
- WIGOS will build on and improve coordination of the existing WMO global observing components (GOS, GAW, and WHYCOS). It will enhance the observational data and products quality by improving the standardization and QMF. WIGOS will respond to the evolving needs of the GFCS by facilitating the availability of high-quality and compatible observations and data on a sustainable manner.

The GCOS provides support for the observational needs of the GFCS, Intergovernmental Panel on Climate Change (IPCC), and WMO Member States and Territories in their national climate services in various international conventions such as UNFCCC, the UN-CCD and the Ozone Convention.

The three Key Outcomes and their associated Key Performance Indicators under ER4 include WMO activities to improve the quality and availability of observations together with the efficiency of the systems to process and exchange data, observations and products.

Key Outcomes	Key Performance Indicators
<p>KO 4.1: WMO Integrated Global Observing System is implemented.</p>	<ul style="list-style-type: none"> • Completion of WIGOS milestones according to WIGOS implementation plan. • Increased availability of observations for users.
<p>KO 4.2: WMO Information System is developed and implemented.</p>	<ul style="list-style-type: none"> • Implementation of WIS by NMHSs with continuous access to observations and products to meet the needs of the NMHSs and national users And to enhance capabilities of Members to access data and products. • Enhanced capabilities for data processing and management.
<p>KO 4.3: Accessible climate observations and climate data archives at the NMHSs and global data centres are increased.</p>	<ul style="list-style-type: none"> • Progress in implementing the Global Climate Observing System, • Increase in projects to rescue and digitize climate data, to improve the use and exchange of high quality climate data sets and to assess the state of the global climate system; • Number of Members developing and implementing modern climate monitoring systems, including Climate Watch Systems.

Expected Result 5 (ER5):

Enhanced capabilities of Members to contribute to and draw benefits from the global research capacity for weather, climate, water and environmental science and technology development.

The scientific community, policy makers and many sectoral users look to World Climate Research programme (WCRP) to provide the most up-to-date climate research products and tools. The improvements in climate models and prediction systems, as well as in downscaling tools for regional applications, will provide key inputs to climate change adaptation planning, the Ozone Convention, the IPCC and the GFCS. Advances in predictive skill for seasons and longer timescales will have direct benefits for NMHSs and their clients.

The unifying theme of the World Weather Research Programme (WWRP) is predicting weather events that are potentially economically disruptive on life threatening, or significantly impact the environment or the quality of life. The WWRP aims to accelerate progress in predictive skill and in utilizing high-impact weather forecasts, including those of severe weather, hydrological and environmental events as well as those that can lead to significant economic or other desirable benefits. WWRP programmes, including THORPEX, emphasize technology transfer, training and development of new services and seek to involve and benefit WMO Members in developing and least developing countries, particularly through regional research and training.

The Global Atmosphere Watch (GAW), a part of WIGOS, provides atmospheric constituent and air quality measurements and information that are important for several international conventions including the UNFCCC, the Vienna Convention on the Protection of the Stratospheric Ozone Layer, and the Convention on Long-Range Transboundary Air Pollution. Numerical weather prediction models are increasingly assimilating aerosols and ozone observations to improve weather forecasts and climate products as well as deliver air quality forecasts.

Weather, Climate and Water Research, Predictions and Services is a priority area under **ER5**.

Future research will follow a balanced (or seamless) approach to weather, climate and water services, including developing forecasts of a broader range of environmental parameters, such as air quality, sand and dust storms, and changes in vegetation, to meet the needs of users and the urgent demands to reduce the vulnerability of communities. For example, improving the skill of seasonal forecasts would contribute greatly to reducing risks and vulnerability to natural disasters and adapting to the impacts of climate variability and change. Figure 4 shows the relationships among current products, potentially predictable climate information and needed climate information together with the directions for applied research are suggested by the purple overlap region.

