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| WEATHER CLIMATE WATER | **World Meteorological Organization**  **EXECUTIVE COUNCIL**  **Seventy-Eighth Session** 10 to 14 June 2024, Geneva | **EC-78/Doc. 6(1)** |
| Submitted by: Chair  14.VI.2024  **Approved** |

**AGENDA ITEM 6: EMERGING AND FUTURE CHALLENGES AND OPPORTUNITIES**

# Revised Guidelines for Public-private engagement



# GENERAL CONSIDERATIONS

### Revised *Guidelines for Public-Private Engagement* (WMO-No. 1258)

Introduction

1. The WMO [*Guidelines for Public-Private Engagement*](https://library.wmo.int/records/item/57344-guidelines-for-public-private-engagement?offset=3)(WMO-No. 1258) were endorsed by EC-72 in 2020. It provides historical perspectives, principles and specific guidance to inform and facilitate global, regional and national actions by WMO and its Members. Since the publishment of the endorsed Guidelines as the 2021 edition, a few developments in WMO policies and Members’ emerging needs on support to the legislative and institutional framework to promote Public-Private Engagement (PPE) have made it necessary to revisit the Guidelines in order to provide up-to-the-date guidance to WMO Members and Regional Associations in their efforts to develop effective and mutually beneficial partnerships and collaboration with the private and academic sectors. The primary revision includes two parts:

(a) Changes to the body text of the 2021 edition of the Guidelines, which primarily reflect policy development since EC-72 with implications on the PPE, including mainly the WMO Unified Data Policy or [Resolution 1 (Cg-Ext(2021)](https://library.wmo.int/idviewer/57850/9)) and its Annex 3 of *Guidelines* on the application of the data policy in PPE, and the WMO Strategic Plan 2024–2027 adopted by Cg-19 setting the strategic objective of scaling up effective partnerships, including partnerships with the private sector; revisions are also intended to increase clarity; and

(b) Addition of an annex on legislative and institutional framework to promote PPE; it provides cases of laws and regulations collected from Members and templates of such framework.

New Annex

2. Both the Geneva Declaration 2019 and *WMO Guidelines for Public-Private Engagement* (2021 edition, (WMO-No. 1258)) identify legislative and institutional arrangements as a key PPE-enabling factor and a priority action at the national level. The Secretariat has created a repository of Members’ laws and other instruments that govern their meteorological activities, mostly collected from websites of Member countries and territories and international organizations as well as from Members on the opportunity of a WMO survey conducted in 2018 on national strategic planning and legislation and other occasions. The repository now includes more than 170 legal/institutional instruments of 120+ Members and is open for use within the Secretariat, especially in support of Members. Concrete provisions of laws, decrees and regulations in such instruments from about 120 Members in the WMO’s database and specific initiatives broadly related to PPE in Members were reviewed and analysed towards revising the Guidelines to meet the emerging needs of Members regarding the support to the legislative and institutional framework to promote PPE.

3. The new annex of the Guidelines briefly describes the background and needs for promoting PPE. It clarifies the content of legislative and institutional arrangements that should be put in place to support effective PPE promotion by Members or their NMHSs. Specifically, it identifies 10 key elements under three pillars of legislative and institutional arrangements to be pursued for PPE. Then, examples of operation and implementation for *[Secretariat]* key elements are included, along with concrete provisions of laws and decrees and the content of institutional arrangements in Member countries and territories. The cited provisions and their characteristics have been verified with the respective Members. In addition, specific legal or institutional items were envisaged concerning key legislative and institutional arrangement elements. The items are used in reference templates contained in the appendix, which are also expected to be referred to and used by Members as options in developing legislative and institutional arrangements to promote PPE, taking account of the circumstances, such as political structures, policies and operating models of their own.

Expected action

3. Based on the above, the Executive Council may wish to adopt draft Resolution 6(1)/1 (EC-78).

# DRAFT RESOLUTION

## Draft Resolution 6(1)/1 (EC-78)

## Revision of the *Guidelines for Public-Private Engagement* (WMO-No. 1258)

THE EXECUTIVE COUNCIL,

**Recalling:**

(1) [Resolution 79 (Cg-18)](https://library.wmo.int/idviewer/56690/253) – Open Consultative Platform “Partnership and Innovation for the Next Generation of Weather and Climate Intelligence”,

(2) [Resolution 80 (Cg-18)](https://library.wmo.int/idviewer/56690/254) – Geneva Declaration – 2019: Building Community for Weather, Climate and Water Actions, by which, the Congress has set a high-level WMO policy on Public-Private Engagement, and

(3) [Resolution 1 (Cg-Ext(2021))](https://library.wmo.int/idviewer/57850/9) – WMO Unified Policy for the International Exchange of Earth System Data,

**Welcomes** key messages from the series of high-level regional fora linked to the Open Consultative Platform (OCP) held in 2022 and 2023 to work in partnership to address global societal risks related to extreme weather, climate, water and other environmental events;

**Takes note** of the needs expressed by Members on many occasions, including at the above-mentioned regional fora, with regard to the establishment in each Member of the legal and institutional framework necessary to promote Public-Private Engagement (PPE), and the need for support from the Secretariat in this regard;

**Endorses** the revised *Guidelines for Public-Private Engagement* (2024 edition) with a new annex on legislative and institutional arrangements for PPE, as provided in the [annex](#_Annex_to_draft) to the present Resolution;

**Agrees** that the *Guidelines* should be reviewed and updated regularly in order to reflect the highly dynamic processes shaping the Public-Private Engagement within the weather enterprise, raise awareness and promote good practices;

**Requests** the Policy Advisory Committee to keep both the high-level policy and the *Guidelines for Public-Private Engagement* under review, and monitor their impact on relevant policies and practices of the Members;

**Requests** the presidents of the regional association to give due consideration to the revised *Guidelines* in planning relevant regional activities, in particular, those for raising mutual awareness and building trust between the sectors, utilizing the potential of the Public-Private Engagement in bridging the capacity gap, and sharing good practices including those related to legal and institutional frameworks and strategies that underpin PPE;

**Urges** Members to use the revised *Guidelines* in further establishing collaboration and partnership at the national level across public, private, academic and civil society sectors that pursue the common goals for the public good, and in considering, as needed, their own legal and institutional frameworks and strategies that underpin PPE;

**Requests** the Secretary-General:

(1) To publish the *Guidelines for Public-Private Engagement* (2024 edition) in all WMO official languages;

(2) To provide necessary supports to facilitate the use of the Guidelines by Members through various opportunities such as OCP and PPE related training events within the resources available.

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[Annex: 1](#_Annex_to_draft_3)

## Annex to draft Resolution 6(1)/1 (EC-78)

## GUIDELINES FOR PUBLIC-PRIVATE ENGAGEMENT

(2024 edition)

### 1. INTRODUCTION

### 1.1 Global factors

The World Meteorological Organization, as a United Nations organization, is driven by the global United Nations agenda. Today, the 2030 Agenda for Sustainable Development (adopted in 2015 and containing 17 sustainable development goals (SDGs)), the Sendai Framework for Disaster Risk Reduction 2015–2030, and the United Nations Framework Convention on Climate Change are the principal global agreements framing the goals and objectives of WMO. The Early Warnings for All initiative announced by the UN Secretary-General in 2022 is also a key ambition which guides the work of WMO. Cross-sectoral and innovative partnerships will play a crucial role in achieving these goals and objectives and will involve actors from different sectors working together in an integrated manner, pooling their financial resources, knowledge and expertise.

SDG 17, “Revitalize the global partnership for sustainable development”, recognizes multi- stakeholder partnerships as important vehicles to support the achievement of the SDGs in all countries, particularly developing countries. It seeks to encourage effective collaboration among stakeholders in the public, private and academic sectors, as well as in civil society, building on the experience and resourcing strategies of existing partnerships. The majority of United Nations organizations have adapted, or are in the process of adapting, their respective strategies and policies to reflect the thrust of SDG 17 for public, private and academic engagement.

### 1.2 WMO context

In 2015, the Seventeenth World Meteorological Congress (Cg-17) defined ‘partnership’ to mean working with international agencies, other organizations, academia, the media and the private sector to improve the range, quality and delivery of critical environmental information and services. The WMO Strategic Plan 2016–2019 sought to strengthen partnerships, some of which were formed decades ago, in order to improve the performance of National Meteorological and Hydrological Services (NMHSs) in delivering services and to demonstrate the value of WMO contributions within the United Nations system and to relevant regional organizations, international conventions and national strategies.

An important milestone in the history of WMO partnering with non-State entities was the adoption by the Twelfth World Meteorological Congress (Cg-XII), in 1995, of a policy and practice for the international exchange of meteorological data and products (Resolution 40 (Cg-XII) – WMO policy and practice for the exchange of meteorological and related data and products including guidelines on relationships in commercial meteorological activities).[[1]](#footnote-2) Annex 3 to Resolution 40 (Cg-XII) provides “Guidelines for relations between National Meteorological or Hydrometeorological Services (NMSs) and the commercial sector” and states, “The purpose of these guidelines is to further improve the relationship between NMSs and the commercial sector. The development of the exchange of meteorological and related information depends greatly upon sound, fair, transparent, and stable relations between these two sectors”..

The WMO World Weather Open Science Conference (WWOSC), held in Montreal in August 2014, put a special focus on the need for a broad dialogue among actors in the public and private sectors, including the strong engagement of stakeholders in academia and other relevant entities, such as learned societies, in order to respond to the changing landscape of weather, climate and hydrological sciences and services.[[2]](#footnote-3) The outcomes of the WWOSC discussions led to a series of multi-stakeholder follow-up dialogues in coordination with partner organizations such as the Global Facility for Disaster Reduction and Recovery (GFDRR) of the World Bank Group and the Association of the Hydro~~meteorological Equipment~~ Meteorological *[Secretariat]* and Environmental Industry (HMEI).

Cg-17 acknowledged the growing involvement of “private sector entities” (private companies, citizen’s associations, bloggers, and so forth) in weather, climate, water and related environmental matters.[[3]](#footnote-4) These entities have been active to a varying extent in the full value chain, starting with observations, extending to data acquisition tools and technologies and toinformation generation and processing technologies, and culminating in product dissemination and services. Cg-17 recognized the involvement of these entities in end-to-end service delivery and their support of the WMO vision, mandate and objectives. Cg-17 also highlighted the different, and at times, complementary roles and responsibilities of NMHSs, academic institutions, research and technological agencies, and private sector stakeholders. It was felt that closer interactions between public and private sector stakeholders would stimulate innovation and facilitate cross-fertilization, ultimately benefitting society. Cg-17 noted that WMO has a unique opportunity to initiate such interaction and emphasized that inaction could limit the benefits for users of weather, climate, water and related information services. At the same time, such activities could also lead to the proliferation of different information sources, sometimes without the necessary quality assurance, which could challenge the mandate of NMHSs as the providers of authoritative information and warnings to the public and to disaster management authorities. It was also recognized that, while private sector stakeholders could help increase the availability of services for citizens and businesses, it was of paramount importance to ensure that NMHSs continue to be the providers of the basic infrastructure and services needed by all stakeholders and citizens.

Acknowledging the challenges, Cg-17 recognized that a WMO guidance document on engagement with the private sector would help NMHSs keep pace with Public-Private Engagement (PPE) activities at the national and international levels and support improvements in their efficiency and service delivery~~, including their delivery of services supporting~~. This guidance should also support the development of observational and communication infrastructure~~s~~ at the local and regional levels as the foundation for all high-quality meteorological services.

Following the directives given by Cg-17, several activities were undertaken to build awareness of ~~Public-Private Engagement (~~PPE~~)~~ *[Secretariat]* and to improve interactions ~~among~~ between stakeholders in the public, private and academic sectors. In 2016, the sixty-eighth session of the Executive Council (EC-68) held the first special dialogue on the “complementary and cooperative contributions of public and private sector institutions to meteorology and hydrology”.[[4]](#footnote-5) In 2017, the sixty-ninth session of the Executive Council (EC-69) adopted Decision 61 (EC-69) – Public-Private Engagement: a road map to the Eighteenth World Meteorological Congress~~, and a~~.[[5]](#footnote-6) A key element of this road map was the adoption of the WMO Policy Framework on Public-~~private~~ Private Engagement by the seventieth session of the Executive Council (EC-70) in Resolution 33 – Public-Private Engagement, in June 2018.[[6]](#footnote-7) The aim of this Policy Framework was to assist Members and stakeholders from all sectors by providing a set of guiding principles ~~for a~~ that supported successful partnerships. ~~and by highlighting~~ The Policy Framework also highlighted the challenges and opportunities that need to be addressed in order to harness the potential benefits of working together for the benefit of society.

In 2019, the Eighteenth World Meteorological Congress (Cg-18) adopted Resolution 80 (Cg-18) – Geneva Declaration – 2019: Building Community for Weather, Climate and Water Actions, a high-level policy document presenting the WMO position, policy and guidance on Public-Private Engagement in support of a sustainable development agenda, climate change adaptation and disaster risk reduction.[[7]](#footnote-8) This document reflects the new paradigm of cooperation and partnership involving stakeholders from all sectors of the weather, climate and water enterprise (hereinafter, the “weather enterprise”[[8]](#footnote-9)) ~~needed~~ which is required as a collective response to the global societal risks related to extreme weather, climate change, water scarcity and other environmental hazards.

An Open Consultative Platform (OCP) entitled “Partnership and Innovation for the Next Generation of Weather and Climate Intelligence”[[9]](#footnote-10) was launched during Cg-18 as a vehicle for a sustainable and constructive dialogue between interested parties in the various sectors. The platform was created to articulate a vision for the future of the weather enterprise involving key stakeholders from all relevant sectors, and to foster mutually beneficial partnerships.

Building on the high-level policy established by the Geneva Declaration 2019, the seventy-second session of the WMO Executive Council (EC-72) endorsed the first edition of the Guidelines for Public-Private Engagement (Edition 2020[[10]](#footnote-11)) as a document to guide actions at national, regional and global levels to pursue engagement between stakeholders in the public, private and academic sectors.

A recent milestone in the ongoing evolution of WMO’s multi-stakeholder partnership strategy is the WMO Unified Data Policy for the International Exchange of Earth System Data (the “WMO Unified Data Policy”, or “Resolution 1[[11]](#footnote-12)”), which was unanimously adopted by the Extraordinary session of the World Meteorological Congress in 2021 (Cg-Ext(2021)). It provided renewed policy guidance to Members in addressing the data-sharing issue, which is one of the critical factors influencing public-private relationship in weather and climate services. By replacing three previous resolutions governing the international exchange of weather, climate and hydrological data, i.e., [Resolution 40 (Cg-XII)](https://library.wmo.int/idviewer/58735/133), Resolution 25 (Cg-XIII) and [Resolution 60 (Cg-17)](https://library.wmo.int/idviewer/54771/557), the WMO Unified Data Policy affirmed WMO Members’ commitment to broadening and enhancing the free and unrestricted international exchange of Earth system data. The Annex 3 to the WMO Unified Data Policy provides guidelines on the application of the data policy in Public-Private Engagement with the understanding that the application of the free and unrestricted principle depends greatly upon sound, fair, transparent and stable relations between these two sectors.

The WMO Strategic Plan 2024–2027[[12]](#footnote-13), which was adopted by the nineteenth World Meteorological Congress in 2023 continued recognition of the importance of partnerships among Members, multilateral and bilateral development agencies and other relevant actors, including the private sector, academia and other non-state players. These partnerships help to leverage investment aimed at enhancing the capability and performance of NMHSs (especially those NMHSs in ~~the less-developed countries~~ least developed countries (LDCs) and small island developing States (SIDS) *[Ms Laing]*), and to deliver improved outcomes for society in line with the UN’s Sustainable Development Goals. It set the strategic objective of scaling up effective partnership for investment in sustainable and cost-efficient infrastructure and service delivery, including partnership with the private sector and academia. The WMO Strategic Plan 2024–2027, while recognizing that nurturing WMO’s strategic partnerships between the public and private sectors is one of its strategic objectives, emphasizes the importance of reinforcing the role of NMHSs through national legislation and showcasing the socioeconomic benefits of quality meteorological and hydrological services.

### 2. OBJECTIVES OF THE GUIDELINES

The Guidelines for Public-~~private~~ Private Engagement are designed to inform and facilitate global, regional and national actions by WMO and its Members and to encourage proactive engagement among stakeholders in the public, private and academic sectors in order to provide better services to governments, economies and citizens. The Guidelines outline and promote principles aimed at maximizing the benefits of an inclusive weather enterprise approach.

Developed in line with ~~Resolution 67 (Cg-17) – WMO guidance on partnerships with the private sector, Decision 73 (EC-68) – Cooperation between the public and private sectors for the benefit of society and Decision 61 (EC-69), and updated with~~ the high-level policy directions provided in Resolution 80 (Cg-18) and general principles stemming from existing WMO strategy and other WMO policies that have a bearing on Public-Private Engagement, the Guidelines address:

(a) The evolving potential for engagement with stakeholders in the public, private and academic sectors and civil society in the areas of weather, climate and water;

(b) Principles for public-private sector engagement ~~based on the “Key issues to be addressed in developing policies and principles for engagement” (Annex 2 to Decision 73 (EC-68))~~;

(c) The evolving roles of stakeholders at the global, regional and national levels;

(d) Options for dealing with Public-Private Engagement issues in the legislative landscape, in capacity development and in other relevant societal ~~issues~~ contexts, with a view to developing ~~a~~ WMO guidance for Members.

The Guidelines are intended to be a living document which will frequently be updated to address emerging issues and to provide guidance for moving forward in a changing environment. The Guidelines seek to strengthen and enhance opportunities for Members, their National Meteorological and Hydrological Services (NMHSs) and stakeholders in the private sector to promote ethical behaviour, ~~enable~~ facilitate efficiency and innovation, and adopt an inclusive approach to challenges related to funding basic infrastructure and research activities.

The Guidelines are based on the WMO Convention, existing policies and related regulations and guidance. The WMO Convention has ~~ensured~~, since 1947, provided the basis for ensuring that the world’s nations cooperate to create and sustain an international system to gather observations, make predictions, and provide reliable information and services ~~to~~ that support effective decision-making in order to reduce the loss of life and property, support sustainable development, and preserve the environment and the global climate for present and future generations.

