



World Meteorological Organization
Organisation météorologique mondiale

Secrétariat

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Weather • Climate • Water
Temps • Climat • Eau

Our ref.: SG/ASG/SPO/SP 2016-2019

GENEVA, 8 December 2014

Annex: 1

Subject: Draft WMO Strategic Plan 2016-2019

Action required: Your response is requested, preferably by **15 January 2015**

Dear Sir/Madam,

I am pleased to bring to your attention the draft Strategic Plan 2016-2019 developed for consideration by the Seventeenth World Meteorological Congress (Geneva, May-June 2015). The draft Plan has been prepared under the guidance of the Executive Council and recommended to the Congress by the Council at its sixty-sixth session (Geneva, June 2014). The current draft Plan integrates the recommendations of the Executive Council, Members, and presidents of regional associations and technical commissions.

The draft Plan is attached and will be soon available at the Congress website.

You are kindly invited to review the document and provide your comments to facilitate consideration and adoption of the Plan by the Congress.

Yours faithfully,

A handwritten signature in black ink, appearing to be 'J. Lengoasa', with a long horizontal line extending to the right.

(J. Lengoasa)
for the Secretary-General

To: Permanent Representatives (or Directors of Meteorological or Hydrometeorological Services) of Members of WMO (PR-6804)

cc: Hydrological Advisers to Permanent Representatives



AGENDA ITEM 10: WMO STRATEGIC PLAN AND BUDGET

ITEM 10.1: WMO STRATEGIC PLAN 2016-2019

WMO STRATEGIC PLAN 2016-2019

SUMMARY

DECISIONS/ACTIONS REQUIRED:

Congress is invited to:

- (a) Approve the draft text for inclusion in the general summary given in Appendix A;
- (b) Approve draft Resolution 10.1/1 (Cg-17) in Appendix B; and
- (c) Approve the draft WMO Strategic Plan 2016-2019 given in the Annex to Appendix B.

CONTENT OF DOCUMENT:

The Table of Contents is available only electronically as a Document Map*.

* In MS Word 2007 or 2003, go to "View" > "Document Map". In MS Word 2010, go to "View" > "Navigation Pane". In MS Word on a Mac, go to "View" > "Navigation Pane", select "Document Map" in the drop-down list on the left.

APPENDIX A: DRAFT TEXT FOR INCLUSION IN THE GENERAL SUMMARY

10. WMO STRATEGIC PLAN AND BUDGET (AGENDA ITEM 10)

10.1 WMO Strategic Plan 2016-2019 (agenda item 10.1)

10.1.1 Congress recalled its decisions on strategic planning (paragraphs 8.5.1-8.5.5 and Resolutions 36 and 38 (Cg XVI)) and noted that the strategic planning for the period 2016-2019 represented the third phase of the Results-based Management (RBM) Strategic Planning Framework for WMO and builds upon the previous long-term planning process and the experience and lessons learnt in RBM during the 2008-2011 and 2012-2015 periods that had enabled it to respond to the changing needs of Members and society in general.

10.1.2 Congress noted with appreciation the work accomplished by the Executive Council (EC) through its Working Group on Strategic and Operational Planning in preparing the Strategic Plan. Congress also noted that the WMO Strategic Plan (SP) for the period 2016-2019 is directed at addressing three broad global societal needs through implementation of seven priorities to advance the achievement of Expected Results (*see Annex I to the Draft Strategic Plan given in the annex to draft Resolution 10.1/1(Cg-17) in Appendix B*). The priorities identified reflected the inputs from all WMO constituent bodies and in particular the six regional associations.

10.1.3 Congress appreciated the active involvement of regional associations, technical commissions and the Secretariat, including Secretariats of co-sponsored programmes, in the development of the WMO Strategic Plan 2016-2019, which ensured that the document reflected the collective view of all WMO constituent bodies.

10.1.4 Congress reaffirmed the importance of the Strategic Plan for the WMO RBM as the foundation for the planning of activities and resource allocation in the seventeenth financial period as reflected in the WMO Operating Plan (OP) and Results-based Budget (RBB) for the period 2016-2019.

10.1.5 Congress agreed that, although its primary focus was on the Seventeenth WMO financial period (2016-2019), the Strategic Plan takes into consideration the challenges beyond the period that may influence the achievement of Expected Results. The Plan should direct collective and coordinated activities of regional associations, technical commissions and the Secretariat through well-defined Programmes, projects and initiatives, as well as guide and motivate activities of Members and their National Meteorological and Hydrological Services.