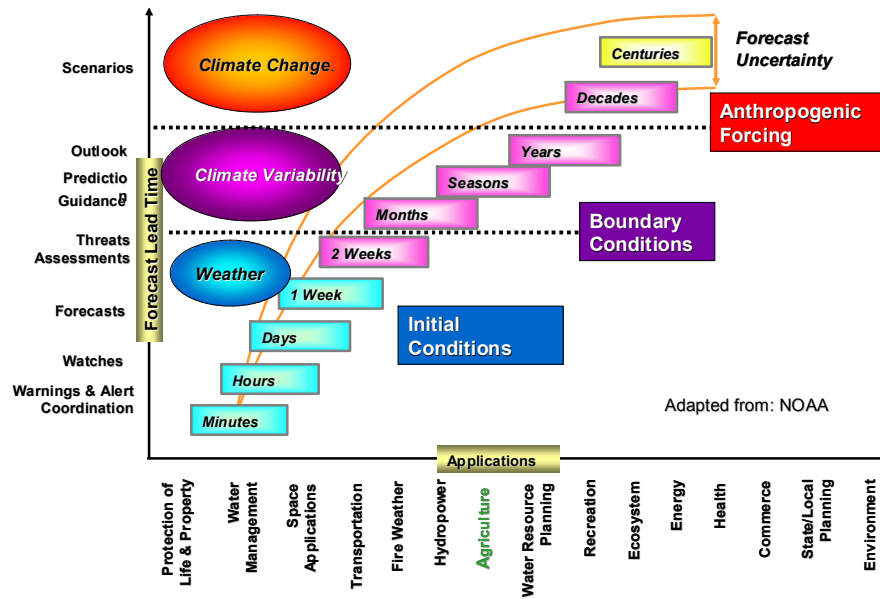


Figure 4: Schematic diagram showing the challenges of developing ‘seamless’ products and Services, and the available climate information and gaps (Source: NOAA).

The future approach to weather, climate and water research, predictions and services will:

- Take a unified approach over multiple time and spatial scales, including a requirement for the downscaling of climate information.
- Invest in increasingly high-performance computing to accommodate the increasing complexity and detail of models;
- Develop closer linkages between research, operations and users, e.g., through Forecast Demonstration Projects (FDP).

The four Key Outcomes and associated key performance indicators under ER5 address improvements in prediction of weather and climate, and observations and assessments of atmospheric chemistry.

Key Outcomes	Key Performance Indicators
<p>KO 5.1: Climate prediction/ projection skill for seasonal, decadal, and longer time scales is improved.</p>	<ul style="list-style-type: none"> • Increase in projects to advance climate research. • Measures of skill and value of climate predictions and projections to national and regional climate services.
<p>KO 5-2: Prediction of high-impact weather on time scales of hours to seasons is Improved.</p>	<ul style="list-style-type: none"> • Increased research-on operations products and services; • Improvements in the number of internationally coordinated weather research initiatives and/or forecast demonstration projects completed.
<p>KO 5-3: Atmospheric chemistry observations and assessment meet needs of environmental conventions and policy assessments.</p>	<ul style="list-style-type: none"> • Regular bulletins on global atmospheric chemistry are provided to environmental conventions and policy assessments; • Number of technical reports, measurement guidelines and scientific analyses linking atmospheric chemistry to weather, climate, water and the environment
<p>KO 5-4 Seamless forecasts of weather, climate, water and the environment from months to seasons are developed.</p>	<ul style="list-style-type: none"> • Increase in the implementation of WMO Global Integrated Forecast System by NMHSs; • Improvement in skill of monthly to seasonal forecasting systems.

Strategic Thrust 3: Strengthening Capacity-Building

The human resource and infrastructure capacities of an NMHS have a significant influence on the quality of services. Equally important is the ability of the users to interpret and integrate information from service providers, including NMHSs into decision-making. Hence, capacity building involving the NMHSs and the users of weather, climate, water and related environmental services is essential in addressing the GSNs. WMO has over decades supported the building of capacity in NMHSs in all parts of the world, thereby making an invaluable contribution to the safety of life and property globally.

The capacity-building strategic thrust is important for:

- Fostering, as appropriate, regional and national approaches to upgrading capacity of NMHSs in basic systems, data acquisition and dissemination technologies, communications, client relations and service delivery;
- Increasing the capacity of Members' National Meteorological and Hydrological Services especially in developing and least developed countries to align their services with the specific development needs in their

countries;

- Strengthening the scientific and technical capacity of developing and least developed countries to develop and apply weather-, climate-, water and environmental-related information and products in support of socio-economic development;
- Enhancing the capacity of developing nations to optimize their own investments and in-country donor funded activities that boost their capacity to provide user-relevant services;
- Assisting in the broadening of governmental and public education in Member countries to improve awareness on weather, climate, water and related environmental services;
- Implementing initiatives to build the capacity of societies to address the different needs and experiences of men and women in the development of environmental products and services.