The Guidelines are supplemented by ~~the~~ examples of good practices, the latest updates of Public-Private Engagement activities, and ~~the~~ contemporary discussions on emerging issues ~~that~~, all of which are made available on the WMO website (~~https://public.wmo.int/ppe~~<https://wmo.int/about-wmo/partnerships>), in particular~~, those that appear under~~ in the pages devoted to [PPE Resources](https://wmo.int/about-wmo/partnerships/ppe-resources).[[13]](#footnote-14)

### 3. NEEDS AND DRIVERS FOR PUBLIC-PRIVATE ENGAGEMENT

Over the last two decades, the number of stakeholders active in all ~~areas~~ elements of the value chain of meteorological, climatological, hydrological and related environmental services has grown, and the stakeholders themselves have become more diverse~~ified~~. They now include not only governments and public sector entities, but also ~~actors~~ stakeholders from academia, the private sector and civil society. The flow of activities and the interconnections ~~among~~ between stakeholders in the various parts of the value chain need to be further analysed and better understood in the current ~~and~~ evolutionary context.

Such an analysis would allow WMO to identify opportunities to facilitate improvement in the efficiency and quality of products and services through partnership arrangements ~~involving~~ which engage stakeholders ~~in~~ across all of the sectors ~~concerned~~. These partnerships would, in particular, ~~enable~~ help to bridge existing gaps in capacity ~~to be bridged~~ and ~~would~~ improve access to essential information and services in the developing world.

### 3.1 Historical perspective

The idea of an “enterprise” involving a multi-stakeholder approach can be traced to the early history of WMO and its preceding international cooperation initiatives. Indeed, one of the first meeting invitations, sent to the international meteorological community in 1872, stated:

*“We venture by the present circular to invite the heads of Meteorological Institutes, the Meteorological and other learned societies, as well as private scientific men and*

*practical observers in the domain of Meteorology, to this consultative meeting, which is to be held in Leipzig…”*

*(From the invitation letter to the Meteorological Conference at Leipzig, August 1872[[14]](#footnote-15))*

The meteorological and related systems and services of the twentieth century were primarily established, operated and funded by the public sector. WMO Member States and Territories collectively built a global infrastructure under the World Weather Watch (WWW) Programme consisting of three core systems – the Global Observing System (GOS), the Global Telecommunication System (GTS) and the Global Data Processing and Forecasting System (GDPFS). The WWW was established in 1963 and made operational on a ~~365/~~24/7/365 basis through an agreed set of global standards for observations, data processing and service delivery, which has ensured the necessary harmonization and interoperability of its constituent systems. A number of global and regional centres hosted by Members’ NMHSs formed the backbone of the communication and numerical modelling needed for the forecasting of the main atmospheric variables. States cooperated, coordinated and collectively invested in building the expensive ~~satellite~~ space-based segment of GOS.

While WWW was primarily a public sector endeavour, it would not have been successful without essential scientific and technological support and innovation from academia and private industry. At the early stages, the participation of the private sector in WWW service delivery was generally limited, with the exception of several countries where private companies played a prominent role in the provision of weather services to citizens, ~~for instance, to~~ in particular through weather broadcasting via media outlets.

### 3.2 Factors of change

The recent ~~changes~~ evolution in the participation of diverse stakeholders ~~engagement~~ in the meteorological value chain has~~ve~~ been evident across the globe but with significant variations ~~by~~ between regions and countries~~y~~. Five primary factors have influenced these changes:

(a) Scientific and technological innovation;

(b) A growing demand for meteorological, climatological, hydrological, marine and related environmental information and services from commercial interests, the general public and the government sector;

(c) Global actions to adapt to climate change, to ~~increase~~ promote sustainable development, and to reduce disaster risk;

(d) Public sector institutional and resource constraints;

(e) Increased involvement of, and investment by, the private sector, and increased globalization and consolidation of private sector entities in the weather enterprise.

These factors have shaped trends within the weather enterprise and accelerated the growth of private stakeholder participation ~~and the~~ with a consequential increase in financial turnover within the sector. Within this context, it remains in the interest of all parties to have a robust national and global meteorological and hydrological infrastructure, adequately and dependably funded, as this forms the information backbone serving all sectors and ultimately the whole user community. Ensuring the sustainability of this infrastructure requires all countries to reaffirm their commitment to funding and operating national observing networks and means of communication and their adherence to the appropriate WMO standards and procedures. In addition, countries should reaffirm their commitment to the free and unrestricted international exchange of the requisite and quality-assured ~~essential~~ core data and products.

The academic sector is involved in the weather ~~and climate~~ enterprise through internationally coordinated scientific and research efforts that underpin operational systems and ensure that they evolve as new innovations arise. The academic sector also ~~encourages~~ facilitates continuous human capacity-building through education, ~~and~~ training and research.

Private sector involvement in the weather enterprise, though initially mostly confined to manufacturing equipment and providing media services, has been growing rapidly across the whole value chain, so much so that a number of companies now have ‘end-to-end’ capability with regional and global coverage. This growth in private sector activity is ~~substantially expanding~~ leading to a substantial increase in both the opportunities and challenges for all stakeholders, including NMHSs.

### 3.3 Impacts and evolving roles

The changes brought about by the ~~above~~ factors identified above could have a significant impact on the institutional arrangements that are currently widely accepted by WMO Members for the collection, processing and exchange of meteorological, hydrological, climatological and other environmental data, as well as for the generation and provision of the corresponding information and services. The potential exists to improve both the ~~efficacy~~ value and the reach of warnings, forecasts and other services within societies around the world. At the same time, concerns have been raised that these changes could erode support for funding the core observational assets usually managed by NMHSs, as well as eroding the status, ~~funding~~ visibility and ~~modes of operation~~ operational functions of NMHSs. This could impact ~~sustained long – term,~~the long-term sustainability of national observing capabilities and thereby harm key activities such as national and global climate monitoring. The role of NMHSs as the (single) national authoritative voice for severe weather warnings and other core governmental purposes could be challenged, which could have negative ~~impacts on~~ consequences for the public and ~~on~~ for end-users of products and services supplied by NMHSs.

Numerous case studies and practices from the meteorological community, as well as examples from other sectors, can inform best practices for effective Public-Private Engagement ~~to~~ which mitigate these risks.

Within the weather enterprise, national, regional and international institutions and operating/business models vary greatly. Regardless of the differences, a common goal of the enterprise should be to contribute to the core mission of WMO: protecting life and property, helping to foster sustainable economic growth and improving the quality of life. Governments, the public sector, the private sector, academia and civil society can all play important roles in achieving this goal.

The role of WMO is set out in the WMO Convention, which recognizes that “meteorology is best coordinated at the international level by one responsible international organization”. Thus, WMO plays a central global role in facilitating the cooperation of Member States and Territories and their weather enterprise stakeholders.

Historically, the public sector has led the funding and development of the backbone infrastructure of the weather enterprise. Observational networks and weather, climate and hydrological services have been considered “public goods”, and their development and provision has been understood to be the responsibility of national governments.[[15]](#footnote-16) Recently, technological ~~changes~~ developments and changes in users’ requirements have provided new opportunities for the private sector to contribute to the provision of these services in support of the public interest and to meet specific stakeholder needs.

One of the distinguishing characteristics of weather services is their dependence on observational data from around the globe. No one nation could provide even basic weather services to its citizens without continuous, real-time access to such international data ~~internationally~~. While investments in obtaining these observations are made at the national level, the collective benefits only accrue if: (i) a sufficiently large number of nations decide to make these investments; and (ii) these nations share the resulting data with each other. Members have invested in public sector meteorological institutions because weather, climate and hydrological services have proven to be essential to the safety and security of their citizens and because providing these services is a fundamental role of government; this is true even if both public and private sector entities contribute to the collection of data and to the provision of services.

At the same time, the private sector is also a valued contributor to the well-being of nations and has been active in the weather enterprise for decades across all elements of the value chain. It serves a number of very important roles, including being a source of investment, a driver of technological development and innovation, a partner in service development and delivery, and an engine for economic growth and employment.

### 4. PRINCIPLES OF ENGAGEMENT

A major role of these Guidelines is to promote a set of basic principles ~~to~~ which provide guidance, outline responsibilities and express goals. These principles are based on the core values and goals of WMO as an organization and provide a framework to facilitate the formulation and implementation of partnerships between – at the international level – WMO and the business sector, and at the national and regional levels, between NMHSs and private sector stakeholders, while safeguarding the integrity, impartiality and independence of WMO and preventing and mitigating potential risks of adverse impacts on its core mandate ~~and services~~. The basic principles are also derived from relevant United Nations policies, strategies and guidelines on Public-Private Engagement and Public-Private Partnerships (PPPs). Furthermore, the Guidelines follow the high-level WMO policy on PPE established in the Geneva Declaration – 2019.

### 4.1 ‘People-first’ principle

Recognizing the core mandate of supporting local-to-global decisions related to saving life and property and supporting economic productivity ~~by providing~~ through facilitating the provision of essential, meteorological, climatological, hydrological and environmental information, WMO adheres to the “people-first” approach to Public-Private Engagement and partnership~~s~~ that has been promoted by the United Nations Economic Commission for Europe (UNECE) and widely accepted as a vehicle to achieve the United Nations SDGs.[[16]](#footnote-17)

The ‘people-first’ principle sets out a clear statement that out of all the stakeholders, ‘people’ should be the priority and main beneficiary. The focus of PPE and PPPs in the weather enterprise should be on improving the safety and quality of life of communities, particularly those that are fighting poverty. PPE and PPPs should provide increased access to essential, affordable and fit-for-purpose products and services for all, thereby contributing to ~~the resolution of vulnerabilities and sensitivities~~ building community resilience to weather and climate impacts. This will, ~~which~~ in turn, ~~will~~ strengthen the weather enterprise by creating ~~a new demand and~~ new requirements and opportunities for weather, climate and hydrological services.

WMO contributes to the ‘people-first’ principle through its programmes supporting meteorological and hydrological service providers, including NMHSs, and by ~~providing~~ facilitating the provision of free and openly available data and products.

### 4.2 Fair and transparent relationships between non-commercial and commercial entities

Commercially-based weather and climate activities have grown during the last three to four decades. A crucial issue for WMO and the meteorological community has been to find optimal solutions to maintain and improve the free international exchange of essential meteorological data and products while safeguarding the economic interests of Members with respect to the sustainability and development of their national meteorological services.

In response to this, the World Meteorological Congress has adopted a data policy demonstrating that WMO has committed itself to broadening and enhancing the free and unrestricted international exchange of meteorological and related data and products. This policy, detailed in ~~Resolution 40 (Cg-XII)~~ the “WMO Unified Data Policy”, also provides ~~“guidelines for relations between national meteorological or hydrometeorological services (NMHSs) and the commercial sector” (Annex 3 to Resolution 40 (Cg-XII)), with the understanding that the development of the exchange of meteorological and related information depends greatly upon sound, fair, transparent, and stable relations between the public and ‘commercial’[[17]](#footnote-18) sectors. Most of this generic guidance remains valid today; however, it has also been recognized that the adoption and application of these guidelines by Members is highly variable. Cg-18 called for a review and update of the WMO data policy in Resolution 40 (Cg-XII), Resolution 25 (Cg-XIII) – Exchange of hydrological data and products and Resolution 60 (Cg-17) – WMO policy for the international exchange of climate data and products to support the implementation of the Global Framework for Climate Services.~~guidelines on the application of the data policy in Public-Private Engagement with the understanding that the application of the free and unrestricted principle depends greatly upon sound, fair, transparent and stable relations between these two sectors.

### 4.3 Mutual benefit

Successful and sustainable Public-Private Engagement builds on contributions from both the public and the private sector, with each sector contributing to the success of the other. While the public sector is more likely to invest in long-term programmes and the underpinning core infrastructure~~s~~ needed for sustained high-quality weather and climate monitoring, the private sector can be more responsive to targeted investments to bridge data gaps and to meet special customers’ needs. The private sector is also faster ~~at applying~~ in the application of innovation and emerging technologies. The public sector’s deep understanding of societal needs and trusted connection with citizens and with governing authorities are critical in assuring community safety through responsiveness to authoritative warnings. At the same time, the technological agility of the private sector may present opportunities to meet novel and emerging service needs. WMO offers a strong foundation of science, data and global standards which can inform and influence the development of these services and offer assurance to end-users regarding their quality. The private sector depends on the essential scientific and observational underpinning provided by the public sector and can be a powerful advocate for sustained government investment in core public infrastructure and capability.

A fair and equitable exchange of data and products is essential for the success of the entire weather enterprise as data availability is crucial for life-saving missions, such as disaster risk reduction, and for meeting the breadth of societal demands that cannot be met by a single sector, especially in the least developed countries. Putting in place and extending an agreed framework for sustainable and affordable ~~conditions for~~ access to data, equally and reciprocally *[Karnawati]* applicable to the private and public sectors, is an essential ~~to fully realize~~ step in fully realizing the potential of all sectors.

### 4.4 Guiding principles for Public-Private Engagement

The Geneva Declaration – 2019: Building Community for Weather, Climate and Water Actions urged all stakeholders from the public, private and academic sectors to adhere to the United Nations Global Compact and the WMO’s established principles for successful partnerships. The following is a set of guiding principles promulgated through the WMO high-level policy and these Guidelines.

(a) **Advancing the overarching goals articulated in the WMO Convention**, namely:

(i) Protection of life and property;

(ii) Safeguarding the environment;

(iii) Contributing to sustainable development;

(iv) Promoting long-term observation, collection and sharing of meteorological, hydrological and climatological data, including related environmental data;

(v) Promotion of endogenous capacity-building;

(vi) Meeting international commitments; and

(vii) Contributing to international cooperation.

(b) **Shared value:** Engagement among the public, private and academic sectors should create shared value and seek “win-win” situations whereby both public entities and private businesses can recognize opportunities for innovation and growth, based on science, to meet societal needs. Creating shared value can be done by~~:~~ leveraging private sector expertise and supporting the transfer of technology; promoting free and unrestricted data sharing based on national circumstances, with intellectual property rights duly respected; accelerating the uptake of research and technological developments into operations and stimulating the generation of new services; translating and disseminating valuable knowledge; investing in local research; and developing human capacity through training, thereby supporting the sustainability of the weather enterprise at all levels.

(c) **Sustainability:** The public, private and academic sectors should promote the sustainability of the global infrastructure by seeking opportunities for multisector engagements that improve efficiency and better serve society. Collaborative efforts – to share both benefits and risks – are needed to ensure the fiscal sustainability of the basic infrastructure for the key modules of the weather enterprise. This fiscal sustainability, in turn, requires both the long-term sustainability of the public budget for meteorology and complementary private financing in areas that can generate a reasonable economic return. The public, private and academic sectors should seek to identify opportunities to assume complementary roles, minimizing overlap or competition where these would lead to inefficiencies or be detrimental to the sustainability of the core infrastructure and service provision capabilities.

(d) **Advancing together:** The rapid development of science and technology carries the risk of widening the gap between developed and developing countries. In addition, the widespread availability of products from global service providers could lead to the marginalization of national agencies if those agencies cannot meet ~~the~~ appropriate standards of quality ~~requirements for~~ and reliability in the provision of the required services. At the same time, there is an opportunity for developing countries to make great strides forward by adopting innovative solutions ~~to implement the~~ in implementing activities necessary to carry out what WMO defines as the key role of NMHSs: providing the core observing infrastructure and authoritative voice in public safety services. A new approach involving effective engagement with the private and academic sectors, as well as smart capacity development investment policies, both national and through development financing, should be promoted to enhance the provision of high-quality products and services in all countries based on identified users’ needs. This approach should include efforts to help bridge the existing capacity gaps ~~of~~ evident in developing countries, least developed countries (LDCs) and small island developing States (SIDS) through development projects focused on enhancing their capacity to deliver essential services in a sustainable long-term manner. A key principle to be maintained is that all countries, no matter what their state of development, should have the possibility to advance~~,~~ and should be helped~~, to advance and~~ to benefit from modern science and technology.

(e) **Level playing field:** Both the public and private sectors have much to offer with respect to advancing shared and collective objectives in support of public goods and specific stakeholder needs. As such, both public and private sector communities contributing to weather, climate and water services should have the opportunity to propose cooperative arrangements or other forms of engagement to facilitate their working together. Weather, climate, hydrological, marine and other environmental services provided by both the public and private sectors should be ~~provided~~ delivered with an assured level of quality and reliability. WMO and Members’ governmental agencies should engage with the private sector for the purposes of ~~development and~~ the provision of products and services and their development that explicitly support and would accelerate achieving the goals of WMO and Member governments. However, to ~~the~~ an extent that is reasonable, engagement should not provide exclusivity or imply endorsement or preference of ~~a~~ any particular private-sector entity or its products or services. Moreover, ~~over~~ during the past decade, the private sector has invested in ~~various aspects of the weather enterprise~~ many elements of the weather value chain, including observation~~al~~ networks and information dissemination mechanisms. This has created a unique opportunity for two-way collaboration and sharing, including the sharing of data and expertise, to facilitate the attainment of common objectives and to extract the maximum benefit from the value chain for all involved. In the interest of a commonly supported level playing field, exclusivity of data ownership existing on both the public and private sides of data gathering and dissemination activities should be avoided insofar as this is possible given the economic requirement in the private sector to produce an appropriate rate of return on invested capital.

With due regard to national legislation, Members should ensure that access to commercial data with use restrictions is treated equally between the private arms of NMHSs and private sector companies. All enterprise stakeholders, including NMHSs, should comply with relevant national legislation and policy with respect to both data provision and the avoidance of anti-competitive behaviour. Where an NMHS operates both public and private arms, these should be treated as distinct entities when engaging in activities such as the exchange of data and products (including computer model outputs) and the provision of services (including consultancy services). Furthermore, where an NMHS with a private arm receives or generates data or products that it does not completely distribute to commercial users on a full and unrestricted basis under ~~Resolution 40 (Cg-XII), Resolution 25 (Cg-XIII) or Resolution 60 (Cg-17)~~ the WMO Unified Data Policy, the commercial activities of that NMHS should be treated in a manner that is equivalent to the manner in which the commercial activities of ~~commercial users~~ private sector entities are treated.

(f) **Integrity:** WMO, NMHSs and stakeholders from the public, private and academic sectors should seek to engage in mutually beneficial relationships and partnerships that benefit society. The integrity, as well as the credibility, independence and impartiality, of WMO and the agencies established by its Members should be fully maintained in ~~the~~ these engagements.

(g) **Sovereignty:** The prerogative of WMO Members in how weather, climate and hydrological services are to be arranged and provided within their sovereign nations ~~should~~ shall be respected. This includes the application of national or regional policies for making public data and products freely and openly available.

(h) **Transparency:** Engagement with the private sector should be transparent. Information on the nature and scope of major contractual and similar arrangements should be available to concerned entities and to the public at large.