10.1.6 In that connection, Congress adopted Resolution 10.1/1 (Cg-17) – WMO Strategic Plan (2016-2019).

[The EC recommended the draft WMO Strategic Plan 2016-2019 to Congress for approval. EC-66 (paragraphs 4.8.1.2-4.8.1.3)]

APPENDIX B: DRAFT RESOLUTION

Draft Resolution 10.1/1 (Cg-17)

WMO STRATEGIC PLAN 2016-2019

THE CONGRESS,

Noting:

- (1) Resolution 36 (Cg-XVI) – WMO Strategic Plan (2012-2015),
- (2) Resolution 38 (Cg-XVI) – Preparation of the Strategic Plan for 2016-2019,
- (3) The decisions of the Executive Council concerning the development of the WMO Strategic Plan,
- (4) The recommendations of regional associations and technical commissions reflected in their respective sessions reports,

Further noting that the WMO strategic planning process for the period 2016 to 2019 is based on and comprises the three interlinked key components, namely the:

- (1) WMO Strategic Plan, which provides a high-level statement of the future direction and priorities of WMO,
- (2) WMO Operating Plan, which presents time-bound specific programme activities and projects needed to address the global societal needs and achieve the Expected Results,
- (3) WMO Results-based Budget, which identifies resources for implementing the Strategic Plan, including functioning of WMO constituent bodies, Secretariat and programme activities,

Approves under the provision of Article 8(a), (b) and (c) of the WMO Convention, the WMO Strategic Plan for the period 2016-2019 (Annex to this resolution);

Urges Members to take the WMO Strategic Plan into account in developing and carrying out their national development, climate, DRR and other relevant strategies on programmes in meteorology, hydrology and related disciplines, as well as in their participation in the programmes of the Organization;

Requests the Executive Council, the regional associations, the technical commissions and the Secretary-General to adhere to the strategic direction and priorities set forth in the Strategic Plan and to organize programme activities so as to achieve the Expected Results;

Further requests the Executive Council to use the Strategic Plan, complemented by the WMO Operating Plan, as a benchmark to monitor progress and performance in achieving the Expected Results by implementing programmes and activities of the Organization and to submit a report to Eighteenth Congress;

Requests the Secretary-General to arrange for the publication of the Strategic Plan, for its distribution to all Members and constituent bodies of WMO, to UN system and other international organizations, and other partner organizations, as appropriate.

Annex: 1

Note: This resolution replaces Resolution 36 (Cg-XVI) after 31 December 2015.

Annex to draft Resolution 10.1/1 (Cg-17)

WMO STRATEGIC PLAN 2016-2019

Draft

Executive Summary

Context

Weather, climate, water and environmental monitoring and prediction services are recognized for their essential contributions to the protection of life and property from hydrometeorological hazards including severe storms, excessive heat, droughts and floods. Furthermore, they also underpin economic growth in sectors including agriculture and food production, transportation, energy and water resources. High impact weather and climate extremes are likely to occur with greater frequency and intensity due to climate variability and change. And today, changing weather, climate, water and related environmental conditions are having compelling consequences for decision-making, for the environment and for the prosperity of nations. Investments to strengthen monitoring infrastructures and improve the quality of weather and climate predictions can result in effective disaster prevention and socio-economic planning. Future investments are also required to optimize socio-economic benefits to mitigate and adapt to high impact weather and climate extremes.

Changing weather, climate, water and related environmental conditions are escalating the demand from governments, institutions and citizens for more useful and reliable information, products and services. The World Meteorological Organization (WMO) and its Members' National Meteorological and Hydrological Services (NMHSs) play a foundational and authoritative role in the provision of these products and services. This demand is also fuelling growth in value-added private sector service providers.

WMO and NMHSs are exploring methods to improve efficiencies through regionalization and cost-effective partnerships amongst themselves, other institutions and private sector service providers. This will improve the capacity of NMHSs to meet governments' expectations for saving lives, reducing damages, contributing to economic growth and supporting environmental stewardship.

The Role of National Meteorological and Hydrological Services

Weather-, climate- and water-related hazards do not necessarily need to become natural disasters. NMHSs strive to provide early warnings of high impact events. Likewise, they provide information on climate extremes and variability, enabling society to better adapt to a changing climate through improved community resilience, water resource management and food security strategies.

Information products and services provided by NMHSs positively impact critical decisions made in economic sectors sensitive to the extremes of weather, climate and water. These services provided by NMHSs also help to improve environmental quality, enable safe and efficient transportation and support positive health outcomes through warnings of health impacts of poor air quality or vector-borne disease outbreaks. Therefore NMHSs can be of enormous benefit for decision-makers to address global, regional and national challenges.

The Value of Sustained Meteorological and Hydrological Infrastructure

To deliver effective weather and climate services, NMHSs must have a strong understanding of the needs of government, the public and other key stakeholders. To deliver high quality services that meet the needs of decision-makers, NMHSs must develop, maintain and improve scientific and technological infrastructure and attract and retain skilled personnel to operate and manage sophisticated meteorological, hydrological and related environmental networks. The value of these services to governments, institutions and citizens hinges on real-time monitoring and modelling of atmospheric processes which form the basis for all weather, water and climate forecasts and projections.

To be sustainable, NMHSs require investment in their core infrastructure, including robust and globally-coordinated observation systems, information and computing technologies, and human resource development. Some essential infrastructure components needed to support service delivery (e.g. high performance computing) are not available at all NMHSs. WMO has an essential and unique role in providing the frameworks for this global coordination and cooperation that supports all Members.