Despite continued improvements in science and technology, many NMHSs in developing and least developed countries often cannot take advantage of these improvements due to inadequate infrastructure and insufficient skilled human resource. Users in these countries may also lack the capacity to interpret and integrate information into decision-making. This generally results in inadequate generation and use of weather, climate, water and related environmental information and services to meet the socio-economic needs in these countries. Hence capacity building remains a high priority for addressing the GSNs.

For many NMHSs and Regional Centres, particularly in developing and least developed countries, the needs for highly qualified personnel is outstripping the capacity of the NMHSs to attract such personnel due to rapid changes in demand for services and the current losses to retirement of their aging workforce and natural attrition worsened by HIV/AIDS epidemic. Institutional capacity building is needed to improve management, planning and policy development skills and to strengthen their national and regional coordination. Further efforts are needed in strategic planning and the valuation of socio-economic benefits of weather, water, climate and other environmental services – to gain a higher profile within their governments, countries and regions. This would allow them to be better positioned to secure resources and to make stronger contributions to economic sectors in achieving development goals at local, national and regional levels.

The media is a primary tool for communicating relevant environmental information to the public and to decision makers. NMHSs, especially in many developing and least developed countries, need to enhance their capacity to utilize the media effectively. Building capacity in communications, especially through print and electronic media, is needed to improve the effectiveness of information delivery to society.

In many countries, the public and decision makers are not aware of the information, products and services from NMHSs beyond the daily weather forecasts. WMO would enhance its efforts in communicating the benefits of its services and products, through education of both those who deliver and those who use weather, climate, water, oceanic and air quality information, especially in developing and least developed countries. Full benefits will

only be achieved through continued capacity-building for users and providers.

The UN Millennium Development Goals recognize the need to promote gender equality and empowerment of women. Women and children are the most adversely affected by natural disasters especially in developing and least developed countries. There is a need to develop skills to provide services tailored to the needs of women, who act as family protectors in times of disasters, play a significant role in agriculture and food production, water resources management, and use environmental resources.

Capacity Building, as well as being a Strategic Thrust, is also a priority area for WMO and is important for improving the NMHSs' capabilities, capacities and involvement with users in other governmental organizations, civil society, private sector and intergovernmental groupings in efforts to address the GSNs. WMO will give priority to promoting cooperation and capacity-building through concrete objectives to:

- Improve regional cooperation and coordination between Regional Associations, Technical Commissions and the Secretariat for setting regional priorities in order to serve Members more efficiently;
- Give particular attention to the capacity development needs of NMHSs in developing countries, Least Developed Countries and Small Islands Developing States to address specific issues such as forecaster qualifications for aviation meteorology, the GFCS and disaster risk reduction;
- Increase awareness of the socio-economic benefits of the products and services provided by the NMHSs and regional centres, including their contribution to the achievement of the Millennium Development Goals;
- Assist NMHSs managers with tools for building effective communication with governments, policy- and decision-makers, and development partners;
- Continuously assess and address NMHS training needs, including professional training and development, technical training, project development and management training;
- Expand the number of strategic partnerships with internal and external stakeholders;
- Support the above initiatives through enhanced Resource Mobilization.

Strategic Thrust 3 has one expected result (ER6) together with the associated key outcomes and performance indicators.

Expected Result 6 (ER6):

Enhanced capabilities of NMHSs, in particular in developing and least developed countries, to fulfill their mandates.

The NMHSs and the Regional Centres have basic systems, physical infrastructure and human resources that are crucial for the production and delivery of improved weather, water and climate services for their governments, public and private sectors and national decision making. To meet the current and future demands for these services, improvements must be made in their infrastructure and systems with special emphasis on the future developments of multi-hazard warning and response systems and climate services to support the Global Framework for Climate Services. These efforts will require financing from governments and voluntary extra-budgetary contributions and their success will depend on the ability to mobilize resources from

multiple sources.

ER6, together with the associated four key outcomes and performance indicators, will be accomplished by WMO, through cooperative efforts with Members and international and regional partners with particular attention to the needs of developing and least developed countries.