### 5. GLOBAL, REGIONAL AND NATIONAL ROLES

Promoting better Public-Private Engagement will require ongoing consultations and actions at the global, regional and national levels, which will include defining the roles of WMO constituencies in their interactions with other stakeholders within the weather enterprise.

### 5.1 Global level – World Meteorological Organization

WMO facilitates worldwide activities and cooperation around weather, climate and water for the benefit of all nations and peoples. The role of WMO in supporting effective Public-Private Engagement includes:

(a) **Modernized and clearly articulated standards and recommended practices.** WMO is a recognized standard-setting organization, and its standards and recommended practices are developed to enable a unified global data exchange in the areas of weather, climate, water and environment and highly harmonized data processing and forecasting services. WMO ~~provides~~ facilitates the provision of services with an acceptable level of quality and at an acceptably high standard to specific economic sectors and to the public. Standards are constantly being developed and refined based on evolving requirements and ~~evolving~~ advancing technology. Throughout its existence, WMO (and before it, the International Meteorological Organization (IMO)) has managed to mobilize a global community of expertise to support the development, validation and promulgation of standards and recommended practices. Once these standards and practices are approved by the World Meteorological Congress, they provide the ~~needed~~ necessary level of standardization, interoperability and investment-sharing that has led to today’s highly successful global weather ~~and climate~~ enterprise. With the understanding that these regulations are to be respected by all providers in all Member countries, WMO should, in the future, engage more experts from the private sector and academia, including through professional associations such as HMEI and other relevant international bodies, in the standard-setting process in order to ensure shared ownership of these standards. As the work of WMO in standard and practice setting expands to include PPE, care should be taken to avoid prescribing specific solutions; instead, the focus should be on the achievement of desired outcomes and performance levels. WMO should also enhance its role to help ensure quality in data and service~~s~~ provision. In particular, compliance with standards should be promoted in all enterprise sectors and supported by agreed verification and validation measures.

(b) **Encouraging the free and unrestricted exchange of data.** Governments that signed the WMO Convention have committed to observe and follow the international regulations established by WMO. These include standards and practices related to the collection and sharing of data and products among stakeholders as outlined in ~~Resolution 40 (Cg-XII), Resolution 25 (Cg-XIII), Resolution 60 (Cg-17)~~ the WMO Unified Data Policy and the relevant technical regulations. WMO ~~will develop and adapt a guidance~~ has also included, in the Annexes of the WMO Unified Data Policy, guidelines for NMHSs, and other stakeholders as needed, with respect to the free and unrestricted international exchange of data and products~~,~~ ~~as applied to~~ in the current environment~~,~~; an environment in which the private sector ~~and~~, together with academic and civil society entities, will play ~~a growing~~ an increasing role in data provision.

(c) **Facilitating dialogue among all stakeholders.** Together with its Members, WMO should formulate policies and strategies to better communicate the value of public meteorological and hydrological knowledge and services. WMO has taken ~~the~~ a leading role in stimulating and promoting global dialogue among actors in the public, private and academic sectors, engaging those actors and tracking developments and trends. The Open Consultative Platform (OCP) “Partnership and Innovation for the New Generation of Weather and Climate Intelligence”, launched at Cg-18 in June 2019, will serve as an open, constructive and participatory framework for collaboratively addressing the challenges facing the weather enterprise. In the spirit of mutual respect and trust, the Platform will enable all stakeholders to stay abreast of issues and opportunities, both institutional and technological, to incentivize win-win approaches and nurture innovation. A new ~~cooperation~~ cooperative paradigm will incorporate actively sharing ideas and stakeholder interactions ~~to~~ , fostering a move from isolated actions by a single stakeholder to coordinated initiatives that are developed and shared across sectoral and organizational boundaries. The ~~new~~ governance structure of WMO, including its technical commissions, should actively seek to better engage available expertise not only from the public sector but also from academia and the private sector and from civil society. This inclusive approach will require innovation in the way the technical bodies conduct their business and the efficient use of modern communication and collaboration technology.

(d) **Investigating emerging issues and changing roles.** As the weather enterprise evolves, WMO should monitor issues emerging around Public-Private Engagement that could impact either its Members or the sustainability of the global weather enterprise itself. Among these issues, WMO should investigate the feasibility and desirability of taking on new roles to support the quality assurance of data and services. For example, with an ever-increasing number of potential service providers, there is a pressing need for an international authority to objectively validate the quality of the information and services provided, thus helping users select providers based on principles of quality assurance. WMO programmes and expert bodies have been engaged in the development and implementation of verification methodologies, intercomparison campaigns and quality management guidance, while the verification of forecasts from both private and public service providers has been carried out by independent third parties. In the future, such quality assurance activities should be better coordinated, and criteria should be developed with the participation of the public, private and academic sectors in order to distinguish between a “good service” and a “bad service”. The WMO Secretariat should also look to continue to expand its dedicated expertise in “meteorology as a business”.

### 5.2 Regional level – regional associations

WMO regional associations interface with their Members, liaise with other stakeholders, and designate and support regional centres in the delivery of regional services to Members. To support engagement with actors in the private sector and with other stakeholders, regional associations are urged to take on other roles, including:

(a) **Gathering and disseminating information and guidance.** Regional associations are urged to facilitate change management and advocate for inclusive consultations ~~and~~ together with knowledge and experience sharing in order to enable Members to learn from each other and to provide support as needed for effective Public-Private Engagement. Knowledge can be shared globally through the WMO Secretariat and disseminated at the regional and national levels, or regional associations can ~~share~~ facilitate the sharing of knowledge directly with the NMHSs of Members and with other stakeholders. The seventy-sixth session of the Executive Council (EC-76) through Decision 7 encourages the presidents of regional associations to consider establishing a regular regional mechanism for dialogue, such as a Regional Open Consultative Platform (R-OCP), to facilitate dialogue between stakeholders from all sectors in the respective regions.

(b) **Raising awareness and promoting the capacity development of Members.** Regional associations are urged to provide awareness training to the staff of NMHSs in matters related to P~~ublic-~~P~~rivate~~ E~~ngagement~~ *[Secretariat]*. They are also urged to demonstrate leadership by promoting the value of ~~public-private engagement~~PPE *[Secretariat]* in ~~providing~~ the provision of weather and climate services ~~to~~ which benefit society. Efforts to enhance the institutional capacity for PPE should highlight ~~the~~ practical ~~modalities of~~ steps and approaches to public-private-academic partnerships with respect to achieving the United Nations SDGs and should be supported with examples of good national practices.

(c) **Exploring further cooperation in service provision at the regional and subregional levels.** Regional associations should inform their Members of ongoing developments in public-private-academic engagement within the context of the expected growth of demand for, and supply of, information and services. In particular, regional associations should ensure that their Members understand and take advantage of the increasing internationalization of service delivery. Modern technology allows for the global and regional provision of data and information services which in the past were provided exclusively by national entities. This both poses risks and offers opportunities. Regional associations should inform their Members of these risks and opportunities to help them adapt to this new environment. Regional associations should also study and promote examples of the regionalization of certain capacities and services through bilateral or multilateral cooperative arrangements among Members which improve the competitiveness of services and reduce their costs. This subregional and regional approach should not be limited to the public sector; regional associations should investigate the possibility of achieving greater efficiency through public-private cross-border engagement without compromising national mandates or quality requirements.

### 5.3 National level – Members and their NMHSs

Given the increasing participation of the private sector, Members and their designated agencies, such as NMHSs, are urged to take action to maintain and improve stakeholder engagement with the aim of maximizing the corresponding socioeconomic benefits to their economies and to their citizens in the short and long-term. Effective engagement offers opportunities to strengthen NMHSs, or other designated agencies, and the weather enterprise as a whole. The evolving role of Members in this regard includes:

(a) **Fostering structured dialogue with the private sector.** Members’ designated agencies, such as NMHSs, are urged to reach out proactively to set up structured dialogues ~~among~~ between public, private and academic sector stakeholders on issues of common interest. Regular dialogues involving these actors would be an effective way to improve mutual understanding and foster relationships built on trust. In setting up these dialogues, NMHSs, or other designated agencies, may benefit from recognizing opportunities where national objectives converge with those of the private and academic sectors.

(b) **Putting in place appropriate legislation and ~~business models~~ operating models, performing change management and building on core strengths.** In an environment in which private sector engagement in meteorological and hydrological services is likely to continue in the decades ahead, NMHSs should continuously enhance the quality and dissemination of their products and services to allow them to thrive in an increasingly competitive environment. ~~They~~ Members need to ~~adapt~~ adjust to ongoing changes in ~~their business models~~ the external environment through adapting NMHSs operating models, including through enhanced national legislation that enables effective PPE to leverage resources and build upon the strengths of each sector. The increasing ~~stress~~ demands on the public budget in many States puts considerable stress on the ability of NMHSs to maintain and develop their infrastructure and service capacity. To cope with this ~~stress~~ situation, Members should enact relevant national legislation to enable effective and equitable PPE and foster ‘win-win’ solutions that meet societal needs~~, including~~. This should include strengthening the authoritative role of NMHSs in the provision of services mandated by governments.

(c) **Promoting the uptake of WMO standards and guidance.** In fulfilment of their commitment as WMO Members, governments need to establish effective oversight over all national players providing information and services within the scope of the WMO business areas to ensure compliance with WMO technical regulations (standards and recommended practices, procedures and specifications). In this way, the success of the global standardization of information and products, as well as the quality and reliability of that information and those products, can be ~~guaranteed~~ fostered. Members are urged to promote awareness of, and compliance with, WMO standards, guidance and other technical regulations among all stakeholders and to introduce effective measures to ~~correct~~ address cases of non-compliance.

(d) **Fostering partnerships with civil society entities.** In an evolving world, with societal vulnerabilities to weather and climate risks growing, designated Member agencies, such as NMHSs, are strongly encouraged to engage with civil society to extend their outreach to communities, and citizens in particular, in order to improve public understanding of, and responses to, natural hazard warnings.

(e) **Exploring new national and cross-border partnerships.** In anticipation of increased diversity in the multi-stakeholder weather, climate and hydrological service provision landscape, Members should encourage national agencies to partner with each other or to establish multinational service delivery models ~~to be established~~ via bilateral or multilateral service agreements. Such models would leverage resources, improve efficiency and ~~allow~~ support consistent and seamless services across national borders.

### 6. PUBLIC-PRIVATE ENGAGEMENT FOR CAPACITY DEVELOPMENT

The United Nations 2030 Agenda for Sustainable Development calls for united efforts to meet common goals and creates a sense of urgency for country-level action. Most of the SDGs are linked to weather-, climate- and water-sensitive areas. Achieving them requires a holistic, multi-stakeholder approach ~~to~~, encompassing public-private-academic engagement, to develop and expand the capability of societies in ~~order to help reduce~~ reducing their vulnerability to weather and climate extremes. A number of stakeholders have made considerable investments so that the goals set by the 2030 Agenda for Sustainable Development, the Sendai Framework for Disaster Risk Reduction 2015– 2030 and the Paris Agreement can be met. The effectiveness of these investments will depend a great deal on the ability of the new generation of weather and climate intelligence to inform decision-making at all levels.

While demands for information and services are increasing exponentially, many NMHSs in developing countries are being confronted with major performance challenges. Closing this capacity gap will require increased collaboration and the leveraging of expertise and knowledge through strategic partnerships.

Capacity development actions to ensure the production of, and access to, the high-quality weather, hydrological and climate information needed for sustainable development will require not only the concerted effort of all stakeholders in the global weather enterprise, but also the mobilization of significant financial resources. This challenging task will necessitate ~~bringing on~~ engaging development finance institutions (DFI) as another important partner in the global weather enterprise. The growing flow of resources to build the capacity of hydrometeorological services, including from the Green Climate Fund (GCF), multilateral development banks, and bilateral partners requires a more systematic and complementary approach to sustainable investments. Efforts need to focus ~~on~~ not only on “more” but also on “smarter” investments to increase the capacity and relevance of NMHSs as key players in their country’s sustainable development planning.

WMO and all stakeholders of the weather enterprise, including DFIs, through open and constructive dialogue, should develop sustainable operating/business models to ensure the best use of ~~the~~ available funding mechanisms in order to raise the capacity of developing countries in a sustainable manner. The interlinkages and interdependencies between the developing and developed world require that there be two main ~~business~~ goals for the enterprise: creating a sustainable global infrastructure to run global services, and enabling developing countries to enhance their local capacity for service delivery based on national needs, with the appropriate ~~utilization~~ use of the global services available. The capacity to support local capabilities throughout the WMO community is, and will continue to be, ~~tied~~ linked to the ability of the private sector to create jobs, especially as the government sector, in many countries, shrinks in the face of contracting budgets. In this regard, a focus on the growth of local expertise in information technology and science-to-service advancements ~~will~~ can go hand in hand with the development and growth of local capabilities within the private sector ~~that will be required~~, helping to sustain the capacity development envisioned for all Members.

Public-Private Engagement development projects have the potential to provide sustainable solutions that will modernize the national infrastructure and enhance access to and the quality of the requisite services needed by the national economy and citizens. To enable such partnerships, it is necessary for public and private sector stakeholders to build mutual trust, respect ~~a~~ an appropriate code of ethics and strive to establish long-lasting engagement. ~~Business~~ PPE models based on leveraging the resources of all sectors and on cost and revenue sharing should be further developed and promoted. The academic sector also has an important role to play in these partnerships by providing access to innovation and training, as well as education opportunities.

At the international level, WMO should work closely with DFIs to design projects that are based on prioritized national needs following the ‘people first’ principle, that are financially viable in order to ensure sustainability, and that reinforce the capability of developing countries to be part of the international exchange of data and products through WMO global systems.

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APPENDIX. GLOSSARY OF TERMS

Note: This glossary of terms is a work in progress. The definitions given below are relevant only in the context of these Guidelines and should not be understood to be universally applicable.

**Academic sector:** Public or private higher education establishments awarding academic degrees; public or private non-profit research institutes whose primary mission is to pursue research. (Source: European Commission[[18]](#footnote-19))

**Business sector:**[[19]](#footnote-20)

 For-profit and commercial enterprises of any size, whether privately owned, public, or fully governed by governments;

 Corporate foundations and foundations that are directly funded and/or governed by businesses;

 Business associations, coalitions and alliances, including for example chambers of commerce, employers’ associations, cooperatives, and industry and cross-industry initiatives where the participants are for-profit enterprises.

**Commercial sector:** Governmental or non-governmental organizations or individuals operating for commercial purposes. ~~(Source: Resolution 40 (Cg-XII), Annex 4)~~

**Data and services:** The terms “data” and “services” are complementary and often overlapping. ~~Their use and definitions are expected to develop over time.~~

For **data**, see a detailed definition in Annex 4 of Resolution 1 (Cg-Ext(2021)), although the meaning may vary depending on the context of the guidelines.

**Services** encompass information provided to users in a variety of formats, including text, graphics, video, etc., as well as consultative services that augment such information with advice and guidance from meteorological professional staff; both of which are intended to support users in making informed decisions and taking appropriate actions.

**Engagement with the private sector (or business sector):**[[20]](#footnote-21) Any type of interaction with private/ business entities, with different objectives, ranging from informal talks and discussions, to knowledge-exchange platforms, to full-fledged partnerships entailing funding or brand asset exchanges. These engagements may be implemented through different modalities, including, but not limited to, partnering, and may entail different levels of public exposure.

**Private sector:**[[21]](#footnote-22) The part of the economy that is run by individuals and companies and is not state controlled. Therefore, it encompasses all for-profit businesses that are not owned or operated by the government, and in some definitions, it may also include privately owned organizations (e.g. family foundations or associations) or include influential individuals such as high net worth individuals.

**Public-Private Engagement:** Collaboration between NMHSs (and/or other public agents) and private sector entities to produce and deliver weather, climate, hydrological, marine and related environmental information and services while respecting the public interest and the mandates of NMHSs ~~and keeping in mind budgetary constraints~~.

**Public-Private Partnerships:** Voluntary and collaborative relationships among various actors in both the public (State) and private (non-State) sectors in which all participants agree to work together to achieve a common goal or undertake specific tasks. Partnerships may serve various purposes, including advancing a cause, implementing normative standards or codes of conduct, or sharing and coordinating resources and expertise. They may ~~consist of~~ be focused on a specific single activity, or they may evolve into a set of actions, or even an enduring alliance, building consensus and ownership with each collaborating organization and its stakeholders. While they vary considerably, public-private partnerships are typically established as structured cooperative efforts with a sharing of responsibilities as well as expertise, resources and other benefits. Partnerships may be codified through a variety of arrangements such as Legal Contracts, Memoranda of Understanding, and Service Level Agreements.

**Weather enterprise (or weather and climate enterprise):** The multitude of systems and entities participating in the production and provision of meteorological, climatological, hydrological, marine and related environmental information and services. Although the term only contains the word “weather”, the enterprise encompasses all the business areas of WMO, including weather, climate and water, and all the core activities ~~of~~ overseen by WMO – observations, modelling, data processing and forecasting, as well as other related services and research. The weather enterprise includes public sector entities (NMHSs and other governmental agencies), private-sector entities (equipment manufacturers, service-provider companies, private media companies, and so forth), academic institutions, and civil society entities (community-based entities, NGOs, national meteorological societies, scientific associations, etc.). The weather enterprise has global, regional, national and local dimensions.

The term “global weather enterprise” describes the global dimension of the multinational, multi-stakeholder weather enterprises which encompass all Earth system monitoring, prediction and service providers from the public, private and academic sectors, as well as from learned societies and civil society entities.

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**ANNEX**

**Guidelines for Legislative and Institutional Arrangements**

**for Public-Private Engagement**

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**1. Introduction**

The background to the creation of this guidance material and its outline are described in this section.

In order to address the shared global societal risks relating to extreme weather, climate, water and other environmental events through enabling effective Public-Private Engagement (PPE), the Eighteenth World Meteorological Congress adopted a high-level policy act, the Geneva Declaration – 2019: Building Community for Weather, Climate and Water Actions through Resolution 80. Subsequently, the WMO Executive Council endorsed the Guidelines for Public-Private Engagement (edition 2020[[22]](#footnote-23)) at EC-72. These documents together provide guidance for and facilitate future actions and change management related to PPE at global, regional and national levels. EC-72 agreed that the *Guidelines for Public-Private Engagement* (hereinafter referred to as the “Guidelines for PPE”) should be reviewed and updated regularly to reflect the highly dynamic processes shaping PPE within the weather ~~and climate~~ *[Secretariat]* enterprise, to raise awareness, and to promote good practices. It requested the Policy Advisory Committee (PAC) to keep both the high-level policy and the Guidelines for PPE under review and to monitor their impact on relevant policies and practices of Members.