The Role of WMO

WMO is a Specialized Agency of the United Nations (UN) with 191 Member States and Territories. It is the UN system's authoritative voice on the state and behaviour of the Earth's atmosphere, its interaction with the land and oceans, the weather and climate it produces and the resulting distribution of water resources. Since its establishment in 1950, WMO has been central in facilitating international collaboration and cooperation for observations, data and knowledge exchange, setting standards, coordinating scientific and technical methods and capacity development for the benefit of its Members and their NMHSs. WMO Programmes such as the World Weather Watch facilitate the gathering, processing and sharing of information, expertise and technology to create cost-effective solutions for the provision of weather, climate, water and related environmental services delivered by its Members.

Under the WMO framework, NMHSs deploy, operate and sustain essential infrastructure in a coordinated manner to deliver a wide range of services that support decision-making on current and emerging issues. WMO supports the work of the broader international community and international Conventions or Treaties such as the United Nations Framework Convention on Climate Change (UNFCCC) and the UN Convention to Combat Desertification (UNCCD). This collaborative framework results in a much more efficient use of global resources.

The WMO Strategic Plan

The WMO Strategic Plan sets the directions and priorities to guide the activities of Members and all WMO constituent bodies to enable all Members to improve their core information, products and services, maintain necessary infrastructures, and to directly benefit from advancements in science and technology. This Plan emphasizes the following **seven key priorities** to advance the realization of the eight expected results which outline the benefits and improvements to the capacity of all Members:

- Improve the effectiveness of high quality impact-based forecasts and early warnings for extreme weather, climate and water events for disaster risk reduction;
- Implement climate services under the Global Framework for Climate Services (GFCS);
- Implement the WMO Integrated Global Observing System (WIGOS);
- Improve the ability of NMHSs to meet International Civil Aviation Organization (ICAO) requirements;
- Develop operational polar weather, climate, and hydrological services;
- Advance capacity development for NMHSs; and
- Improve efficiency and effectiveness of WMO constituent body activities.

WMO EXPECTED RESULTS

1. *Improved service quality and service delivery*
2. *Reduced Disaster Risk*
3. *Improved Data Processing, Modelling and Forecasting*
4. *Improved Observations and Data Exchange*
5. *Advance targeted Research*
6. *Strengthened Capacity Development*
7. *Strengthened Partnerships; and*
8. *Improved Efficiency and Effectiveness.*

These priorities reflect the inputs from all WMO Members and constituent bodies and guide decisions for the upcoming financial period 2016-2019 to ensure that the Plan brings the greatest benefits to Members. These priorities as well as expected results (Annex I) are reflected in the integrated draft WMO results-based budget and detailed in the draft WMO Operating Plan, which presents time-bound programme activities and projects. The draft WMO Operating Plan forms the basis for resource allocation, and defines the risks and performance matrices against which to assess progress to achieve expected results through the WMO Monitoring and Evaluation System.

WMO STRATEGIC PLAN 2016-2019

Global Societal Needs

Context

High impact weather and climate events (storms, floods, droughts, etc.) have devastating effects throughout the world, resulting in injury and loss of life, displacement of people, work destruction and destruction of communities. Furthermore, air pollution is responsible for 3.2 million premature deaths worldwide every year. The personal and social costs of these losses are tremendous; the financial impacts alone are enormous - insured losses from natural catastrophes have ranged between \$10B and \$50B a year internationally over the past decade (Figure 1).

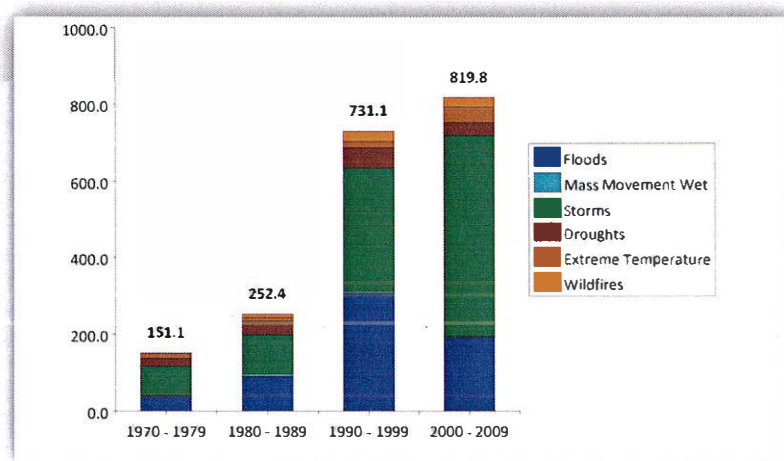


Figure 1: The global total economic losses by decade and by hazard type in USD billions adjusted to 2011 (during the period 1970-2009 (Source: WMO and CRED, 2013)

This rise in economic losses can be partly attributed to the increasing vulnerability of people and infrastructure to the impact of weather and climate extremes due to growing human settlements – particularly in flood plains and coastal regions, urbanization, the rise of megacities, economic interdependencies and obsolescence of infrastructures. Weather and climate extremes are contributing to ever larger economic losses and in some cases slower economic post-disaster recovery, particularly in developing, least developed and small island developing states.