Key Outcomes	Key Performance Indicators
<p>KO 6.1: NMHSs and Regional Centres are improved, particularly in developing and least developed countries.</p>	<ul style="list-style-type: none"> • Number of NMHSs and WMO Regional Centres with defined roles in national and regional socioeconomic development activities, in cooperation with international and regional development agencies; • Number of NMHSs with programmes and networks for collaborating on service delivery at regional levels.
<p>KO 6.2: Infrastructure and operational facilities of NMHSs and Regional Centres are improved, particularly in developing and least developed countries.</p>	<ul style="list-style-type: none"> • Number of NMHSs with improvement in infrastructure and operational facilities to address identified deficiencies. • Number of NMHSs with modernized capacities to develop and disseminate products to their customers.
<p>KO 6.3: Human resources development activities at national and regional levels are improved especially in developing and least developed countries.</p>	<ul style="list-style-type: none"> • Participation of NMHS staff in training activities in meteorology, climatology, hydrology and the related geosciences and allied disciplines for effective and efficient service delivery; • The number of NMHS staff trained in priority service areas and in management.
<p>KO 6.4: Capacities of NMHSs are enhanced through cooperation and partnerships with other national and regional organizations.</p>	<ul style="list-style-type: none"> • Development projects and activities funded through voluntary and extra-budgetary resources.

Strategic Thrust 4: Building and enhancing partnerships and cooperation

The complexity of the Earth system and the interconnections between weather, water, climate and related environmental processes and hazards are increasingly challenging the scientific and financial capacity of WMO to improve the quality and accuracy of information and products. No single government or agency has the necessary resources to address all the challenges on its own. Consequently, the Organization's success depends on its ability to partner effectively with internal stakeholders and external organizations in addressing the GSNs.

The partnership strategic thrust is important to:

- Heighten understanding and use of WMO's environmental information and service capabilities by the United Nations system, Member countries, and international and national organizations, e.g., in implementing the GFCS

and other initiatives;

- Enhance partnerships with other major international scientific organizations due to the increasing complexity and multi-disciplinary of the basic science issues required to provide improved products and services.
- Enhance WMO's ability to increase the scope of its information and products and to develop and sustain service improvements by leveraging the capabilities of partners. Further the responsiveness of Member's agencies to emerging requirements is expected to increase by this cooperation;
- Broaden partnerships between developed, developing and least developed countries involving relevant national agencies, e.g., with emergency management agencies.; and
- Maintain a proactive role in ensuring a coherent, science-based approach within the United Nations system and among other stakeholders to implement environmental conventions, including outcomes of World Summits and follow-up to all relevant United Nations Conventions.

Strategic Thrust 4 has one expected result (ER 7) together with the associated key outcomes and performance indicators.

Expected Result 7 (ER 7):

New and strengthened partnerships and cooperation activities to improve NMHSs' performance in delivering services and to increase the value of the contributions of WMO within the United Nations system, relevant international conventions and national strategies.

Through the GFCS WMO is expected to play a leading role in UN Delivering as One on Climate Knowledge (with UNESCO) and to have extensive collaboration with UN specialized agencies, funds and programmes, and intergovernmental institutions including the Group on Earth Observations (GEO). WMO will strengthen its role in the UN Chief Executives Board and contribution to the implementation of the UN Conventions (i.e., UNFCCC, UNCCD and UNCBD), including through their subsidiary bodies on scientific technological advice (SBSTAs). WMO will continue to contribute to the further implementation of major international programmes of action (e.g. Hyogo Framework for Action on disaster risk reduction, Nairobi Work plan on Adaptation, Brussels Programme of Action (BPoA) for the LDCs).

WMO has contributed to the development of and participates in the management of several co-sponsored programmes and activities (IPCC, WCRP, GCOS, GTOS and GOOS) in agreement with relevant contributing sponsors (IOC of UNESCO, ICSU, UNEP, FAO). WMO is also a strategic partner on the Millennium Development Goals (MDGs), in particular with FAO and WFP on food security, ILO and WHO for social protection and UNEP for the green economy.

Within most national governments, the NMHSs are the authoritative agencies on the scientific aspects of weather and climate information and impacts and deliver the official forecasts and warnings to the government and the public on both extreme weather and climate events, many times in partnership with national civil protection and hazard response agencies. In many countries the NMHSs are also responsible for services related to hydrology and water resources and their influence on sectors such as agriculture and air and marine transportation.

The four Key Outcomes and the associated key performance indicators under ER7 address the need to enhance cooperation and partnerships national and international institutions to achieve the shared objectives.