While both the Geneva Declaration 2019 and the Guidelines for PPE identify the establishment of appropriate legislative and institutional arrangements as one of the critical PPE-enabling factors and priority actions at the national level, the Guidelines for PPE (2021 edition) did not provide detailed options for PPE in the legislative landscape. There have also been numerous requests for assistance on legislation from Members at conferences and meetings held to date. In light of the agreement reached at EC-72 as above, and noting the current status of the Guidelines, this guidance material on legislation for facilitating PPE has therefore been prepared to provide concrete options in this regard, and is presented as an annex to the Guidelines for Public-Private Engagement (2024 edition).

Section 2 describes the objectives of this guidance material. These objectives are to identify key elements of legislative and institutional arrangements for PPE that may be secured or facilitated at the national level, and to present specific legal or institutional items and concrete legal provisions or institutional arrangements for Members or their National Meteorological and Hydrological Services (NMHSs) as options to support putting in place the legislative and institutional arrangements necessary for effective PPE. The meaning of legislative and institutional arrangements in this material is concisely described.

The focus of Section 3 is on the necessity of putting in place legislative and institutional arrangements suitable for Members or NMHSs which strengthen partnerships with the private and academic sectors, and which promote PPE. For effective implementation of the relevant measures, Members need to develop and apply concrete legal provisions, including regulations, which provide clarity in relation to the objectives, functions, and responsibilities of their NMHSs. Thus it is imperative to review and clarify the respective roles of the public and private sectors in the changing environment in which they operate, and to learn from the precedents of legislative and institutional arrangements in Members with similar situations. Members are also encouraged to develop legislative and institutional arrangements in line with the principles of engagement, including guiding principles for PPE, as set forth in the Guidelines for PPE.

Section 4 describes the key elements of legislative and institutional arrangements for PPE that may be established at the national level including legislation and regulations with respect to the fulfilment of the global, regional, and national roles to be played by WMO Members. It further provides a systematic overview of specific legal or institutional approaches, following a review and analysis of the national laws, decrees and regulations of Members. It should be noted that these specific items are presented as options so that Members can make appropriate consideration and reach informed decisions, taking into account the particular circumstances, such as political structures, policies and operating models, relevant to their own situation.

Section 5 provides concrete referenced practices that exemplify the effective operation and implementation of legislative and institutional arrangements for PPE, including provisions of laws, decrees, and regulations for each of the key elements of legislative and institutional arrangements presented in Section 4.

The Appendix~~appendix~~ *[Secretariat]*, together with the above text, contains a set of reference templates of structured legal and institutional provisions that can be easily and optionally used in crafting legislative and institutional arrangements by each Member who wishes to promote effective PPE. In the templates, since there are differences in policies and legal systems in Members, consideration has been given to the inclusion of multiple options so that each Member can choose what is appropriate to their situation in an á la carte manner.

**2. Objectives of the Guidance Material**

The objectives of this guidance material are to identify key elements of legislative and institutional arrangements through which PPE can be secured or facilitated at the national level, and to present specific legal or institutional items and concrete legal provisions or institutional arrangements for Members or their NMHSs as options to support putting in place the legislative and institutional arrangements necessary for effective promotion of PPE. This section provides a brief summary of the background and needs of PPE, as described in the Guidelines for PPE, and serves as an introduction to the next section, providing the meaning of legislative and institutional arrangements in this context. This guidance material is also intended to provide options so that Members can make own efforts to address legislative and institutional arrangements, considering their own particular political or legal circumstances.

Over the last few decades, there has been significant development and change in all areas of the value chain of meteorological, climatological, hydrological and related environmental services. These changes are driven by factors such as scientific and technological innovation, growing demand for information and services, global actions for climate change adaptation, sustainable development and disaster risk reduction, and (in many countries) public sector resource constraints, as well as increased involvement and investment in these services from the private sector.

In response to these major changes in the operating and business structures of entities within the weather ~~and climate~~ *[Secretariat]* enterprise, and to address the shared global societal risks related to extreme weather, climate, water and other environmental events, the high-level policy act of the Geneva Declaration – 2019 and the Guidelines for PPE both note the need to enable effective PPE and to broadly guide and facilitate future actions and change management related to PPE at global, regional, and national levels. The establishment of suitable legislative and institutional arrangements has been identified as one of the critical PPE-enabling factors and priority actions at the national level.

Why do we need legislative and institutional arrangements to promote PPE? In short, it is because in order to implement and sustain the actions and management changes associated with PPE, stakeholders in the meteorological services, including the NMHSs, need clarity with respect to their roles, rights, and obligations in the provision of services.

What is meant here by "legislative or institutional arrangements"? In general, legislative arrangement refers to the formulation of laws or regulations by a governing body, such as a parliament or congress, to regulate various aspects of society, or to the acts or regulations that have been enacted. Institutional arrangements, on the other hand, refer to the policies, systems, and processes that an organization uses to manage its activities effectively and efficiently, and to effectively coordinate with others to fulfil its mandate. Specifically, in the weather ~~and climate~~ *[Secretariat]* enterprise, legislation refers to the clarification of the duties, powers, and functions of the government and NMHS, the rights and responsibilities of the private sector, and regulatory matters related to the provision of meteorological services, including the formulation of these into laws, acts, decrees and regulations. Institutional arrangements, on the other hand, are a set of arrangements describing the roles and responsibilities of the stakeholders and agencies, including NMHSs, working together and in partnership in the value chain. Legislation and institutional arrangements, together with actions appropriate to the country, can promote more effective PPE when the stakeholders complement and interact positively with each other.

It should be noted that such legislative and institutional arrangements vary from country to country, depending on national policies and on the operating models of meteorological services. For this reason this guideline document provides examples of referenced practices as options, so that Members can use their own judgement in crafting legislative and institutional arrangements appropriate to their country. Reference templates of optional legal provisions for PPE are also provided in the appendix of this document.

**3. Necessity of Legislative and Institutional Arrangements for PPE**

This section will cover the importance and necessity of putting in place legislative and institutional arrangements suitable for each Member or its NMHS to strengthen partnerships with the private and academic sectors, and to promote PPE. For effective implementation of the relevant measures, Members need to develop and apply concrete legal provisions, including regulations, thereby securing clarity relating to the powers, functions, and responsibilities of the NMHSs. To this end, it is imperative to review and clarify the respective roles of the public and private sectors in the changing environment in which they operate, and to learn effectively from the precedents of legislative and institutional arrangements in Members who are in similar situations.

3.1 Importance and needs of legislative and institutional arrangements

The recent evolution in stakeholder engagement in the value chain for meteorological, climatological, hydrological and related environmental services, has a significant impact on the institutional arrangements currently and widely accepted among WMO Members, involving data collection, processing and exchange, and the generation and provision of corresponding information and services. In order to recognize these impacts and mitigate the related risks, and to ensure that the weather ~~and climate~~ *[Secretariat]* enterprise grasps new opportunities to address global and societal challenges, it is vitally important for Members or their NMHSs to understand the practices of effectively functioning PPE and to incorporate them into appropriate national legislative and institutional arrangements. They will also need to adjust their operating model accordingly, following the general principles of change management.

The reason for this need for legislative and institutional arrangements for the weather ~~and climate~~ *[Secretariat]* enterprise is, in brief, that it will provide assurance in relation to the relevant activities and ensure that all stakeholders have a clear understanding of their rights and obligations in the country. Government offices are generally established and vested with clear powers, duties and functions by law, act, decree or other formal instrument, along with subordinate rules and regulations, to clarify their rights and responsibilities in fulfilment of their mission. For NMHSs this generally encompasses all matters, relating to meteorology and/or operational hydrology, linked with public welfare including the protection of life and property, safety of transportation and the promotion of industry. Also typically prescribed in such legal instruments are liabilities in respect of actions by citizens or bodies in violation of the law, and, in some cases, exemption of liability of the NMHS and its staff for damages, (such as those consequent on a forecast or warning that does not verify) thereby ensuring them the necessary professional freedom to conduct their mission.

Nevertheless it should be noted that a WMO survey conducted in 2018 on the status of PPE in WMO Members (overall response rate: 58%) revealed that, for 25% of the respondent Members, there is neither law nor formal regulations in place to clarify and determine the roles and relationships of the public and private sectors with regard to the provision of meteorological, climatological, or hydrological information services. Also, 34% of the respondent Members have no description in their legislation or regulation relating to the conduct of observations and/or forecasts by non-NMHS entities as either being prohibited, unconditionally free, or allowed under some conditions. These survey findings clarify the need for legislative and institutional arrangements for PPE, including how to deal with the conduct of observations, forecasts and information services provided by the private sector.

Furthermore, a significant number of Members that have some laws, decrees, or other instruments related to meteorological services have requested assistance on how to develop their legal or institutional framework for guiding and facilitating future actions and change management through effective PPE. These Members recognize the necessity to address the significant changes in the business domain structure and in societal risks related to extreme weather, climate, water, and other environmental events.

3.2 Needs for concrete legal provisions and institutional arrangements

The respective roles of the public and private sectors, including the role of NMHSs, need to be reviewed and clarified in a timely and appropriate manner, as meteorological services and their support services are today not performed solely by public agencies such as NMHSs. In this context and to effectively clarify the specific roles of the public and private sectors, it will be necessary to develop concrete legal provisions in national laws or institutional arrangements, including regulations as appropriate, for guiding and regulating the activities of institutions and organizations involved in the provision of meteorological services. This will help to promote compliance with WMO standards and recommended practices among private companies and academic institutions, as well as clarifying the legal status of the powers, functions and responsibilities of the NMHSs.

As an example, activities such as the collection of private-sector observation data, or matters concerning access to public and private data cannot be left to individual understanding and ad hoc solutions, but require clear, reasonable, and acceptable rules. Similarly, there needs to be clear legal positioning, such as measures to maintain and enhance the authoritative voice of NMHSs in relation to early warnings. Guarantees for such activities should be enshrined in national legislation so that all stakeholders have a clear understanding of their rights and obligations with respect to the country's meteorological services.

To this end, it would be useful for Members to learn from the precedents of legislative and institutional arrangements established among countries with similar policies, operating models, or social circumstances. It is also desirable that Members, in developing legislative and institutional arrangements for PPE, take account of the principles of engagement provided in the high-level WMO policy on PPE established through the Geneva Declaration 2019, and reflect or respect the guiding principles for PPE as set forth in the Guidelines for PPE.

Here, the principles of engagement are

*‘people-first’,*

*fair and transparent relationships between non-commercial and commercial entities,*

*mutual benefit, and*

*guiding principles for PPE*.

The set of *guiding principles for PPE* includes: *-*

*Advancing the overarching goals articulated in the WMO Convention,*

*Shared value,*

*Sustainability,*

*Advancing together,*

*Level playing field,*

*Integrity,*

*Sovereignty, and*

*Transparency.*

**4. Putting in Place Legislative and/or Institutional Arrangements for PPE**

As emphasized above, and in order to ensure that roles and functions within the realms of meteorology are defined in a clear and reliable manner, WMO Members need to put in place legislative and institutional arrangements for facilitating PPE. In that context, this section lists *key elements of legislative and institutional arrangements* *for PPE* to be secured or facilitated by WMO Members, based on “global, regional, and national roles” as defined in Section 5 of the Guidelines for PPE. Furthermore, based on a review and analysis of the national laws, decrees and regulations of Members, *specific legal or institutional items* are systematically recommended in relation to the *key elements of the legislative and institutional arrangements for PPE* addressed within this section.

Before getting into the details there are some general and important points that need to be kept in mind and taken into consideration when putting in place legislative and institutional arrangements.

The first of these is that there is no one-size-fits-all legal or institutional system for PPE, as the systems and operating models of NMHSs among Members vary widely from country to country, such as whether or not the NMHS is engaged in commercial activities. For example, some NMHSs note that they are not engaged in commercial activities but that they are engaged in cost recovery. Whether or not an NMHS will participate in commercial activities itself, and whether or not a country will allow private commercial activities, are matters of sovereignty and the overarching policies of the country concerned. In this sense, the country concerned needs to consider specific legal or institutional items that reflect the circumstances of the country, including political structures, policies and operating models. The specific legal and institutional items referred to in this guidance material should therefore be regarded as options that a country may wish to apply according to its national circumstances.

Secondly, legal and institutional systems need to be modified in a timely manner in response to the changing social and technological environment. Ideally legal or institutional systems should be designed to be able to respond to such changes, including through the flexible application of the existing framework, and should be formulated according to such a concept. In other words, each Member should be aware that there may be room under existing national laws and systems to operate effectively in such a way as to promote PPE.

4.1 Key elements of legislative and institutional arrangements for PPE

The Guidelines for PPE, in Section 5, define the roles of different WMO constituencies in their interactions with other stakeholders within the weather ~~and climate~~ *[Secretariat]* enterprise in the promotion of improved PPE at the global, regional, and national levels. This section~~Subsection 5.3~~ *[Secretariat]* identifies key elements of legislative and institutional arrangements for promoting PPE, to guide *[Secretariat]* the roles of Members and their designated agencies, such as NMHSs, in taking action to maintain and improve stakeholder engagement at the national level as described in subsection 5.3 of the Guidelines for PPE~~through focusing on legislative and institutional arrangements as key elements for promoting PPE~~ *[Secretariat].* The key elements are essential to facilitate effective collaboration and to provide opportunities for strengthening the NMHSs, or other designated agencies, and the weather ~~and climate~~ *[Secretariat]* enterprise as a whole, while contributing to increasing the corresponding socioeconomic benefits in the short and longer term.

These key elements should be organized around the more common issues from a legislative and institutional perspective, while insofar as possible using terms and phrases that indicate specific actions, following subsection 5.3 of the Guidelines for PPE. In this regard, the following lists a set of 10 key elements (numbered Key Elements 1 through 10) under three pillars, Pillar 1 through Pillar 3, as legislative and institutional arrangements to be pursued for PPE.

**Pillar 1 – Exploring and fostering national and cross-border collaboration**

This pillar includes common and essential collaborative activities by Members to promote PPE in anticipation of increasing diversity in the context of providing multi-stakeholder weather, climate, and hydrological services. This pillar is characterized by being driven not just by legislation but also by a wide range of institutional arrangements. Under this pillar, the following should be pursued as key elements of legislative and institutional arrangements:

**Key Element 1 – Structured dialogue with the private sector**

Members’ designated agencies, such as NMHSs, are urged to reach out proactively to public, private and academic sector stakeholders to set up structured dialogues on issues of common interest. Regular dialogues involving these actors would be an effective way to improve mutual understanding and foster relationships built on trust. In setting up these dialogues, NMHSs would benefit from recognizing opportunities where national objectives converge with those of the private sector.

**Key Element 2 – Partnerships with civil society entities**

In an evolving world, with societal vulnerabilities to weather and climate risks growing, designated Member agencies, such as NMHSs, are strongly encouraged to engage with civil society to extend their outreach to communities, and citizens in particular, in order to improve public understanding of and response to natural hazard early warnings.

**Key Element 3 – Multidisciplinary collaboration and capacity development**

Members’ designated agencies are encouraged to explore and foster multidisciplinary collaboration with national stakeholders, or to establish multinational service delivery models via bilateral or multilateral service agreements. Such models would leverage resources, improve efficiency and facilitate consistent and seamless services across national borders, as well as supporting effective capacity development, particularly in developing countries facing significant performance challenges.

**Pillar 2 – Fulfilling and promoting the uptake of, and compliance with, international commitments**

This pillar includes the fulfilment by Members of international commitments including the WMO Convention, and the promotion of compliance with WMO standards and recommended practices by all stakeholders in a country or region. This pillar is also characterized by being driven not only by legislation but also a wide range of institutional arrangements, particularly in the uptake by stakeholders of WMO standards and recommended practices. Under this pillar, the following should be pursued as key elements of legislative and institutional arrangements.

**Key Element 4 – Fulfilment of international commitments**

Members are urged to fulfil international (multilateral and bilateral) commitments including the WMO Convention and relevant Agreements and Frameworks aimed at promoting cooperation in global activities related to weather, climate and water for the benefit of all countries and regions.

**Key Element 5 – Promoting the uptake of, and compliance with, WMO standards and** **recommended practices (by all stakeholders, including the NMHS itself)**

Members’ designated agencies, such as NMHSs, in their operational practices, are urged to comply with WMO standards and guidance, including free and unrestricted data exchange. National stakeholders such as companies or institutions involved in the weather ~~and climate~~ *[Secretariat]* enterprise are encouraged to enhance their uptake of and compliance with WMO standards and recommended practices, including the WMO Unified Data Policy guiding the exchange of Earth system data, for societal benefit. To this end, this key element should be pursued through exploring and fostering collaborative activities, including the evolution of mutual understanding through structured dialogue and the introduction of effective coping mechanisms, as are mentioned in Key Elements 1 and 2. For specifics on observations, see Key Element 6 in Pillar 3.

**Pillar 3 – Putting in place appropriate legislation and operating models, performing change management and building on core strengths**

This pillar includes key elements related to putting in place appropriate legislation and operating models through which NMHSs function as regulators and facilitators as well as operators. It emphasizes the importance of change management and building core strengths, thereby enabling Members to build effective and equitable PPE in the changing and evolving value chain of the weather ~~and climate~~ *[Secretariat]* enterprise. The details of these elements, including specific legislation, may vary depending on the policies and operating model of the Member\*. For this reason, it should be noted that the referenced practices to be cited in Section 5 are presented as options.

**Key Element 6 –** **Providing core infrastructure and using private sector observation data**

Members are urged to establish regulations and legal systems that ensure standardization of domestic meteorological observations, establishment of nationwide observing networks, public-private collaboration on observations such as the mutual exchange and use of data, and entry to land by staff of NMHSs for the establishment and maintenance of observation stations.

**Key Element 7 – Quality assurance of information and services**

Members are encouraged to develop activities and appropriate legislation to ensure the quality of information and services provided by private companies, as well as the quality of those provided by the NMHSs themselves, with a view to enhancing quality and providing assurance to the users of meteorological information and services.

**Key Element 8 –** **Providing the authoritative voice supporting public safety services**

As activities in the private sector expand through PPE, the responsibilities and functions of the NMHS need to be clarified. In particular, in order to implement national responsibilities relating to disaster risk reduction (DRR), such as the protection of life and property, Members are urged to appropriately position information supporting DRR, such as early warnings that are provided by the NMHS, within their legal systems in a manner that supports the concept of the single authoritative voice, and includes provision for relevant attribution. Members are also encouraged to appropriately position the early warning system (EWS) within their legal frameworks to include not only the provision of DRR information but also its dissemination and effective use by relevant national entities and media.