A global analysis of the statistics of disasters as a consequence of environmental hazards indicates a significant increase in the total number of disasters having larger impacts on the economy, but conversely, a notable decrease in the associated number of total deaths. There is strong evidence that increasingly accurate early warnings and their integration into disaster risk reduction approaches have contributed to significant saving of lives. Nevertheless, high impact weather such as tropical storms continues to pose elevated risks to the safety of lives and property, particularly in developing and least developed countries. Typhoon Haiyan that devastated the Philippines in 2013 is a stark reminder of this ongoing reality.

The Need for Sustainable Development

Recognizing the growing socio-economic and environmental risks and the benefits that meteorological and hydrological services bring, WMO Programmes are conceived to improve the capabilities of all NMHSs, especially those in developing, least developed and small island developing states, to meet their mandates and benefit their governments, institutions and citizens. WMO, through its Members, constituencies and Secretariat, implements programmes and project initiatives to meet the following three Global Societal Needs (GSN) of fundamental importance to every Member of the Organization:

1. **Improved protection of life and property** by mitigating the impacts of hazardous weather, climate, water and other environmental events and addressing the need for improved safety of transport on land, at sea, and in the air;
2. **Poverty eradication, sustainable livelihoods, food security, sustainable access to water and energy, and economic growth** by making available weather, climate, water and related environmental services to support the post-2015 sustainable development agenda, climate risk management, climate resilience, green economy, disaster risk reduction, food security, improved health and social well-being of citizens, water management, and tapping renewable energy resources such as hydro-, solar- and wind-power;
3. **Sustainable use of natural resources and improved environmental quality** by designing weather, climate, water and related environmental services to manage atmospheric, terrestrial and water resources at all time-scales, and the development and management of other natural resources.

In addition, the United Nations recognizes sustainable development as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs”. The weather, climate and water services provided by NMHSs are fundamental to support the three interdependent pillars of sustainable development: Social, Economic, and Environmental. (The contribution of WMO and its Members to each of these pillars is described in Annex II). The value of these services increases with the quality, accuracy, timeliness, location specificity and utility of the information applied in the decision-making process to reduce risks and to optimize benefits.

Weather and water services enable shorter term preparedness and response to events, whereas longer term climate information at the seasonal and decadal timescale is essential for long-term planning purposes. WMO has spearheaded the establishment of the Global Framework for Climate Services (GFCS) to guide the development and application of science-based climate information and services in support of decision-making. The vision of the GFCS is to enable society to better manage the risks and opportunities arising from climate variability and change, especially for those who are most vulnerable to such risks. Together with the shorter term information NMHSs provide, this will allow seamless information to be provided across all timescales in support of sustainable development.

The Role of National Meteorological and Hydrological Services

Figure 2 below illustrates the role of a National Meteorological and Hydrological Service in responding to the Global Societal Needs. NMHSs are built upon a foundation of observations and data that, together with research activities, are used to produce relevant, timely and quality information and services. Such information and services can positively impact the critical decisions of those who are sensitive to the extremes of weather, climate and water as well as help decision-makers address societal needs. Early warnings of high impact weather and climate can contribute to improved food security strategies, community resilience and water resource management, enabling society to adapt to climate change, prevent loss of life and property and limit the

disastrous effects of high-impact weather events. These services also help to improve environmental quality, enable safe and efficient transportation and support positive health outcomes through warnings of health impacts from poor air quality or vector-borne disease outbreaks.

WMO plays an essential role in coordinating global meteorological data and in setting service delivery quality standards for NMHSs. The efficiency and effectiveness of NMHSs is enhanced through improved data interoperability and quality management systems, enabling them to better fulfil their mandates and raise their visibility within national governments and with other stakeholder organizations.