Key Outcomes	Key Performance Indicators
<p>KO 7.1: WMO Leadership in UN activities and stronger linkages with international, global and regional organizations.</p>	<ul style="list-style-type: none"> • Degree of reporting to international conventions, particularly the UNFCCC, UNCCD, UNCBD and enhanced interaction with their SBSTAs and COP processes; • Enhanced cooperative efforts and partnerships with key Member institutions, the UN system, other international organizations, NGOs, and the private sector.
<p>KO 7.2: Co-sponsored programmes (e.g. IPCC, WCRP and GCOS) and strategic partnerships are improved</p>	<ul style="list-style-type: none"> • Increased visibility and initiatives of WMO in the activities of co-sponsored programmes and as a strategic partner
<p>KO 7.3 NMHSs partnerships with other organizations in national and regional decision-making processes are improved.</p>	<ul style="list-style-type: none"> • Impact of NMHSs' reports, bulletins, and other outputs on decision-makers; • Number of NMHS's leading partnerships for service delivery at national and regional levels,
<p>KO 7.4: Effective communication at global, regional and national levels</p>	<ul style="list-style-type: none"> • Increase in the presentation of climate issues in international and national media.

Strategic Thrust 5: Strengthening good governance

An organization's resource limitations and sub-optimum alignment with its objectives are fundamental constraints on the pace—and ultimately—the success of every strategic plan. Internally, process and management efficiencies can help mitigate resource limitations and can expedite progress towards strategic targets by improving alignment with organizational priorities. Good governance promotes open and transparent processes, efficient and effective use of resources and equitable treatment of all parties. Explicit efficiency goals are needed to accelerate the pace of improvements within currently achievable resources.

This strategic thrust aims to improve management by:

- Promoting open and transparent business processes, efficient and effective use of resources and equitable treatment of all parties;
- Enhancing the efficiency of the WMO Secretariat;
- Ensuring the integrity of WMO management systems, including information technology.
- Strengthen the results-based management systems and practices and the connection of the Programmes and Budget to its strategic initiatives,

and

- Affirming the Organization’s effectiveness by conducting a comprehensive review of its structure, programmes and priorities and implementing the findings.

Strategic Thrust 5 has one expected result (ER8) together with the three key outcomes and associated performance indicators.

ER 8: An effective and efficient Organization.

The effectiveness and efficiency of an organization has a strong influence on the achievement of results. Given the difficult fiscal environment and the level of management and financial oversight by the Executive Council and others, a management priority exists for improving the efficiency, effectiveness and transparency of the programmatic and financial management of the organization. This will include developing a visionary Strategic Plan, a clear and effective WMO Operating Plan and an efficient and transparent Results Based Budget for the Financial Period 2012 – 2015 together with a monitoring and evaluation system.

The WMO support services provide valuable expertise, advice and services in the planning, organization of meetings, conferences and other related activities. These services are a key factor in the efficient functioning of the constituent bodies. Specific functions include, inter alia, translation, interpretation, and organizational activities, essential in the conduct of meetings and conferences and a range of services essential in producing attractive, readable and accurate documentation, publications and other communication materials on all aspects of WMO’s activities.

The three Key Outcomes and the associated key performance indicators under ER8 address the need to improve the efficiency and effectiveness of the Organization.

Key Outcomes	Key Performance Indicators
KO 8.1: Effective and Efficient WMO Congress and Executive Council	<ul style="list-style-type: none"> • <u>Increased Members’ satisfaction in the quality of documentation and supporting services for Cg and EC;</u> • Reduction in the cost of sessions.
KO 8.2: Efficient and Effective WMO Secretariat	<ul style="list-style-type: none"> • Timely and cost effective completion of management objectives, and oversight recommendations for improved organizational effectiveness, e.g., from External Auditor and EC subsidiary bodies; • Unqualified Audits and effective internal controls
KO 8.3: Efficient and Effective Constituent bodies (Regional Associations and Technical Commissions).	<ul style="list-style-type: none"> • Increased Members’ satisfaction in the quality of documentation and supporting services for constituent body sessions • Reduction in the cost of constituent body sessions • Number of developing countries participating in sessions

WMO Operating Plan

The WMO Operating Plan translates the strategic thrusts, expected results and key outcomes described in the Strategic Plan into specific initiatives and projects, which are needed to address the global societal needs and achieve the expected results. The WMO Operating Plan is comprehensive in that it distinguishes the contribution of WMO Members, technical commissions, regional associations and the Secretariat. Starting with the Key Outcomes, it specifies the deliverables; activities and performance metrics to assess progress in achievement of the expected results and encompass the activities of the 7 WMO Technical Commissions and the 6 Regional Associations. It forms the basis for WMO-wide Monitoring and Evaluation.