**Key Element 9 – Making data and information widely available**

The wider use of weather and climate information and products, including observation data, will increase benefits to society. Members are therefore encouraged to create a supportive environment through appropriate collaboration and to establish legal systems which sustain it.

**Key Element 10 – Optimal public-private involvement within the weather ~~and climate~~** *[Secretariat]* **enterprise**

The development of a sound weather ~~and climate~~ *[Secretariat]* enterprise requires a variety of measures that are aligned with the overarching policies of the country. For example, in a Member where the NMHS is involved in commercial activities, legislative and institutional arrangements for optimal PPE are needed to ensure fairness, transparency, and a level playing field.

Some of these key elements are interrelated and may be useful to put in place in a synergistic and interactive manner. Some elements may be suitable for all Members to pursue, while others, depending on the Member’s political structure, policy and operating model, may vary in the specifics that can or should be done. The pathway for putting these elements in place may differ depending on the circumstances of the Members.

The above set of key elements is used to describe the referenced practices of the legislative and institutional arrangements for PPE in Section 5 below. Before that, the following subsection will illustrate the specific legal or institutional items that are generally envisaged for each of the key elements.

4.2 Specific legal or institutional items in relation to the key elements

Concrete provisions of laws, decrees and regulations in legal instruments from about 120 Members which have been collected in the WMO’s database, in addition to specific initiatives broadly related to PPE among Members, have been reviewed and analysed. As a result, specific legal or institutional items are proposed as follows, in a systematic manner consistent with the key elements of the legislative and institutional arrangements listed in subsection 4.1. The specific legal or institutional items include those that are provided for by actual laws, decrees and regulations, as well as those that are expected to be put in place through future measures. They are numbered from S1 through S20; the prefix of the letter S, which stands for specific legal or institutional item, provides for ease of identification and reference.

In the collection of reference provisions contained in the Reference Templates of the Appendix, these specific legal and institutional items generally correspond to concrete provisions or their outlines. The templates are expected to be employed by Members to refer to and use in developing legislative and institutional arrangements for the facilitation of PPE.

**Pillar 1 – Exploring and fostering national and cross-border collaboration**

The following two specific legal and institutional items are common and basic to Key Elements 1 through 3.

*・Provisions for establishing collaboration and cooperation with state agencies, local government, communities, and the private sector, as functions of a designated national agency such as an NMHS (S1)*

*・Provisions for promoting collaboration and cooperation in scientific research and innovation, and capacity-building including education and training, and competency implementation (S2)*

**Key Element 1 – Structured dialogue with the private sector**

*・Provisions or clauses defining institutional arrangements for establishing and maintaining systematic dialogue with the private sector (S3)*

**Key Element 2 – Partnerships with civil society entities**

*・Provisions for the engagement with and participation of citizens, including awards (S4)*

**Key Element 3 – Multidisciplinary collaboration and capacity development**

*・~~Any other provisions or clauses relating~~Provisions or clauses that relate [Secretariat] to institutional arrangements for exploring and fostering PPE and partnerships, in particular those concerning multidisciplinary collaboration and capacity development (S5)*

**Pillar 2 – Fulfilling and promoting the uptake of, and compliance with, international commitments**

**Key Element 4 – Fulfilment of international commitments**

*・Provisions or arrangements for fulfilling international commitments to achieve common goals, including those relating to sustainable development, and international cooperation, especially in support of developing countries (S6)*

*・Provisions or arrangements for fulfilling international commitments for the promotion of international data exchange and of joint research projects (S7)*

**Key Element 5 – Promoting the uptake of, and compliance with, WMO standards and recommended practices (by all stakeholders, including the NMHS itself)**

*・Provisions or arrangements for the NMHS to make efforts, including dissemination of guidance materials, to facilitate and ensure stakeholders' compliance with WMO standards and recommended practices regarding observations and international data exchange. (S8)*

**Pillar 3 – Putting in place appropriate legislation and operating models, performing change management and building on core strengths**

**Key Element 6 – Providing core infrastructure and using private sector observation data**

*・Provisions for ensuring standards and procedures for observations by institutions other than the NMHS, including a certification system for meteorological instruments (S9)*

*・Provisions for developing and maintaining the national observation network and for enabling effective use of the data through mutual exchange (S10)*

*・Provisions defining official authority to enter land to establish and maintain meteorological stations and establishing the right to compensation for permanent damage (S11)*

**Key Element 7 – Quality assurance of information and services**

*・Provisions prescribing aspects of government oversight of private meteorological services, such as granting of permissions/licenses, certification of meteorologists, and other measures to ensure quality of services, including information and forecasting services (S12)*

**Key Element 8 – Providing the authoritative voice supporting public safety services**

*・Provisions that stipulate the position of early warnings as a responsibility of the state administration, e.g., a provision to define the NMHS as the authoritative voice or sole provider of early warnings, including stipulations regarding relevant attribution (S13)*

*・Provisions or clauses that clarify the expected response to early warnings provided by the NMHS in the national disaster management system, for enhancement of the effectiveness of disaster management (S14)*

*・Provisions or clauses that stipulate the responsibility for creating and maintaining the Early Warning System in Member countries and territories, which would include not only the provision of early warnings but also their dissemination and effective use (S15)*

**Key Element 9 – Making data and information widely available**

*・Provisions or arrangements that make weather, climate and water data generally available to any individual or organization, including duties or functions such as relevant system development, other institutional arrangements, and surveys to gauge user needs (S16)*

*・Provisions ensuring the attribution of service providers, including NMHSs, as a source of data, products and information when reported in the media, on the web and on social media, thus helping users in their use and selection of weather and climate information of diverse nature and quality (S17)*

**Key Element 10 – Optimal public and private involvement within the weather ~~and climate~~** *[Secretariat]* **enterprise**

*・Provisions defining an NMHS or its competent ministry or related institution as a regulating authority (S18)*

*・Provisions stipulating that involvement of the public sector with the private sector is conducted in an efficient and transparent manner (S19)*

*・Provisions defining basic and specialized NMHS services, and relevant measures to ensure fairness, transparency and a level playing field (S20)*

The table provides a list of 10 key elements of legislative and institutional arrangements for PPE and 20 specific legal or institutional items under the three pillars presented in this section.

|  |  |  |
| --- | --- | --- |
| **Pillar 1 – Exploring and fostering national and cross-border collaboration** | | |
| Specific legal or institutional items common and basic to Key Elements 1 – 3 | **S1** Provisions for establishing collaboration and cooperation with state agencies, local government, communities, and the private sector, as functions of a designated national agency such as an NMHS | |
| **S2** Provisions for promoting collaboration and cooperation in scientific research and innovation, and capacity-building including education and training, and competency implementation | |
| **Key Element 1** – Structured dialogue with the private sector | **S3** Provisions or clauses defining institutional arrangements for establishing and maintaining systematic dialogue with the private sector | |
| **Key Element 2** – Partnerships with civil society entities | **S4** Provisions for the engagement with and participation of citizens, including awards | |
| **Key Element 3** – Multidisciplinary collaboration and capacity development | **S5** Provisions or clauses that relate to institutional arrangements for exploring and fostering PPE and partnerships, in particular those concerning multidisciplinary collaboration and capacity development | |
| **Pillar 2 – Fulfilling and promoting the uptake of, and compliance with, international commitments** | | |
| **Key Element 4** – Fulfilment of international commitments | | **S6** Provisions or arrangements for fulfilling international commitments to achieve common goals, including those relating to sustainable development, and international cooperation, especially in support of developing countries |
| **S7** Provisions or arrangements for fulfilling international commitments for the promotion of international data exchange and of joint research projects |
| **Key Element 5** – Promoting the uptake of, and compliance with, WMO standards and recommended practices (by all stakeholders, including the NMHS itself) | | **S8** Provisions or arrangements for the NMHS to make efforts, including dissemination of guidance materials, to facilitate and ensure stakeholders' compliance with WMO standards and recommended practices regarding observations and international data exchange |
| **Pillar 3 – Putting in place appropriate legislation and operating models, performing change management and building on core strengths** | | |
| **Key Element 6** – Providing core infrastructure and using private sector observation data | | **S9** Provisions for ensuring standards and procedures for observations by institutions other than the NMHS, including a certification system for meteorological instruments |
| **S10** Provisions for developing and maintaining the national observation network and for enabling effective use of the data through mutual exchange |
| **S11** Provisions defining official authority to enter land to establish and maintain meteorological stations and compensation for permanent damage |
| **Key Element 7** – Quality assurance of information and services | | **S12** Provisions prescribing aspects of government oversight of private meteorological services, such as granting of permissions/licenses, certification of meteorologists, and other measures to ensure the quality of services, including information and forecasting services. |
| **Key Element 8** – Providing the authoritative voice supporting public safety services | | **S13** Provisions that stipulate the position of early warnings as a responsibility of the state administration, e.g., a provision to define the NMHS as the authoritative voice or sole provider of early warnings, including stipulations regarding relevant attribution |
| **S14** Provisions or clauses that clarify the expected response to early warnings provided by the NMHS in the national disaster management system, for enhancement of the effectiveness of disaster management |
| **S15** Provisions or clauses that stipulate the responsibility for creating and maintaining the Early Warning System in Member countries and territories, which would include not only the provision of warnings but also their dissemination and effective use |
| **Key Element 9** – Making data and information widely available | | **S16** Provisions or arrangements that make weather, climate and water data generally available to any individual or organization, including duties or functions such as relevant system development, other institutional arrangements, and surveys to gauge user needs |
| **S17** Provisions ensuring the attribution of service providers, including NMHSs, as a source of data, products and information when reported in the media, on the web, and on social media, thus helping users in their use and selection of weather and climate information of diverse nature and quality |
| **Key Element 10** – Optimal public and private involvement within the weather enterprise | | **S18** Provisions defining an NMHS or its competent Ministry or related institution as a regulating authority |
| **S19** Provisions stipulating that involvement of the public sector with the private sector is conducted in an efficient and transparent manner |
| **S20** Provisions defining basic and specialized NMHS services, and relevant measures to ensure fairness, transparency and a level playing field |

**Table: Ten key elements of legislative and institutional arrangements for PPE and 20 specific legal or institutional items under three pillars**

**5. Referenced Practices Related to Legislative and Institutional Arrangements for PPE**

As referenced practices, examples of the effective operation and implementation of the key elements under the three pillarsof the legislative and institutional arrangements indicated in subsection 4.1, will be described, together with the content of the concrete examples of laws, decrees, or institutional arrangements.

Legislative and institutional frameworks are not of a static nature that end with a one-time promulgation or arrangement, but are of an evolving nature. Members continually work to improve their frameworks as an evolving process, since they are required to implement new policies to meet evolving societal needs, resolve challenges which they face, improve efficiency, or adjust their frameworks in response to other laws enacted or amended. The same is the case with the PPE framework, and Members would benefit significantly from studying the existing and foregoing referenced practices in addressing this evolving process.

The referenced practices below are taken from Members' approaches to multi-sectoral collaboration or PPE to achieve their respective goals, taking into account the existing legal, institutional and administrative environment and the technical capacity or maturity of meteorological and related services in their particular country. Those Members intending to adopt some of these practices will need to give systematic and broad consideration to the balance of interests in the sectors involved and the sustainability of meteorological services in the country, paying attention to the complexity of this subject, while making the necessary adjustments to meet their own purposes.

Because of the variety of legislative and institutional frameworks and challenges each Member faces, a detailed description of different Members’ laws and regulations may not always be helpful to readers such as senior officers of NMHSs. This section, therefore, will briefly describe the provisions of the laws and decrees, and the contents of institutional arrangements, that correspond to the key elements of the legislative and institutional arrangements for PPE as identified in Section 4, along with their features. This should allow the executives and staff of NMHSs in many Members to understand and digest the purpose of the various instruments, and to reflect the concepts in their national legislation or institutional arrangements, as they move forward.

Most of the legislative and institutional instruments cited here were collected from websites of Member countries, territories and international organizations as well as directly from Members during a WMO survey conducted in 2018 on national strategic planning and legislation. The cited provisions and their characteristics have been verified with the respective Members. The following notes should also be referenced.

**Notes**

 Referenced practices shown in the following are only a selection of practices picked up from available laws, acts, decrees, and institutional arrangements for promoting PPE. Members may wish to refer to many other Members’ latest practices when they consider amending or establishing a law, an act, a decree, or institutional arrangement, taking account of the Member country’s situation, policies and environment. It is planned that Members’ relevant laws, acts and decrees will be made available via a WMO webpage.

 If a Member’s practice is not shown here it is not because of the operating model or the content of its legislation and institution, but because of other factors, such as the limited space available in this material and the regional balance of the Members included.

 Texts of laws, acts and decrees are abbreviated for clarity to the extent that the gist is not changed (“…” are used to indicate places where paragraphs, items, sentences or words are omitted). In some cases, acronyms of NMHSs are used instead of their full name, for the sake of brevity.

 For legal documents where an official English version is not to hand, DeepL translations have been used to create the English language version.

 When a Member and its NMHS wishes to select and apply some of the referenced practices to its own country, it is advised to check whether the selected practice provisions were introduced along with other relevant provisions or were subsequently amended.

 It should be noted that, in general, only the original language versions of the laws, acts, or decrees referred to are binding for legal purposes.

**5.1 Pillar 1 – Exploring and fostering national and cross-border collaboration**

**Key Element 1 – Structured dialogue with the private sector**

**Member (NMHS):** United States of America (National Oceanic and Atmospheric Administration (NOAA) National Weather Service (NWS))

**Legislation/Institution:** Weather Research and Forecasting Innovation Act of 2017

**Features:** The Act empowers NOAA and the U.S. National Weather Service to conduct outreach to key stakeholders to both assess weather forecasts and forecast products, and, importantly, to determine the highest priority weather forecast needs of key communities served. This direct engagement with stakeholders to build relationships and understand risks, vulnerabilities, and decision points is the core of the broader NWS Weather Ready Nation (WRN) strategy.

**Provision:**

“SEC. 412. WEATHER ENTERPRISE OUTREACH.

(a) IN GENERAL.—The Under Secretary may establish mechanisms for outreach to the weather enterprise\*—

(1) to assess the weather forecasts and forecast products provided by the National Oceanic and Atmospheric Administration; and

(2) to determine the highest priority weather forecast needs of the community described in subsection (b).

(b) OUTREACH COMMUNITY.—In conducting outreach under subsection (a), the Under Secretary shall contact leading experts and innovators from relevant stakeholders, including the representatives from the following:

(1) State or local emergency management agencies.

(2) State agriculture agencies.

(3) Indian tribes … and Native Hawaiians ….

(4) The private aerospace industry.

(5) The private earth observing industry.

(6) The operational forecasting community.

(7) The academic community.

(8) Professional societies that focus on meteorology.

(9) Such other stakeholder groups as the Under Secretary considers appropriate”.

\* The term ‘‘weather industry” and “weather enterprise” are interchangeable with ‘‘weather industry’’ in this Act, and include individuals and organizations from public, private, and academic sectors that contribute to the research, development, and production of weather forecast products, and primary consumers of these weather forecast products. (from (5) of SEC. 2. DEFINITIONS)

**Member (NMHS):** China (China Meteorological Administration (CMA))

**Legislation/Institution:** Setup of the China Meteorological Service Association to facilitate Public-Private Engagement

**Features:** On 13 May 2015, with the approval of the State Council and the Ministry of Civil Affairs, the China Meteorological Service Association (CMSA) was formally established, with 540 members, 16 branches and 53 experts. Its main responsibilities are as follows:

- to build a communication and service platform for its members;

- to set up a “Public Good Fund for Climate Ecological Value Transformation” and a “Fund of Meteorological Scientific and Technological Innovation” for facilitating climate services in support of natural resource management;

- to take on a number of government-commissioned tasks such as quality evaluation of public forecast dissemination, social observation, reward for scientific and technological achievements, and competency assessment for professional titles;

- to develop and apply voluntary codes of conduct by providing such services as association standards, credit evaluation, service capability evaluation, scientific and technological achievement evaluation; and

- to exercise fully the functions of industry research and consultation, and to conduct training sessions based on different needs.

**Provision:** The Approval of China Meteorological Administration on the Establishment of China Meteorological Service Association (ZQH [2014] No.80) issued on 4 April 2014

**Key Element 2 – Partnerships with civil society entities**

**Member (NMHS):** Uganda (Uganda National Meteorological Authority)

**Legislation/Institution:** Uganda National Meteorological Authority Act, 2012

**Features:** The functions of the authority include the broad application of meteorology to transportation, water resources management, agriculture, health, national defence, disaster management, and other development activities, as well as the promotion of the use of weather and climate services in development planning, and the establishment of strategic partnerships with national and international governments, institutions, academic institutions, civil society organizations, cultural institutions, and other institutions at various levels in the management of climate and weather programs.

**Provision:**

“4. Functions of the Authority

The functions of the Authority are— …

(d) to apply meteorology to aviation, marine transport, water resources management, agriculture, health, national defence and security, disaster preparedness, and other developmental activities; …

(j) to promote the use of weather and climate services in development planning, build strategic partnership with national and international governments, agencies, academic institutions, civil society organizations, cultural and other institutions at various levels in the management of climate and weather programmes; …”

**Member (NMHS):** United States of America (National Oceanic and Atmospheric Administration (NOAA) National Weather Service (NWS))

**Legislation/Institution:** Weather Research and Forecasting Innovation Act of 2017

**Features:** This Act authorizes the NWS Director to establish an award program to provide annual awards to individuals or organizations that use or provide NOAA Weather Radio All Hazards receivers or transmitters as well as those who utilize other early warning tools or applications. In other words, this award programme honours those who willingly collaborate with the NWS in extending outreach to communities and citizens. This program is one example of the ways in which the NWS Weather Ready Nation (WRN) initiative strengthens partnerships with external organizations towards building community resilience in the face of increasing vulnerability to extreme weather and water events.

**Provision:**

“SEC. 407. NOAA WEATHER READY ALL HAZARDS AWARD PROGRAM.

(a) PROGRAM.—The Director of NWS is authorized to establish the NOAA Weather Ready All Hazards Award Program. This award program shall provide annual awards to honour individuals or organizations that use or provide NOAA Weather Radio All Hazards receivers or transmitters to save lives and protect property. Individuals or organizations that utilize other early warning tools or applications also qualify for this award.

(b) GOAL.—This award program draws attention to the life-saving work of the NOAA Weather Ready All Hazards Program, as well as emerging tools and applications, that provide real-time warning to individuals and communities of severe weather or other hazardous conditions.

(c) PROGRAM ELEMENTS.—

(1) NOMINATIONS.— ….