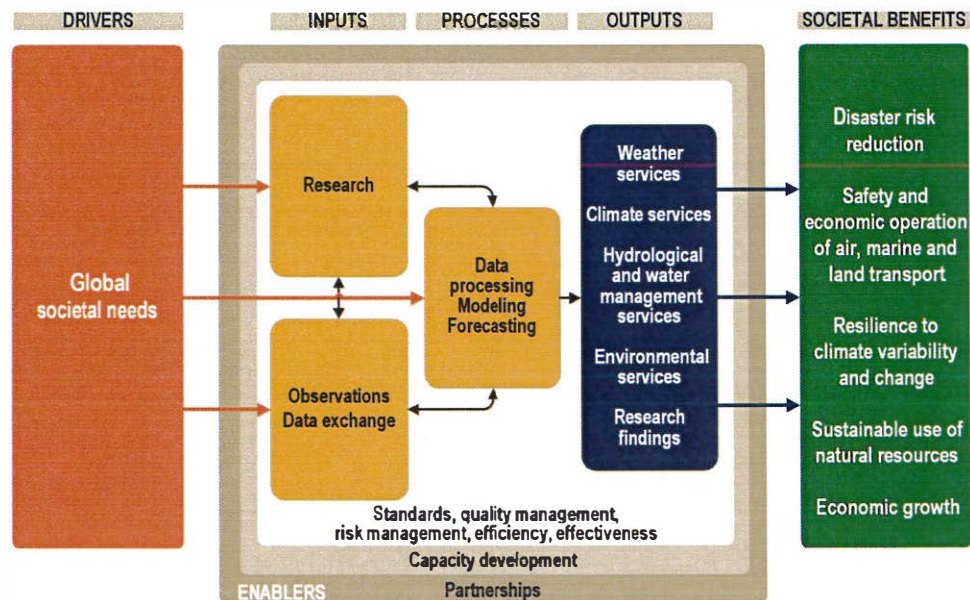


Figure 2: Schematic representation of the processes involved in delivering effective weather, climate and water services and processes to achieve them linked with the mandate of WMO

The Role of WMO

Under its collaborative framework, WMO provides world leadership and expertise in international cooperation in the delivery and use of high quality, authoritative weather, climate, water and related environmental services by its Members, for the improvement of the well-being of societies of all nations. It does so through the coordination of standards and practices among its Members, based on core values of professionalism, excellence, impartiality, cultural sensitivity, non-discrimination and team spirit in international service. WMO's mission, as described in its Convention, is:

- (a) To facilitate worldwide cooperation in the establishment of networks of stations for the conduct of meteorological observations as well as hydrological and other geophysical observations, and to promote the establishment and maintenance of centres charged with the provision of meteorological, hydrological and related services;
- (b) To promote the establishment and maintenance of systems for the rapid global exchange of meteorological, hydrological and related information;
- (c) To promote standardization of meteorological, hydrological and related observations and to ensure the uniform publication of observations and statistics;
- (d) To further the application of meteorology to aviation, shipping, water management, agriculture and other human activities;

- (e) To promote activities in operational hydrology and to promote close cooperation between meteorological and hydrological services;
- (f) To encourage research and training in meteorology, hydrology and, as appropriate, in related fields, and to assist in coordinating international aspects such as research and training; and
- (g) To provide guidance to national regulations on provision of official meteorological information and advice, through the Common Alerting Protocol and Register of Alerting Authorities.

The mandate of WMO directly supports the delivery of effective services by NMHSs for the safety of life, the protection of property and support for sustainable development.

Building on Achievements

For decades, WMO Members and their NMHSs have made remarkable progress delivering on WMO priorities. Recent examples over the last four years are:

- (a) WMO has played a key role in the establishment of the Global Framework for Climate Services, bringing operational climate services a step closer to realizing their full potential;
- (b) Significant advances among the NMHSs in implementing quality management systems and personnel competency standards to further improve the efficiency and safety of international aviation;
- (c) Coordination of international scientific developments in support of new and evolving environmental hazard services and associated monitoring systems, e.g. for space weather and volcanic ash;
- (d) Global and regional plans have been developed for implementing the WMO Integrated Global Observing System and 360 national, regional and global centres have enhanced their capabilities in support of the WMO Information System (WIS); and
- (e) The provision by NMHSs, and use by disaster and civil protection agencies, of severe weather forecasts and warnings has improved in many regions through the implementation of severe weather forecasting demonstration projects.

This WMO Strategic Plan builds upon these achievements.

Emerging Challenges

Internal Factors Influencing WMO Priorities 2016-2019

Many challenges confront WMO Members, especially those who face significant development and capability gaps in serving the weather-, climate-, and water-related needs of their governments, institutions and citizens. Reliable, high quality services that help prevent the loss of life and property, contribute to economic growth, and support environmental stewardship world-wide depend upon:

- (a) Understanding and integrating the needs of various user communities, including disaster and civil protection agencies, into forecasts and warning programmes;
- (b) Availability of modern meteorological, climatological and hydrological infrastructure and availability of well trained, motivated and competent personnel to gather, process, archive and facilitate the rapid exchange of data and products;
- (c) Capability to maintain high standards of observations and data;
- (d) Participation in, and access to, research that leads to improved monitoring, prediction and understanding of the atmosphere and hydrosphere at all spatial and temporal scales;
- (e) Capability to prepare and deliver high quality early warnings and forecasts of weather-, climate- and water-related hazards, with an increased emphasis on impact-based warnings; and,
- (f) Effective mobilization of resources, efficiency in their use and effective modern governance and decision-making nationally, regionally and globally.

External Factors Influencing WMO Priorities 2016-2019

High impact weather and climate extremes continue to have significant consequences around the globe and have caught the attention of world leaders. Concerns are mounting about the increasing socio-economic vulnerabilities, risks and severity of these events due to climate variability and change. The rapidly increasing scale of environmental change being observed in the Polar Regions is already having significant implications on weather and climate patterns worldwide. Demands are escalating for improved monitoring, better forecasts and advanced impact-based warnings which inform decision-making that mitigates and adapts to these risks and minimizes disastrous consequences. Continuing economic pressures around the world mean that there is an increasing drive to deliver these service improvements as efficiently as possible.