WMO Secretariat Implementation Plan and Budget

The WMO Secretariat Implementation Plan and Budget identifies specific activities, initiatives, and the resources that the Secretariat, working with regional associations and technical commissions, requires to implement the activities that lead to achieving the key outcomes and expected results.

The end result is a results-based budget for the Secretariat containing the following items:

- A logical framework for informed budgetary decision-making, which provides the expected results, deliverables, activities and performance indicators, together with the required resources;
- Resource justification by results, which is designed to optimize the use of resources and improve the Secretariat's responsiveness to meet Members' needs;
- Incorporation into the budgetary decision-making process of performance measures gauging progress towards key performance targets against allocated resources.

The Secretariat Implementation Plan and Budget is submitted in a different document (*add web-link once approved*) and is approved by Congress.

Monitoring and Evaluation

In the WMO results-based management system, monitoring and evaluation (M&E) are tools to measure the performance of the Organization and the implementation of its Strategic Plan. Monitoring and evaluation also contribute to identifying good practices and lessons learned with respect to implementation as well as policy, strategy and programmatic design that will inform the next phase of strategic planning. They provide information for ensuring the continuing effectiveness and relevance of the WMO Programmes. The evaluation results are important inputs to the strategic planning process and are used to adjust strategic direction and priorities, if required.

Whereas monitoring is an ongoing function, annual evaluations are conducted and results are reported to the constituent bodies of WMO, in particular the Executive Council.

The M&E procedures and practices are defined in the WMO Monitoring and

Evaluation System. Monitoring and evaluation of the implementation of the WMO Operating Plan and Secretarial Budget is the joint responsibility of WMO constituent bodies, Members and the Secretariat.

CONCLUSION

Significant progress in improving the quality, timeliness and utility of weather, climate, water and related environmental predictions and assessments has resulted from the cooperation of all nations in sharing observations of the Earth system from the local to the global scale, coupled with advances in data assimilation techniques and numerical models. This interdependence of countries (in?) is the principal *raison d'être* for the establishment of WMO, since WMO provides an effective forum for establishing observational and data quality standards, for promoting the exchange of data and the transfer of technology, and for sharing knowledge related to research, products and services.

Despite these improvements more communities are increasingly vulnerable to natural hazards, while national economies are becoming more sensitive to the climate variability and change as evidenced by the greater frequency and intensity of climate extreme events. The full benefit from continuing scientific and technological progress is yet to be realized.

WMO is focusing its strategic direction for the period 2012-2015 on five Strategic Thrusts that address the Global Societal Needs. Its Strategic Plan under-scores the importance of improving the interaction between providers and users of weather, climate, water and related environmental products and services. Within the Strategic Thrusts and eight Expected Results are five priority areas:

- Disaster Risk Reduction
- Global Framework for Climate Services
- Implementation of the WMO Integrated Global Observing System
- Advancing Seamless Weather, Climate, Water and related Environmental Prediction
- Capacity Building

Advancing these priorities offers great potential for improving the weather, climate, water and related environmental products and services offered by the NMHSs, for enhancing WMO and its Members contribution to global initiatives, and for strengthening the capacities and involvement of all Members within their countries and in regional and global activities, especially those in developing and least developed countries.

The Plan emphasizes capacity-building and partnerships as an effective way to optimize resources to achieve internationally agreed development goals and to reduce the risks to development from natural disasters and climate change. Finally the Organization will focus on efficient management and good governance to achieve its objectives.

This Strategic Plan provides a clear way forward for the Organization to address the critical global societal needs, agreed upon by Members. More information about WMO and its strategic planning process is available on its website 'www.wmo.int'

World Meteorological Organization

7 *bis*, avenue de la Paix – P.O. Box 2300 – CH 1211 Geneva 2 – Switzerland

Tel.: +41 (0) 22 730 81 11 – fax: +41 (0) 22 730 81 81

E-mail: wmo@wmo.int – Website: www.wmo.int