(2) SELECTION OF AWARDEES.— ….

(3) AWARD CEREMONY.— ….”

**Key Element 3 – Multidisciplinary collaboration and capacity development**

**Member (NMHS):** China (China Meteorological Administration (CMA))

**Legislation/Institution:** CMA-University Cooperation Mechanism

**Features:** China Meteorological Administration (CMA), together with meteorological and interdisciplinary universities, research institutes and relevant sci-tech enterprises, is empowered to conduct in-depth consultation and dialogue, ~~and~~ *[Secretariat]* to promote co-building and sharing of scientific and educational resources, to improve collaborative innovation, to *[Secretariat]* enhance talent training and academic exchange, and to *[Secretariat]* promote high-quality meteorological development.

**Provision:** The Guidelines of China Meteorological Administration on Strengthening the Cooperation with Universities in the New Era

**Member (NMHS):** Argentina (Servicio Meteorológico Nacional (SMN))

**Legislation/Institution:** Decreto 1432/2007 de creación del Servicio Meteorológico Nacional (Decree 1432/2007 creating the National Meteorological Service)

**Features:** The Decree permits SMN to take actions focused on mutual collaboration or multidisciplinary action with public or private, national, international or foreign entities related to meteorology and its applications. It also defines SMN’s coordinating function with academic entities in regard to training and staff development.

**Provision:**

“Art. 3º — Son funciones del SERVICIO METEOROLOGICO NACIONAL: …

h) Convenir y desarrollar planes y programas con entidades oficiales o privadas, nacionales, internacionales o extranjeras que realicen observaciones, estudios, investigaciones y desarrollos relacionados con la meteorología o sus aplicaciones; suscribiendo acuerdos y convenios que promuevan la colaboración mutua o la acción multidisciplinaria. …

j) Coordinar con las universidades y/o centros de investigaciones nacionales o internacionales la formación y el perfeccionamiento del personal. …”

“Art. 3º — The functions of the NATIONAL METEOROLOGICAL SERVICE are as follows: ...

h) To agree and develop plans and programs with official or private, national, international or foreign entities that carry out observations, studies, research and developments related to meteorology or its applications; subscribing to agreements and conventions that promote mutual collaboration or multidisciplinary action. …

j) To coordinate with universities and/or national or international research centres for staff training and development. …”

(DeepL Translation)

**5.2 Pillar 2 – Fulfilling and promoting the uptake of,** **and compliance with, international commitments**

**Key Element 4 – Fulfilment of international commitments**

**Member (NMHS):** Germany (Deutscher Wetterdienst (DWD))

**Legislation/Institution:** Gesetz über den Deutscher Wetterdienst – Deutscher Wetterdienst Act (DWD Act)\*

**Features:** Specifically provided for in the Act are the DWD’s duties to cooperate internationally in the meteorological and climatological domains and to fulfil overall obligations resulting therefrom.

**Provision:**

“Section 4: Duties …

(3) DWD shall be the National Meteorological Service of the Federal Republic of Germany. It shall participate in the international cooperation in the field of meteorology and climatology and shall meet the obligations resulting therefrom. …”

\* For all legal purposes only the original German version of the DWD Act is binding.

\* Available online at <https://www.gesetze-im-internet.de/dwdg/BJNR287100998.html>, last visited on 2023–11-16; convenience translation provided by DWD – full text available at <https://www.dwd.de/SharedDocs/downloads/EN/general/dwd_act.pdf?__blob=publicationFile&v=5>

**Member (NMHS):** Socialist Republic of Viet Nam (Viet Nam Meteorological and Hydrological Administration)

**Legislation/Institution:** Law on Hydrometeorology, 2015

**Features:** With regard to international cooperation in hydrometeorology and climate change monitoring, the law clearly stipulates the promotion of such cooperation and the fulfilment of obligations as a member of international organizations, and comprehensively stipulates its principles, contents (data exchange, participation in cooperative programs such as observation, forecast, survey, research, and technology transfer, exchange of experts and human resource development, etc.), exchange and provision of information and data with international and foreign organizations and individuals, etc.

**Provision:**

“Article 5. Policies of the State toward hydrometeorological activities …

8. To promote international cooperation on hydrometeorology and climate change monitoring and fulfil obligations of a member of international organizations on hydrometeorology and climate change monitoring”.

“Article 45. Principles of international cooperation on hydrometeorological activities (1–3 …)

Article 46. Contents of international cooperation on hydrometeorological activities

1. Exchanging hydrometeorological and climate change monitoring information and data with international organizations and foreign organizations and individuals.

2. Participating in observation, forecast, investigation, survey, scientific research and technology transfer in hydrometeorology and climate change monitoring under multilateral, bilateral, regional and global cooperation programs and projects.

3. Cooperating and exchanging specialists; training and developing high-quality human resources, and training personnel in foreign countries and international organizations on hydrometeorology and climate change.

4. Organizing and implementing other activities of international cooperation on hydrometeorology and climate change”.

“Article 48. Exchange and provision of hydrometeorological and climate change monitoring information and data and with international organizations and foreign organizations and individuals (1–3) …”

**Key Element 5 – Promoting the uptake of, and compliance with, WMO standards and recommended practices (by all stakeholders, including the NMHS itself)**

**Member (NMHS):** South Africa (South African Weather Service (SAWS))

**Legislation/Institution:** South African Weather Service Act, Act No. 8 of 2001 as amended by South African Weather Service Amendment Act, Act No. 48 of 2013

**Features:** The Act provides for the adherence to the intent of Resolution 40 (Cg-XII) and any other related resolutions regarding local and international exchange of meteorologically-related data and products.

**Provision:**

“4. Functions of Weather Service

(1) The Weather Service must – …

(b) adhere to the intent of Resolution 40 of the Twelfth Congress of WMO, and any other related resolutions regarding the internationally free and unrestricted exchange of meteorologically-related data and products; …”

**Member (NMHS):** Mexico (Coordinación General del Servicio Meteorológico Nacional, General Coordination of the National Meteorological Service)

**Legislation/Institution:** Reglamento Interior de la CONAGUA articulo 58 y 59 de (Internal Regulations of the National Water Commission)

**Features:** The Regulation provides for ensuring transmission and exchange of meteorological and climatological information and data, in accordance with the criteria and standards agreed by the World Meteorological Organization.

**Provision:**

“ARTÍCULO 58.- Corresponden a la Coordinación General del Servicio Meteorológico Nacional las siguientes atribuciones: …

XI bis. Transmitir e intercambiar información y datos meteorológicos, climatológicos y atmosféricos a los centros nacionales e internacionales para su procedimiento, interpretación y aplicación, de acuerdo con los criterios y estándares acordados con la Organización Meteorológica Mundial; …”

“ARTICLE 58.- The General Coordination of the National Meteorological Service shall have the following powers: …

XI bis. To transmit and exchange meteorological, climatological and atmospheric information and data to national and international centres for their procedures, interpretation and application, in accordance with the criteria and standards agreed upon with the World Meteorological Organization; …”

(DeepL Translation)

**5.3 Pillar 3 – Putting in place appropriate legislation and operating models, performing change management and building on core strengths**

**Key Element 6 – Providing core infrastructure and using private sector observation data**

**Member (NMHS):** Republic of Korea (Korea Meteorological Administration (KMA))

**Legislation/Institution:** Weather Observation Standardization Act

**Features:** Taking due account of WMO observational standards, the Act, as an institutional mechanism to ensure high quality in-situ meteorological observations, standardizes the taking and management of weather observations by relevant authorities (provincial governments and non-governmental public institutions) including the siting of weather observation stations. These provisions for standardization, coupled with the provisions for establishing a nationwide weather observation network (Article 8), and those for mutual exchange and joint utilization of data (Article 12), permit the extensive sharing and utilizing of data and information in near real-time. This is one of the fundamental and essential role models for collaboration with respect to observations.

**Provision:**

“Article 4 (Advancement of Standardization of Weather Observations)

(1) The Administrator of KMA shall prepare and promote a policy on the standardization of weather observations … so that the authorities that conduct weather observations (hereinafter referred to as “observational authorities”) falling under Article 3 (1) can collect accurate data about weather through the standardization of weather observations.

(2) The standards specified in the following subparagraphs for weather observations shall be prescribed by Ordinance of the Ministry of Environment, taking into consideration the standards established by WMO for the standardization of weather observations …

1. Standards for the environment of weather observations for each meteorological element, such as the requisites for outdoor observation stations … and the location of observatories;

2. Standards for the types, specifications, and quantity of meteorological instruments with which each observation facility shall be equipped; …

(3) The Administrator of KMA may establish standard forms for weather observations and recommend other observational authorities to use such forms.

Article 5 (Observational Authorities’ Duties)

All observational authorities shall comply with the standards for weather observations under Article 4 (2) in conducting weather observations”.

“Article 8 (Establishment and Management of Weather Observation Network) …

Article 12 (Mutual Exchanges and Joint Utilization of Data from Weather Observations) …”

**Member (NMHS):** Singapore (Meteorological Service Singapore (MSS))

**Legislation/Institution:** National Environment Agency Act, CAP 195

**Features:** Section 41(1) of the Act provides the National Environment Agency (NEA) with the power to enter upon any land to set up and operate meteorological observation stations in an emergency situation, where it is assessed that public health or the safety of the public may be adversely affected. The Act also stipulates that the NEA must pay compensation to the owner of the land, if there is any permanent damage caused to the land in the exercise of the NEA’s powers.

**Provision:**

“41.—(1) Where, in any emergency, the chief executive is of the opinion that the public health or the safety of the public may be adversely affected, the chief executive may direct any officer or employee of the Agency to enter upon any land, after giving reasonable notice, to set up a meteorological observation station and to operate the station in such manner as may be reasonably necessary.

(2) The Agency shall pay compensation to the owner of the land for any permanent damage caused to the land in the exercise of the powers conferred by subsection (1).

(3) If any dispute arises as to the amount of compensation payable to the owner of such land, the dispute may be summarily determined by a District Court or a Magistrate’s Court.

(4) Except as provided in subsection (2), no action shall be brought against the Agency for any compensation in respect of any damage caused arising out of the exercise of the powers conferred by subsection (1)”.

**Key Element 7 – Quality assurance of information and services**

**Member (NMHS):** Japan (Japan Meteorological Agency (JMA))

**Legislation/Institution:** Meteorological Service Act\*

**Features:** ~~The Act defines the responsibility of the Director-General of JMA for the sound development of meteorological services, including those provided by the private sector. It also authorizes the Council for Transport Policy (Article 43–2), an advisory committee comprised of external experts from the public, private, and academic sectors, to investigate and deliberate upon important matters concerning meteorological services. In line with recommendations made by the Council,~~The Act establishes *[PAC member and the Secretariat]* a licensing system for forecasting services ~~has been in place since 1994~~ *[PAC member and the Secretariat]*, with objective standards including staffing by certified weather forecasters, for the purpose of ensuring the quality of services provided by the private sector. This system has been in place since 1994, in line with recommendations made by the Council for Transport Policy (Article 43-2), an advisory committee comprised of external experts from the public, private, and academic sectors. ~~JMA, acting as the regulator, provides fundamental public meteorological services only, including warnings, avoiding competition and conflicts of interest with the private sector. The Act also prescribes the services to be provided by an entity designated as a private weather service support centre, through which JMA data and products are provided to users on a free and unrestricted basis, subject to only marginal data handling fees.~~ *[PAC member and the Secretariat]*

**Provision:**

~~“Article 1 The purpose of this Act is to ensure the sound development of meteorological services by prescribing basic systems concerning meteorological services, and thereby to contribute to the promotion of public welfare by preventing disasters, securing traffic safety, and promoting the prosperity of industries, and to offer international cooperation concerning meteorological services”.~~ *[PAC member and the Secretariat]*

“Article 17 (1) Any person other than JMA who intends to perform the services for forecasting meteorological phenomena … (hereinafter referred to as “forecasting services”) must obtain a license from … JMA”.

“Article 19–2 A person who has obtained a license pursuant to the provisions of Article 17 … must staff a certified weather forecaster(s) …”.

“Article 19–3 A person who has obtained a license … must, among said forecasting services, assign the predictions of phenomena to a certified weather forecaster(s).”

“Article 24–2 (1) A person who intends to become a certified weather forecaster must pass an examination for a certified weather forecaster's license ….

(2) An examination is conducted with respect to the knowledge and skills necessary for the services of a certified weather forecaster.”

~~“Article 24–29 A centre is to carry out the following services for the purposes of supporting the sound development of forecasting services performed under license pursuant to the provisions of Article 17 and other meteorological services in the private sector and ensuring the promotion of the use of meteorological information in industries, transportation, and other social activities:~~

~~(i) Providing the results of observations, the information concerning forecasts prepared by JMA in the course of implementing its services ….”~~ *[PAC member and the Secretariat]*

\* The Meteorological Service Act has undergone about 40 amendments since its establishment in 1952. The most recent amendment took place in May 2023. The articles pertain to the Act No. 41 of 2017 available at the Japanese Law Translation Database System, operated by the Ministry of Justice (<https://www.japaneselawtranslation.go.jp/>) (as of November 2023).

**Key Element 8 – Providing the authoritative voice supporting public safety services**

**Member (NMHS):** United Republic of Tanzania (Tanzania Meteorological Authority (TMA))

**Legislation/Institution:** The Tanzania Meteorological Authority Act, 2019

**Features:** TMA has a legal obligation to issue weather and climate forecasts and warnings contents for publication through media for public consumption. The Act stipulates that TMA is a single authoritative voice in the issuance of severe weather-related warnings and advisories. The Act provides that media shall disseminate such warnings as are issued by TMA in a timely manner, despite ongoing programs and acknowledge TMA as a source of those contents, including forecasts. The act further stipulates that TMA shall have exclusive powers with regard to weather forecasts and the issue of weather warnings to the public and the provision of meteorological services supporting safety to sectors including aviation, marine and search and rescue.

**Provision:**

“5.-(1) The functions of the Authority shall be to deliver public good and commercial services in relation to meteorology ….

(2) Without prejudice to subsection (1) the functions of the Authority shall be to-…

(d) provide weather and climate services for the safety of life and property and to various users of meteorological services;

(e) issue severe weather-related warnings and advisories to ensure that there is a single authoritative voice in this regard; …”

“31.-(1) The Authority shall issue weather and climate forecasts and warnings contents for publication through media for public consumption.

(2) Subject to subsection (1) any use of contents by way of publication through media shall acknowledge the Authority as a source of such contents.

(3) The media shall, arrange particular times or space every day for public meteorological forecasts or severe weather warnings and shall use the latest meteorological information and warnings provided by the Authority.

(4) Media shall, upon receiving any severe weather warning that has a significant impact on the safety of people and their properties issued by the Authority, timely disseminate such warnings despite of ongoing programs.

(5) Subject to the provisions of this Act, a person shall not publish or disseminate weather and climate forecasts and warnings to the public in respect of the United Republic without the permission of the Authority.”

**Member (NMHS):** United Kingdom of Great Britain and Northern Ireland (Met Office)

**Legislation/Institution:** Civil Contingencies Act 2004, and Civil Contingencies Act 2004 (Contingency Planning) Regulations 2005

**Features:** In the framework of the Act which makes provision concerning civil contingencies, emergency responders, including local authorities and relevant governmental offices, must have regard to the arrangements maintained by the Met Office to warn the public, and to provide information and advice to the public, if an emergency is likely to occur or has occurred. The legal arrangement whereby warnings from the national meteorological service are positioned in the Act or regulation governing emergency response should be cited as a reference example in the sense that effective use of warnings is ensured.

**Provision:**

**Civil Contingencies Act 2004**

“2 Duty to assess, plan and advise

(1) A person or body listed in [Part 1, 2 or 2A of Schedule 1\*] shall— …

(g) maintain arrangements to warn the public, and to provide information and advice to the public, if an emergency is likely to occur or has occurred”.

\* Part 1 of Schedule 1 prescribes general Category 1 responders, which include local authorities, emergency services (police and fire and rescue authority), the National Health Service having the function of providing ambulance services and hospital accommodation and services, the Secretary of State having functions of responding to emergencies, port health authority, the Environment Agency, etc.

**Civil Contingencies Act 2004 (Contingency Planning) Regulations 2005**

“35.—(1) In performing its duty under section 2(1)(g), general Category 1 responders –

(a) must have regard to the arrangements maintained by each of the following persons to warn the public, and to provide information and advice to the public, if an emergency is likely to occur or has occurred – …

(iii) the Meteorological Office; …”

**Member (NMHS):** Vanuatu (Vanuatu Meteorology and Geohazards Department)

**Legislation/Institution:** Meteorology, Geological Hazards and Climate Change Act No. 25 of 2016

**Features:** The Vanuatu Meteorology and Geohazards Department has a legal function, conferred by the Act, to issue warnings and alerts of flood, gale, storm, drought and any other weather condition, and furthermore, issuance of such warnings and alerts is restricted to the Director of the Vanuatu Meteorology and Geohazards Department only.\* At the same time, the Act provides for the Director’s function to develop programs for supporting early warning systems.

**Provision:**

“17. Functions of the Director\*

(1) In addition to such functions as are conferred on the Director under this Act and any other Act, the Director has the following functions: …

(e) to issue a warning and alert of flood, gale, storm, drought and any other weather condition likely to endanger life or property, and determine when a warning and alert is to be lifted; …

(u) to develop programs to support early warning systems in relation to adverse weather events. …

(3) To avoid doubt, the functions referred to under paragraph (1)(e) are to be carried out exclusively by the Director”.

\* Director means the Director of the Department of Meteorology.

**Member (NMHS):** Indonesia (Badan Meteorologi, Klimatologi, dan Geofisika (BMKG)), The Agency for Meteorology Climatology and Geophysics of the Republic of Indonesia (BMKG)

**Legislation/Institution:** Law No. 31~~No.31~~ *[Secretariat]* of 2009 on Meteorology, Climatology, and Geophysics

**Features:** BMKG, as the Government Agency, has an obligation to provide early warnings which consist of, but are not limited to, extreme weather, extreme climate, dangerous waves, and tsunami. Only BMKG may provide these early warnings, unless otherwise provided in the prevailing laws. Broadcasting agencies must provide and establish a time allocation to disseminate these early warnings. In cases where any meteorological, climatological, or geophysical extreme occurrence is identified by personnel or officers of government institutions, public or private sectors within the territory of Indonesia, then such occurrence is required to be immediately communicated to relevant parties and reported to BMKG.

**Provision:**

“Article 33 Early warning as referred to in Article 31 point b\* may consist of:

a. extreme weather;

b. extreme climate;

c. dangerous waves;

d. tsunami”.