Significant changes in the socio-economic sectors that are served by WMO Programmes, including in health, food production, transportation, water resource management and energy sectors are also shaping the demands for services from NMHSs now and will continue in the future:

- (a) The Global Air Navigation Plan of ICAO will have significant implications for the globalization and regionalization of civil aviation meteorological provision, based on data-centric service and quality service delivery principles;
- (b) Expansion of maritime transportation into sparsely monitored and less skilful predicted Polar Regions comes with elevated risks associated with increased variability of weather, climate and sea-ice conditions;

- (c) Real-time operational climate services at national, regional and global levels are needed urgently to support the GFCS priorities of agriculture production and food security, reduced disaster risk, human health and sustainable water resources. Such services will also have significant relevance for the energy sector, urban infrastructure and transportation;
- (d) Shifts in the intensity and distribution of precipitation patterns world-wide and continued declines of snow and ice conditions especially in the high mountain regions will further implicate water resource and flood management and related decision-making;
- (e) New disaster risk and sustainable development frameworks, including the post-2015 framework for disaster risk reduction (HFA2), will emphasize the importance of weather and climate resilience and prevention in society and the need for associated information services;
- (f) Increasing urbanization and population, which is expected to grow by a further 1 billion by 2025, will increase the vulnerability and exposure of people to natural hazards;
- (g) The burgeoning use of new technologies, such as wireless and social media, and citizens' expectations for tailored information and 'just-in-time' delivery, require NMHSs to use these new technologies to remain effective and relevant;
- (h) Slow economic global growth may have a negative impact on resource mobilization; NMHSs need to demonstrate resource efficiencies, cost-benefit and value; and
- (i) Increased activity in the value-added, third party meteorological and hydrological sector, while offering potential for enhanced services to targeted economic sectors, may impact community and government support for, and visibility of NMHSs, particularly as an official and authoritative voice for early warnings.

World is changing:

- ✓ Global population above 9 billion in 2050
- ✓ One billion living in extreme poverty
- ✓ More than 50% live in urban areas, 72% by 2050
- ✓ 23 Megacities today, 37 by 2050
- ✓ 15% of population have no access to safe drinking water
- ✓ More than one billion lack electricity
- ✓ By 2030 more countries will graduate to middle-income status

WMO Priorities 2016-2019

WMO priorities for 2016-2019 reflect the inputs from all WMO constituent bodies and in particular the six regional associations, which gathered the collective views of all 191 WMO Members and Territories. All bodies recognize the significance of WMO's research priorities in the area of high impact weather, seasonal to sub-seasonal forecasting, polar prediction and urban meteorology as the means of enabling improvements to operational service delivery. This is also the case for advancements in monitoring and information technologies, in particular the need to keep WIS aligned with WIGOS developments.

The following seven key priorities will be given additional emphasis in WMO's Programmes and Result-based Budget for 2016-2019:

- (a) **High impact services for disaster risk reduction:** Improve the effectiveness of high quality impact-based forecasts and multi-hazard early warnings of high impact meteorological, hydrological and related environmental hazards, thereby contributing to international efforts on disaster risk reduction, resilience and prevention;
- (b) **GFCS:** Implement climate services under the GFCS particularly for countries that lack them by: (a) establishing regional climate centres; (b) identifying user requirements for climate products; (c) developing the Climate Services Information System (CSIS); and (d) advancing the Subseasonal to Seasonal (S2S) Prediction Project;
- (c) **WIGOS:** Complete the implementation of the WIGOS/WIS focusing on the implementation of all the interoperability building blocks of the framework and supporting their acceptance at regional and national levels;
- (d) **Aviation meteorological services:** Improve the ability of NMHSs to meet International Civil Aviation Organization (ICAO) requirements by: (a) accelerating the implementation of ICAO/ WMO competency standards and Quality Management Systems (QMS); (b) addressing the emerging needs and challenges associated with the emerging Global Air Navigation Plan; and (c) strengthening cost recovery frameworks;
- (e) **Polar and high mountain regions:** Improve operational meteorological and hydrological monitoring and prediction services in polar and high mountain regions and beyond by: (a) operationalizing the Global Cryosphere Watch (GCW); (b) better understanding the implications of changes in these regions on the global weather and climate patterns; and (c) advancing the polar prediction under the Global Integrated Polar Prediction System (GIPPS);
- (f) **Capacity Development:** Enhance the capacity of NMHSs to deliver on their mission by assisting with human resource development, technical and institutional capacities and improved infrastructure, particularly in developing, least developed and small island developing states; and
- (g) **WMO Governance:** Continue to conduct a strategic review of WMO structures, operating arrangements and budgeting practices focusing on the effectiveness of constituent body activities and the Secretariat arrangements.

Expected Results

To achieve significant, targeted improvements of services to address the escalating needs, WMO will focus its endeavours on the following Expected Results:

1. **Improved service quality and service delivery:** Enhanced capabilities of Members to deliver and improve access to high-quality weather, climate, water and related environmental predictions, information, warnings and services in response to users' needs and to enable their use in decision-making by relevant societal sectors.
2. **Reduced Disaster Risk:** Enhanced capabilities of Members to reduce risks and potential impacts of hazards caused by weather, climate, water and related environmental elements.
3. **Improved Data Processing, Modelling and Forecasting:** Enhanced capabilities of Members to produce better weather, climate, water and related environmental information, predictions and warnings to support, in particular, reduced disaster risk and climate impact and adaptation strategies.
4. **Improved Observations and Data Exchange:** Enhanced capabilities of Members to access, develop, implement and use integrated and interoperable Earth- and space-based observation systems for weather, climate and hydrological observations, as well as related environmental and space weather observations, based on world standards set by WMO.
5. **Advance Targeted Research:** Enhanced capabilities of Members to contribute to and draw benefits from the global research capability for weather, climate, water and related environmental science and technology development.
6. **Strengthened Capacity Development:** Enhanced capabilities of Members' NMHSs, in particular, in developing and least developed countries and Small Island Developing States, to fulfil their mandates.
7. **Strengthened Partnerships:** New and strengthened partnerships and cooperation activities to improve NMHSs' performance in delivering services and to demonstrate the value of WMO contributions within the United Nations system, relevant regional organizations, international conventions and national strategies.
8. **Improved Efficiency and Effectiveness:** Promote Quality Management Systems in NMHSs and within the WMO Secretariat for efficient and effective use of resources.

The degree to which this Plan is factored into the national, regional and international development agenda is amongst the risks that will influence the achievement of Expected Results. The fluid global financial situation is having significant impact on voluntary contributions, which provides some of the resources for implementing the strategic priorities, particularly to enhance capacities of NMHSs in developing and least developed countries and small islands developing states.

ANNEX I
SCHEMATIC REPRESENTATION OF THE RELATIONSHIPS BETWEEN
GLOBAL SOCIETAL NEEDS, WMO PRIORITIES 2016-2019 AND EXPECTED RESULTS

Global Societal Needs	Priorities	Expected Results
Improved protection of life and property	Aviation meteorological services	1 Improved service quality and service delivery <i>Enhanced capabilities of Members to deliver and improve access to high-quality weather, climate, water and related environmental predictions, information, warnings and services in response to users' needs and to enable their use in decision-making by relevant societal sectors</i>
	High impact services for DRR	2 Reduced Disaster Risk <i>Enhanced capabilities of Members to reduce risks and potential impacts of hazards caused by weather, climate, water and related environmental elements</i>
	High impact services for DRR GFCS RCC, CSIS	3 Improved Data Processing, Modelling and Forecasting <i>Enhanced capabilities of Members to produce better weather, climate, water and related environmental information, predictions and warnings to support, in particular, reduced disaster risk and climate impact and adaptation strategies</i>
Poverty eradication, sustainable livelihoods, food security, sustainable access to water and energy, and economic growth	WIGOS Polar and high mountain regions - GCW	4 Improved Observations and Data Exchange <i>Enhanced capabilities of Members to access, develop, implement and use integrated and interoperable Earth- and space-based observation systems for weather, climate and hydrological observations, as well as related environmental and space weather observations, based on world standards set by WMO</i>
	Polar and high mountain regions – GIPPS High impact services for DRR GFCS-S2S prediction	5 Advance Targeted Research <i>Enhanced capabilities of Members to contribute to and draw benefits from the global research capacity for weather, climate, water and the related environmental science and technology development</i>
Sustainable use of natural resources and improved environmental quality	Capacity development	6 Strengthened Capacity Development <i>Enhanced capabilities of Members' NMHSs, in particular, in developing and least developed countries and Small Island Developing States, to fulfil their mandates</i>
	High impact services for DRR GFCS	7 Strengthened Partnerships <i>New and strengthened partnerships and cooperation activities to improve NMHSs' performance in delivering services and to demonstrate the value of WMO contributions within the United Nations system, relevant regional organizations, international conventions and national strategies</i>

<p>WMO governance</p>	<p>8</p>	<p>Improved Efficiency and Effectiveness</p>
		<p><i>Promote Quality Management Systems in NMHSs and within the WMO Secretariat for efficient and effective use of resources</i></p>

ANNEX II

BENEFITS OF WEATHER, CLIMATE, WATER AND RELATED ENVIRONMENTAL SERVICES

Social Benefits

NMHSs and other institutions of WMO Members contribute to the safety and well-being of society through their efforts to provide information on the impacts on lives and livelihoods of natural hazards, to improve the safety of transport on land, at sea, and in the air and to contribute to human and environmental health outcomes. Improving operational climate services through the GFCS will enhance national capabilities to support climate-smart decision-making. This will further the resilience of society to longer-term climate variability and change. Critical to success are the service delivery interactions with the community of users, including open access to global weather, water, climate and related data, knowledge and impact-relevant products and services.