“Article 34 …

(2) Broadcasting agency must provide and set time allocation to disseminate the early warning with respect to the meteorology, climatology, and geophysics in accordance with the provisions of the prevailing laws and regulations”.

“Article 36 (1) The meteorological, climatological, and geophysical information services as referred to in Article 30 may only be performed by the Agency, unless otherwise provided by the prevailing law. …”

“Article 37 In the event that any meteorological, climatological, and geophysical extreme occurrence is identified by personnel or officers of observation station, off-shore oil or mining platform, vessels, or aircrafts operating within the territory of Indonesia, then such occurrence is obligated to be immediately disseminated to other parties and reported to the Agency in accordance with the provisions of the prevailing laws and regulations”.

**Key Element 9 – Making data and information widely available**

**Member (NMHS):** Germany (Deutscher Wetterdienst (DWD))

**Legislation/Institution:** Gesetz über den Deutscher Wetterdienst – Deutscher Wetterdienst Act (DWD Act)\*

**Features:** The Act makes it a duty for DWD to ensure the availability of meteorological and climatological spatial data, including those collected through its operations and in the performance of its duties. Also, DWD shall provide (meteorological and climatological) spatial data free of charge within the meaning of Section 3(1) and (3) of the Spatial Data Access Act (GeoZG) on the 'Geoportal', Germany's national spatial data infrastructure.

Distribution of such data and products shall only be permitted if their source is acknowledged. The source acknowledgement provision, along with ensuring DWD's positioning with regard to public warnings, also promotes the broader availability of data and information.

**Provision:**

“Section 4: Duties

(1) The duties of DWD shall be: …

3. to issue official warnings about weather phenomena that

a) could become a danger to public safety and order or

b) are related to imminent weather and climate events with a high potential to cause damage; …

8. to operate the necessary measuring and observation systems for the performance of the duties listed in Numbers 1 to 7 above as part of the spatial data infrastructure; and

9. to ensure the availability, archiving, documentation and release of meteorological and climatological spatial data and services. …”

“Section 6: Remuneration …

(2a) Provided that there are no other legal regulations prescribing charges, DWD shall provide the following services free of charge: …

3. provision of spatial data and spatial data services within the meaning of Section 3(1) and (3) of the Spatial Data Access Act (GeoZG) on the 'Geoportal' for spatial data of Germany's national spatial data infrastructure”.

“Section 7: Acknowledgement of sources

Distribution of meteorological data, products and value-added services, especially the warnings issued by DWD in accordance with Section 4(1)(3) above shall only be permissible if the source is acknowledged. This shall be without prejudice to further protection in accordance with the Copyright Act of 9 September 1965 (Federal Law Gazette I, p. 1273), last amended by Article 5 of the Act of 19 July 1996 (Federal Law Gazette I, pp. 1014, 1017).”

\* For all legal purposes only the original German version of the DWD Act is binding.

\* Available online at <https://www.gesetze-im-internet.de/dwdg/BJNR287100998.html>, last visited on 20231–16; convenience translation provided by DWD – full text available at <https://www.dwd.de/SharedDocs/downloads/EN/general/dwd_act.pdf?__blob=publicationFile&v=5>

**Key Element 10 – Optimal public-private involvement within the weather ~~and climate~~** *[Secretariat]* **enterprise**

~~Specific reference provisions for this item “optimal public-private involvement” will be included in the template of Appendix, because the optimal situation varies with national policies and changing circumstances.~~ *[Secretariat]*

**Member (NMHS):** Japan (Japan Meteorological Agency (JMA))

**Legislation/Institution:** Meteorological Service Act\*

**Features:** The Act defines the responsibility of the Director-General of JMA for the sound development of meteorological services, including those provided by the private sector. It also authorizes the Council for Transport Policy (Article 43–2), an advisory committee comprised of external experts from the public, private, and academic sectors, to investigate and deliberate the matters listed in the items of Article 3 and other important matters concerning meteorological services. In line with recommendations made by the Council, JMA, acting as the regulator, provides fundamental public meteorological services only, including warnings, avoiding competition and conflicts of interest with the private sector. The Act also prescribes the services to be provided by an entity designated as a private weather service support center, through which JMA data and products are provided to users on a free and unrestricted basis, subject to only marginal data handling fees. *[PAC member and the Secretariat]*

**Provision:**

“Article 1 The purpose of this Act is to ensure the sound development of meteorological services by prescribing basic systems concerning meteorological services, and thereby to contribute to the promotion of public welfare by prevention of disasters, securing traffic safety, and prosperity of industries and to offer international cooperation concerning meteorological services”.

“Article 3 To accomplish the purpose set forth in Article 1, the Director-General of JMA must make efforts to carry out the following matters: …

(ii) establishing and maintaining central systems for forecasts and warnings of meteorological phenomena …;

(iii) establishing and maintaining systems to quickly exchange information concerning observations, forecasts, and warnings of meteorological phenomena …; …

(vi) promoting the use in industries, transportation, and other social activities of the results of meteorological observations, meteorological forecasts and warnings, and the results of investigations and research concerning meteorological phenomena.”.

“Article 17 (1) Any person other than JMA who intends to perform the services for forecasting meteorological phenomena … (hereinafter referred to as “forecasting services”) must obtain a license from … JMA”.

“Article 24–29 A center is to carry out the following services for the purposes of supporting the sound development of forecasting services performed under license pursuant to the provisions of Article 17 and other meteorological services in the private sector and ensuring the promotion of the use of meteorological information in industries, transportation, and other social activities:

(i) Providing the results of observations, the information concerning forecasts prepared by JMA in the course of implementing its services ….”

“Article 43-2(1) In response to consultation from … the Director-General of JMA, the Council for Transport Policy investigates and deliberates the matters listed in the items of Article 3 and other important matters concerning meteorological services.” *[PAC member and the Secretariat]*

\* The Meteorological Service Act has undergone about 40 amendments since its establishment in 1952. The most recent amendment took place in May 2023. The articles pertain to the Act No. 41 of 2017 available at the Japanese Law Translation Database System, operated by the Ministry of Justice (<https://www.japaneselawtranslation.go.jp/>) (as of November 2023). *[PAC member and the Secretariat]*

**6. Concluding Summary**

This guidance material briefly describes the background and need for the promotion of PPE, and clarifies the content of legislative and institutional arrangements that may be put in place to support effective promotion of PPE by Members or their NMHSs. Specifically, it identifies a set of 10 key elements under three pillars of legislative and institutional arrangements to be pursued for improved PPE. Examples of the operation and implementation for most of the key elements are included, along with samples of the concrete provision of laws and decrees, and the content of institutional arrangements, in a variety of Member countries and territories. In addition, specific legal or institutional items are proposed in relation to key elements of legislative and institutional arrangements. The items are illustrated in the reference templates of appendix, and it is anticipated that these can be referred to and used by Members in developing legislative and institutional arrangements for the promotion of PPE.

Finally, deep appreciation is extended to those who have assisted in the preparation of this guidance material, including the contributions of the Member countries and territories that have provided and substantiated the contents of legislative and institutional arrangements.

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**Appendix**

**Reference Templates of Legal and Institutional Provisions for Public-Private Engagement~~PPE~~***[Secretariat]* **[ ]**

**Introduction [ ]**

**Notes on the content and format of the provisions and clauses [ ]**

**Prerequisite – Basic provisions for putting in place legislative and institutional arrangements for PPE [ ]**

**Pillar 1 – Exploring and fostering national and cross-border collaboration [ ]**

Key Element 1 – Structured dialogue with the private sector  **[ ]**

Key Element 2 – Partnerships with civil society entities [ ]

Key Element 3 – Multidisciplinary collaboration and capacity development [ ]

**Pillar 2 – Fulfilling and promoting the uptake of, and compliance with, international commitments [ ]**

Key Element 4 – Fulfilment of international commitments [ ]

Key Element 5 – Promoting the uptake of, and compliance with, WMO standards and recommended practices (by all stakeholders, including the NMHS itself) [ ]

**Pillar 3 – Putting in place appropriate legislation and operating models, performing change management and building on core strengths [ ]**

Key Element 6 – Providing core infrastructure and using private sector observation data [ ]

Key Element 7 – Quality assurance of information and services [ ]

Key Element 8 – Providing the authoritative voice supporting public safety services [ ]

Key Element 9 – Making data and information widely available [ ]

Key Element 10 – Optimal public and private involvement within the weather ~~and climate~~ *[Secretariat]* enterprise [ ]

**Introduction**

This appendix contains a set of templates of structured provisions or clauses that can be introduced into the legal or institutional system that a Member may wish to develop for Public-Private Engagement (PPE). These templates provide further material related to Section 4 – Putting in Place Legislative and/or Institutional Arrangements for PPE. Specifically, they have been prepared in line with the key elements of legislative and institutional arrangements for PPE described in subsection 4.1, which list key elements corresponding to the specific legal or institutional items described in subsection 4.2.

Since these templates are for the development of concrete legal provisions or institutional arrangements by Members, they are intended to be used in, or adapted for, a Bill for the creation of a new Act or the amendment of an existing legal Act. \*

\* The terms Law, Act and Bill represent distinct stages in the legislative process. A law is a binding set of rules enforced by a governing authority. An Act is a formal written document that embodies a law, created through the legislative process and carrying legal weight. A Bill, on the other hand, is a proposed law undergoing consideration in a legislative body. It evolves into an Act upon approval, which, once enforced, becomes a law.

**Notes on the content and format of the provisions and clauses**

The followings should be noted regarding the content and format of the provisions and clauses in the templates.

This set of templates is designed to include multiple examples of provisions or clauses as needed, so that each Member can choose appropriate content in an á la carte manner according to its national policies, recognizing that there are considerable differences in policies and legal systems among Members. For simplicity’s sake, this set of templates is expressed through one style and terminology system in writing provisions and clauses, rather than presenting multiple styles for the same content. The style and terms of provisions and clauses should, therefore, be modified as required to make them suitable to the respective Members’ laws, decrees, and regulations, based on an understanding of the specific legal or institutional concepts presented in relation to the key elements.

The laws and decrees governing the organization and operations of National Meteorological and Hydrological Services (NMHSs) differ in their structure and the way in which they are written, depending on the legal systems of the Member countries and territories. This set of templates presents provisions and clauses in relation to, or for the facilitation of, PPE, in a form which is employed in laws and decrees such as “Law/Decree on meteorological services” or “Law on (Hydro-)Meteorology”; formulations which are used in many Member countries and territories. Specifically, in most templates, the functions, duties, powers and operations of the NMHS are described and laid out according to the form commonly used in such laws or decrees, including observations, forecasts, and services, as well as the regulatory oversight of private sector activity in meteorological enterprises, and relevant provisions to facilitate PPE.

Some laws and decrees not only specify the functions/duties of the NMHS and the powers of the NMHS or the supervising Minister, but also provide separate sections for individual topics such as observations, forecasts, information, offences, and penalties which clarify the rights and obligations, including those related to regulation of the private sector, in a specific and transparent manner. There are, therefore, a number of templates that include not only provisions relating to the functions, duties or powers of the NMHS or the supervising Minister, but also concrete provisions regarding the rights of and obligations to persons or entities other than the NMHS.

Separately from laws and decrees which are specifically focused on meteorology, policies and measures relevant to meteorological services may also be set forth in other laws, decrees, or national plans such as those relating to scientific and technological innovations, and to disaster risk reduction. These templates, therefore, also include provisions and clauses which have been enshrined in such other laws and institutional arrangements where necessary. Only those clauses and provisions related to the administration, staffing, and financing of NMHSs that are specifically related to PPE are included in the templates.

In developing the templates reference is made to particular provisions and clauses which correspond to specific legal and institutional items relating to key elements for PPE, as follows.

- The provisions and clauses cited in the practices contained within Section 5 of this guidance material;

- Provisions on the objectives and functions of NMHSs, and the interpretation of terms related to PPE, refer in many cases to the Model Hydrometeorological Services Bill implemented by the Caribbean Meteorological Organization (CMO), with financial support from Environment and Climate Change Canada and the Climate Risk and Early Warning Systems (CREWS); and

- Reference is made to other provisions and clauses as necessary so that specific legal or institutional items relating to key elements for PPE can be comprehensively covered.

Nevertheless, in order to ensure consistency of wording throughout the templates, to make them easier to use by Members, most of the provisions and clauses taken, used and referenced above have been modified to make the wording style as uniform as possible.

Before providing examples of provisions/clauses corresponding to key elements (Key Elements 1 through 10) of legislative and institutional arrangements, the basic provisions are included in the section titled **Prerequisite**, which clarifies their relevance to PPE. There, terms related to PPE are prescribed in **Definitions/Interpretation**, and provisions regarding the establishment, mission, duties and objectives of the organization (denoted as the [Organization]) are included, as common content for the provisions and clauses to be described thereafter. Here, in the provisions/clauses of the templates, the assumption is that, in principle, the “[Organization]” part will contain the name of the national designated authority, such as the NMHS. The same applies to words such as country (denoted as [Country]) and minister (denoted as [Minister]).

The terms such as mission, objective, function, duties, and powers with respect to the [Organization], the head of the [Organization], or the [Minister] supervising the [Organization] vary among countries, laws, and other regulations. The terms should, therefore, be modified as appropriate according to the respective countries’ laws, decrees, and regulations, based on an understanding of the meaning of the terms within a country’s legal framework and the method of their use.

Some of the provisions of the mission, duties, and objectives of the [Organization] are repeated in the provisions/clauses corresponding to key elements of legislative and institutional arrangements, for the sake of clarity of context. In the templates, words or phrases in square brackets ([ ]) which are contained in provisions or clauses mean those that should be used selectively or modified as appropriate, including by omission as necessary.

**Prerequisite – Basic provisions for** **putting in place legislative and institutional arrangements for PPE**

This Prerequisite includes basic provisions that are essential criteria related to the 10 key elements of legislative and institutional arrangements already described for PPE. The basic provisions consist of the two specific legal items below, *S0–1 and S0–2*, which respectively contain “**Definition/Interpretation”**which define, clarify or interpret terms related to PPE, and “**Establishment, mission, duties and objectives of the [Organization]”** which describe the provisions for establishing a designated national agency such as an NMHS and defining its mission/duties and objectives.

***- Provisions for defining, clarifying or interpreting terms, in particular those related to Public-Private Engagement in meteorology (S0–1)***

***Definition/Interpretation***

***“commercial services”*** *means specialized meteorological services provided for specific sectors, customer or clients for economic gains or benefits as specified in [Schedule];*

***“data exchange”*** *means making data accessible and available for national and international users at the required timeliness and via agreed channels or on agreed platforms; this includes ensuring interoperability of the data;*

***“early warning system”*** *means a set of capacities needed for generating and disseminating timely and meaningful warning information to enable individuals, communities and organizations threatened by a weather, climate or related hazard to prepare and to act appropriately, and in sufficient time, to reduce the risk of harm to human life, damage to property and the environment;*

***“free and unrestricted”*** *means available for use, re-use and sharing without charge and with no conditions on use, apart from a requirement to attribute the data source;*

***“international meteorological obligations”*** *means international standards and practices accepted and adopted by organizations whose membership is open to [all countries and territories]/[relevant regional countries and territories], including the* *World Meteorological Organization, under and in addition to its Convention, as applicable to and accepted by [Country] as a contracting party;*

***“meteorological services”*** *means the following activities, including those provided not only by the [Organization] but also by the private sector, while the issuance of warnings shall only be performed by the [Organization]. –*

*(a) observation, transmission and processing of weather data;*

*(b) collection, processing, quality control and analysis of meteorological data;*

*(c) provision of weather information and forecasts;*

*(d) provision of climatological and related environmental information, [including information focused on adaptation to and mitigation of climate change];*

*(e) issuance of weather forecasts, alerts, advisories and warnings;*

*(f) development and maintenance of observational, forecasting, climate data management and product dissemination systems and networks, telecommunication systems, and other such systems as are necessary to pursue the activities described in the preceding items;*

*(g) research and development with the aim of improving products and the delivery of services, including early warning services for disaster risk reduction; and*

*(h) provision of education and training in meteorology and related sciences [in partnership with relevant institutions].*

***“public good meteorological services”*** *means meteorological services such as forecasts, advisories and warnings provided for the welfare and safety of the general public as specified in [Schedule];*

***“specialized service”*** *means a meteorological service provided to an identifiable client or a customer who will use the service for economic gain or customers’ benefit;*

***“weather ~~and climate~~*** *[Secretariat]* ***enterprise”*** *means the multitude of systems and entities participating in the production and provision of meteorological, climatological, hydrological, marine and related environmental information and services.*

***- Provisions for establishing a designated national agency such as an NMHS and defining its mission/duties and objectives (S0–2)***

***Establishment, mission, duties and objectives of the [Organization]***

*(Establishment of the [Organization])*

Option 1

*The [Organization] shall be the only recognized national provider for meteorological and climate services in [Country].*

Option 2

*The [Organization] shall be a public institution with legal capacity and shall be an executive agency of the Ministry of xxxx.*

*(Mission/duties of the [Organization])*

Option 1

*The mission of [Organization] is to ensure the sound development of meteorological services,[ including those by the public and private sectors,] thereby to contribute to the promotion of public welfare [including disaster risk reduction] and the prosperity of [Country], and to fulfil international commitments concerning meteorological services.*

Option 2

*The duties of the [Organization] shall be to provide meteorological services for the general public [and for individual customers and users].*

*(Objectives of the [Organization])*

*The objectives of the [Organization] are –*

*- To ensure continued collection and updating of meteorological data;*

*- To be the archive of reliable national meteorological records;*

*- To maintain, extend and improve the quality of meteorological services, [including those provided by the private sector];*

*- To provide public good meteorological services [and commercial meteorological services];*

*- To provide meteorological services to critical sectors such as [disaster risk reduction, air and sea navigation, …];*

*- To promote the use of meteorological data, information and services in socioeconomic activities;*

*- To take measures to fulfil relevant international obligations[/commitments]; and*

*- To fulfil any other related objectives as may be prescribed.*

**Pillar 1 – Exploring and fostering national and cross-border collaboration**

Pillar 1 includes common and essential collaborative activities by Members to promote PPE in the context of a multi-stakeholder weather, climate, and hydrological service provision landscape. Under this pillar, the following three key elements (Key Elements 1 – 3) should be pursued as legislative and institutional arrangements.

The following two specific legal and institutional items, S1 and S2, are common and basic to Key Elements 1 through 3 in Pillar 1.