The successor to the Hyogo Framework for Action (HFA) will be established in 2015 and WMO and its Members will be guided by its objectives, particularly in support of disaster prevention and community resilience through improved ability of NMHSs to warn and inform citizens of natural hazards. Effective disaster risk reduction is founded on actions that are informed by science-based weather, climate, water and related environmental information about the potential hazards. Seasonal climate forecasts are useful for strategic and tactical planning of climate-sensitive activities, while the analysis of multi-year hazard patterns and trends, combined with climate change scenarios, can underpin longer-term strategic planning.

Climate-related risk knowledge on month to decadal timescales helps institutions and organizations at global, regional and national levels to develop risk management plans based upon:

- (a) Early warning systems and preparedness;
- (b) Medium- and long-term sectoral planning (e.g., land zoning, infrastructure development and agricultural management); and
- (c) Utilization of weather-indexed insurance and financing mechanisms to reduce the impacts of disasters at various levels.

Economic Benefits

Accurate, timely and impact-oriented weather, climate, water and related environmental services from Members, in particular from their NMHSs, make a significant contribution to economic stability, efficiency and growth in many sectors. Examples include in water resource management, food production, aviation and marine transportation and energy, especially hydro-, solar- and wind-power. Early warning services and forecasts inform economically-driven decisions that mitigate the effects of meteorological and hydrological hazards. Improved climate products and services offer significant economic benefits.

WMO Members also monitor space weather conditions and processes (e.g. solar flares, geomagnetic storms, etc.) which can have significant impacts on economic sectors such as aviation, telecommunications, satellite operations and electricity transmission. Governments and the aviation industry rely on WMO and its Members to provide advice on the dispersion of volcanic ash, a significant hazard to aircraft and with associated downstream impacts on numerous economic sectors. In response to nuclear or industrial accidents, WMO works in close collaboration with agencies such as the International Atomic Energy Agency (IAEA) and the World Health Organization (WHO) to provide advice and information to reduce community impacts.

Environmental Benefits

WMO and its Members monitor the environment over time, providing insight into possible impacts on our climate, food and water security, natural ecosystems and human health. Changes are occurring in rainfall and temperature, the chemical composition of our atmosphere, surface and groundwater availability, land cover and soil condition, the temperature and chemical balance of our oceans, and pollutants in our air, water, soil and oceans. Subtle changes in these parameters can have profound consequences for ecosystems, biodiversity and our food production systems.

APPENDIX C: PROGRESS REPORT FOR INFORMATION – NOT TO BE INCLUDED IN THE GENERAL SUMMARY

WMO STRATEGIC PLAN 2016-2019 (AGENDA ITEM 10.1)

1. The decisions of the Sixteenth World Meteorological Congress (Cg-XVI, May/June 2011) on the preparation of WMO Strategic Plan 2016-2019 are presented in paragraphs 8.5.1-8.5.5 of the Abridged Final Report and Resolution 38 (Cg-XVI) – Preparation of the Strategic Plan for 2016–2019. They include:
 - (a) The Global Societal Needs (GSNs) that formed the basis for the Strategic Plan for the period 2012–2015 and the Strategic Thrusts (STs) together with the Expected Results (ERs) should form the basis for the WMO Strategic Plan for the period 2016–2019;
 - (b) The strategic and operational planning for the period 2016–2019 should follow the structure of the Strategic Plan 2012–2015 (GSNs, STs and ERs) and the overall planning process, taking into account the evolution of the societal and economic needs of the Members, relevant international initiatives, and the challenges of climate variability and change; build on experiences gained from the two phases (2008-2011 and 2012-2015); and further enhance linkages between SP, OP and RBB to facilitate the implementation of RBM and to improve Key Performance Indicators.
 2. EC-64 (June/July 2012) considered the recommendations of its Working Group on WMO Strategic and Operational Planning (WG/SOP) and endorsed parameters for the development of the next Strategic and Operating Plans. The Council also agreed with the development of the next Strategic and Operating Plans based on the outlines of the SP and OP, and the proposed process and timeliness (EC-64, paragraphs 4.8.13-4.8.15).
 3. EC-65 (May 2013) considered the first draft WMO Strategic Plan 2016–2019 and requested its WG/SOP to review the draft taking into account its recommendations. The Council also considered the future strategic priorities and accorded high ranking to WIGOS (supported by WIS), Capacity Development, GFCS and DRR while recognizing the importance of Service Delivery (notably aviation and marine services) and Research (EC-65, paragraphs 4.8.1.1-4.8.1.5).
 4. EC-66 (June 2014) considered the draft WMO Strategic Plan 2016–2019 and recommended it to Congress with further improvements by its WG/SOP. The Council also refocused priorities for the next financial period (EC-66, paragraphs 4.8.1.2-4.8.1.3).
 5. The Members, PRAs and PTCs were involved in the preparation of WMO Strategic Plan 2016-2019. The regional associations and technical commissions' recommendations regarding the organizational-wide strategic priorities are recorded in their respective session's reports.
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