**・Provisions for establishing collaboration and cooperation with state agencies, local government, communities, and the private sector, as functions of a designated national agency such as an NMHS (S1)**

**・Provisions for promoting collaboration and cooperation in scientific research and** **innovation, and capacity-building including education and training, and competency implementation (S2)**

(Provisions prescribing functions of the [Organization])

*The functions of the [Organization] are, as the official national authority, –*

*- To cooperate and coordinate with state agencies, local government, and the private sector, including the academic community, for implementing its mission or duties, including the provision of meteorological services;*

*- To promote the advancement of meteorological science by means of meteorological research and investigation, including awareness building activities, and the processing and analysis of weather and climate data for use in social development; and*

*- To cooperate with national, regional and international institutions and authorities involved in meteorology and related fields in order to conduct or make arrangements in relation to training, studies, research and innovation.*

*The [Organization] may, in order to achieve its objectives, cooperate or enter into agreements or contracts with any person or institution.*

**Key Element 1 – Structured dialogue with the private sector**

**・Provisions or clauses defining institutional arrangements for establishing and maintaining systematic dialogue with the private sector (S3)**

For facilitating a structured dialogue with the private sector, the following provisions are envisaged in addition to those described in Key Element 3.

(A specific example prescribing duties/powers of the [Organization] or the head of the [Organization], mainly for improving the performance of the [Organization])

*The head of the [Organization] may establish and maintain mechanisms for [outreach to]/[communication with] the broader weather ~~and climate~~ [Secretariat] enterprise –*

*- To assess the quality and extent of meteorological information provision, including forecasts and services provided by the [Organization]; and*

*- To identify the highest priority needs of the communities described in the following paragraph.*

*The head of the [Organization] shall, in conducting [outreach]/[communication] pursuant to the preceding paragraph, have [contact]/[dialogue] with leading experts from relevant stakeholders, including representatives of the following:*

*- National or local emergency management agencies;*

*- Governmental agencies responsible for industries affected by weather and climate,*

*- Private institutions involved in weather observation, forecasting, data processing and related manufacturing;*

*- The operational forecasting community;*

*- The academic community;*

*- Professional societies that focus on meteorology; and*

*- Such other stakeholder groups as the [Minister]/[head of the Organization] considers appropriate.*

(A specific example prescribing duties/powers of a Minister governing the [Organization] or the head of the [Organization] focused on the development of all of the meteorological enterprise community)

*The [Minister governing Organization]/**[the head of the Organization] may [establish]/[designate] an [association]/[institution] to promote collaboration, including dialogue, with the private sector related to meteorological services, and this [association]/[institution] will be responsible for –*

*- establishing a communication platform for members to exchange information and views on issues of interest, including government policy initiatives;*

*- establishing a fund for the development of activities and services in the field of weather and climate resources;*

*- taking on tasks assigned or commissioned by the government, such as assessing the quality of public forecast communication and social effectiveness, rewards for scientific and technological achievements, and the granting and evaluation of professional titles;*

*- exercising regulatory functions to provide such services as setting standards and assessing capabilities related to meteorological services, evaluating scientific and technological achievements, and consulting on the development of weather and climate resources; and*

*- performing functions in the area of industry research and consultation, and organizing or conducting training sessions based on identified needs.*

**Key Element 2 – Partnerships with civil society entities**

**・Provisions for the engagement with and participation of citizens, including awards (S4)**

For promoting partnerships with civil society entities, the following provisions are envisaged in addition to those indicated in Key Elements 1 and 3.

(A specific example prescribing duties of the [Organization] with a view to building partnerships with civil society)

*The [Organization] may, in order to achieve its objectives, build strategic partnerships with civil society entities, cultural and other institutions at various levels in the management of weather and climate programs, including arrangements for ensuring observation, data collection and information provision.*

A specific example prescribing powers/duties of a Minister governing the [Organization] or the head of the [Organization] with a view to reinforcing the engagement of civil society.

*The [Minister governing the Organization]/[head of the Organization] may establish the XXX Award Program. This award program shall provide awards to honour individuals, entities or institutions that, through research, development, production and services in the field of meteorology, have contributed to the promotion of public welfare including disaster risk reduction, safe transportation, the prosperity of industries, and international cooperation concerning meteorological services.*

*The [Minister governing the Organization]/[head of the Organization] shall, in implementing the award program, draws attention to emerging needs in the development, application, and provision of weather and climate services, including warnings to individuals and communities of severe weather or other hazardous conditions, and* *give due consideration to facilitating the addressing of those needs.*

**Key Element 3 –** **Multidisciplinary collaboration and capacity development**

**・~~Any other provisions or clauses relating~~Provisions or clauses that relate** *[Secretariat]* **to institutional arrangements for exploring and fostering PPE and partnerships, in particular those concerning multidisciplinary collaboration and capacity development (S5)**

For promoting multidisciplinary collaboration and capacity development, the following provisions are envisaged in addition to those indicated in Key Elements 1 and 2.

(An example establishing collaborative mechanisms with academic and educational institutions)

*The [Organization] may,* *in order to achieve its objectives, establish a collaborative mechanism with meteorological and multidisciplinary universities, research institutes and relevant private sector entities in pursuit of the following objectives:*

*- To conduct in-depth consultation and dialogue;*

*- To promote co-building and sharing of scientific and educational resources;*

*- To improve collaborative innovation;*

*- To enhance training and academic exchange; and*

*- To promote high-quality meteorological development.*

(An example promoting collaboration and cooperation concerning observation, scientific research and innovation, or capacity-building including education and training)

*The [Organization] may,* *in order to achieve its objectives, –*

*- Develop and participate in plans and programs with public, private, national, international, or foreign entities that carry out observations, studies, research and developments related to meteorology or its applications, and conclude agreements and conventions that promote mutual collaboration or multidisciplinary action, as appropriate;*

*- Coordinate with universities, educational institutions, and national or international research centres for staff training and development, and conclude agreements for joint educational, qualification and scientific activities as appropriate; and*

*- Contract with national and local authorities and other legal and natural persons for the provision of expertise, consultations, specialized forecasts and other activities in the field of meteorology.*

**Pillar 2 – Fulfilling and promoting the uptake of, and compliance with, international commitments**

Pillar 2 includes the fulfilment by Members of international commitments including the WMO Convention, and promoting the uptake of, and compliance with, WMO standards and recommended practices by all stakeholders in the country. Under this pillar, the following two key elements, Key Elements 4 and 5, should be pursued within legislative and institutional arrangements.

The followings are provisions on the objectives and functions of the [Organization], which are common and basic to Key Elements 4 and 5.

(Provisions prescribing duties, objectives and functions of the [Organization])

*The duties of the [Organization] shall be to act as the national meteorological service of [Country]. It shall participate in international cooperation in the field of meteorology and climatology.*

*The objectives of the [Organization] include taking measures to fulfil international obligations[/commitments].*

*The functions of the [Organization] are, as the official national authority –*

*- To pursue international cooperation in meteorology and related fields;*

*- To fulfil such other meteorological and climatological-related regional and international obligations as the [Minister]/[Governing Board] may determine; and*

*- To cooperate with international institutions and authorities involved in meteorology and related fields to conduct or make arrangements for the provision of training and studies and for the promotion of research and innovation.*

*The [Organization] shall perform its functions under this [Act]/[decree] in the public interest, consistent with the Sustainable Development Goals or any successor international framework.*

**Key Element 4 – Fulfilment of international commitments**

**・Provisions or arrangements for fulfilling international commitments to achieve common goals, including those relating to sustainable development, and international cooperation, especially in support of developing countries (S6)**

**・Provisions or arrangements for fulfilling international commitments for the promotion of international data exchange and of joint research projects (S7)**

For the fulfilment of international commitments the following provisions are envisaged, in addition to those above, that may be employed in connection with the two key elements (Key Elements 4 – 5).

(A case prescribing the key function and specific functions of the [Organization])

*The [Organization] shall promote international cooperation in meteorology and climatology and fulfil all relevant obligations (including the obligations of the State) as a member of international organizations on meteorology and climatology.*

*The [Organization] shall carry out international cooperation in meteorology and climatology through the following mechanisms:*

*- To exchange meteorological and climatological data and information with international organizations and with relevant foreign organizations and individuals;*

*- To participate in observation, forecast, investigation, survey, scientific research and technology transfer in meteorology and climatology as required under multilateral, bilateral, regional and global cooperation programs and projects;*

*- To cooperate and exchange specialists for training and for the development of high-quality human resources, and for training personnel in foreign countries and international organizations on meteorology and climatology; and*

*- To organize and implement other activities of international cooperation in meteorology and climatology.*

**Key Element 5 – Promoting the uptake of, and compliance with, WMO standards and recommended practices (by all stakeholders, including the NMHS itself)**

**・Provisions or arrangements for the NMHS to make efforts, including dissemination of guidance materials, to facilitate and ensure stakeholders' compliance with WMO standards and recommended practices regarding observations and international data exchange (S8)**

For the uptake of WMO standards and recommended practices, the following provisions are envisaged in addition to those indicated in Key Element 4, as well as activities for exploring and fostering collaboration contained in Key Elements 1 – 3.

(Provisions prescribing functions/powers of the [Organization] and duties of the head of the [Organization])

*The functions of the [Organization] are, as the official national authority, –*

*- To participate in international cooperation in the field of meteorology and climatology and to meet the obligations resulting therefrom.*

*The [Organization], as the official national authority responsible for international cooperation in the field of meteorology, may communicate the above-prescribed WMO standards and recommended practices to relevant stakeholders in [Country], and recommend their adoption for advancing the weather ~~and climate~~ [Secretariat] enterprise through broad and effective use of high-quality data and information.*

(Examples for ensuring the adoption of WMO standards and procedures for observation and/or international data exchange)

Option 1

*The [Organization] must adhere to the intent of the WMO Unified Data Policy (Resolution 1 of the Extraordinary session of the World Meteorological Congress in 2021), and any other related resolutions regarding the free and unrestricted international exchange of Earth system data and products.*

Option 2

*The [Organization] shall have the powers to transmit and exchange Earth system data and information to national and international centres for their processing, interpretation and application, in accordance with the standards and procedures agreed upon with WMO.*

**Pillar 3 – Putting in place appropriate legislation and operating models, performing change management and building on core strengths**

Pillar 3 includes key elements related to putting in place appropriate legislation and operating models, performing change management, and building core strengths. Under this pillar, the following five key elements, Key Elements 6 – 10, may be pursued as legislative and institutional arrangements.

Considering that the legislative and operational models of meteorological services vary from country to country and that there is no one-size-fits-all legal or institutional system for PPE, the following Key Elements 6 through 10 include multiple provisions as necessary, which can be used as options to adapt to the circumstances of the respective Members.

**Key Element 6 – Providing core infrastructure and using private sector observation data**

The followings are provisions envisaged for developing and maintaining infrastructure and for using private sector observation data in Key Element 6. This key element is related to Key Element 7 for quality assurance of information and services, and is also connected to Key Element 9 for making data and information widely available. The provisions regarding this Key Element 6 are therefore envisioned to be referred to and used in conjunction with those of Key Elements 7 and 9.

(Provisions prescribing functions of the [Organization])

*The functions of the [Organization] are, as the official national authority –*

*- To perform observations of meteorological phenomena, and to establish and maintain observation networks of meteorological stations, equipment and other supporting infrastructure, as necessary;*

*- To ensure integration of the methods of meteorological observations and the methods of communicating the results thereof.*

**・Provisions for ensuring standards and procedures for observations by institutions other than the NMHS, including a certification system for meteorological instruments (S9)**

**・Provisions for developing and maintaining the national observation network and for enabling effective use of the data through mutual exchange (S10)**

(An example of a prescription for ensuring adequate standards and procedures for observations by persons other than the NMHS, and for developing and maintaining a national observation network)

*(Standardization of weather and climate observations)*

*(1) Any institution specified by [decree]/[regulation]/[ordinance of the responsible Minister], including state agencies and local government, which conducts accurate weather observations in performing its duties shall be an "observational authority”.*

*(2) All observational authorities should comply with the standards specified in the following subparagraphs in conducting weather and climate observations:*

*– Standards for the environment in which weather observations for each meteorological element are conducted, such as the siting requisites for outdoor observation stations;*

*- Standards for the types, specifications, and quantity of meteorological instruments with which each observation facility shall be equipped;*

*- Standards for units used for recording each measurement of a meteorological element in weather observations in accordance with the International System of Units;*

*- Standards for precision, or the last digit of observational units, in data from weather observations for each meteorological element;*

*- Standards appropriate for observation facilities provided by specific observational authorities, if necessary.*

*(3) The standards under the preceding paragraph shall be prescribed by [regulation]/[ordinance of the responsible Minister], taking into consideration the standards established by WMO for weather and climate observations.*

*(4) The head of the [Organization] shall promote the standardization of weather and climate observations so that an observational authority can collect precise and accurate data to the required standards.*

*(5) The head of the [Organization] may, to ensure compliance with the standards for weather and climate observations under paragraph (2) and in implementing the duties of the preceding paragraph, establish standard forms for recording weather and climate observations and recommend other observational authorities to use such forms.*

*(Development and management of a national observation network)*

*The head of the [Organization] [shall]/[may] promote policies necessary for the development of a nationwide weather and climate observation network which incorporates the observation facilities of diverse observational authorities, and for the comprehensive management of such facilities, subject to consultation with heads of other observational authorities.*

*(Mutual exchange and joint utilization of data from observations)*

*The head of the [Organization] [shall]/[may] prepare and implement a policy which mandates that data from weather and climate observations by each observational authority be mutually exchanged and jointly utilized through the weather and climate information system.*

**・Provisions defining official authority to enter land to establish and maintain meteorological stations and compensation for permanent damage (S11)**

(An example prescribing powers/functions of staff from the [Organization] for the operation and maintenance of meteorological observation equipment, and addressing the liability and compensation for damage to observation equipment caused by any person)

*The head of the [Organization] may authorize its staff*

*- To enter upon any land for any purpose that is necessary under this [Act], after obtaining permission from the owner of the land to do so;*

*- To install, operate and maintain observation stations, facilities, installations and related equipment and instruments on government land, and on private lands with the consent of the owner or occupier of the land; and*

*- To require the removal of or seize any item which interferes with or obstructs any station, facility, installation or equipment installed in accordance with this [Act].*

(An example establishing the authority of the [Organization] or its employees for entering land to set up and operate meteorological observation stations in an emergency, including procedures for compensation)

*(1) Where, in any emergency, the head of the [Organization] is of the opinion that public health or the safety of the public may be adversely affected, the head of the [Organization] may direct any officer or employee of the [Organization] to enter upon any land, after giving reasonable notice, to set up a meteorological observation station and to operate the station in such manner as may be reasonably necessary.*

*(2) The [Organization] shall pay compensation to the owner of the land for any permanent damage caused to the land in the exercise of the powers conferred by the preceding paragraph (1).*

*(3) If any dispute arises as to the amount of compensation payable to the owner of such land, the dispute may be summarily determined by a [District Court or a Magistrate’s Court].*

*(4) Except as provided for in paragraph (2), no action shall be brought against the [Organization] for any compensation in respect of any damage caused arising out of the exercise of the powers conferred by paragraph (1).*

**Key Element 7 – Quality assurance of information and services**

The following are provisions envisaged for the quality assurance of information and services, particularly those provided by the private sector.

**・Provisions prescribing aspects of government oversight of private meteorological services, such as granting of permissions/licenses, certification of meteorologists, and other measures to ensure the quality of services, including information and forecasting services. (S12)**

(An example of a permission/license for private providers of meteorological services)\*

*(Application for approval of private providers of meteorological services)*

*Any person or institution who intends to perform the following meteorological services in [Country] shall apply to the [Organization] for a [permission]/[license] in the prescribed form and with the prescribed [fee]/[registration tax].*

*(Scope of meteorological services to be regulated)*

*The meteorological services regulated under this [Act] are as follows –*

*(a) weather forecasting activities;*

*(b) meteorological observations taken with a view to publicizing the results or using the results to inform disaster risk reduction activities; and*

*(c) meteorological consultancy services, including risk assessments to support decisions by public or private sector organizations.*

*(Information required for application)*

*An application for a [permission]/[license] shall be submitted to the [Organization] and shall include the following –*

*(a) the name, address, professional qualifications, and any other information concerning the applicant as may be prescribed;*

*(b) the purposes and scope of the meteorological services to be provided;*

*(c) the type of instruments and equipment to be used and the locations in which instruments and equipment are expected to be placed; and*

*(d) Such other information the [Minister supervising the Organization]/[head of the Organization] may deem necessary regarding the facilities and staff members required to perform said meteorological services to an adequate standard.*

*(Consideration of and decision on application)*

*The [Organization]/[Assessment Committee under the Minister supervising the Organization (hereinafter referred to as the Committee)] shall consider the application, and decide – -*

*(a) if satisfied that the applicant meets the requirements, grant the [permission/license] for the specified duration, in accordance with terms and conditions as it considers necessary; or*

*(b) if the applicant fails to meet the requirements, not to [permit]/[license], providing reasons for so doing.*

*(Transmission of Early Warnings)*

*A person or institution who has obtained a [permission]/[license] to deliver services shall endeavour to quickly transmit to the users of their [permitted]/[licensed] services the [Organization]’s early warning information pertaining to the purposes and scope of said [permitted]/[licensed] services.*

*(Terms applicable to [permission]/[license])*

*The [Organization]/[Committee] may impose such terms and conditions applicable to the [permission]/[license] as it deems necessary.*

*(Suspension or revocation of permission)*

*The [Organization]/[Committee] shall, after due enquiry, suspend or revoke a [permission]/[license] for any of the following reasons -*

*(a) failure to comply with the terms and conditions of the [permission]/[license]; or*

*(b) the use of misleading or fraudulent information in the application for permission.*

*(Registry)*

*The [Organization] shall maintain a register in which shall be entered the details of persons and institutions to whom [permissions]/[licenses] have been granted under this [Act].*

\* In addition to the decision as to whether or not meteorological services by the private sector are to be subject to regulation, the scope of the meteorological services to be regulated, the requirements to be met for permission, and the terms and conditions of permission to be imposed all depend on overarching national policies, including those concerned with the development of science and technology and its application to society. The term “license” may be used instead of “permission” in some conditions.

(An example requiring the certification of meteorological personnel to adequate technical and professional standards, and the assignment of certified meteorologists to key professional duties and responsibilities by private providers of meteorological services)

*(Assignment of certified meteorologists)*

*A person* *or institution who [has obtained a permission pursuant to the preceding provisions]/[intends to perform meteorological services\*\*] must employ a certified meteorologist(s) and assign key professional duties and responsibilities, including those related to predictions of phenomena, to a certified meteorologist(s).*

*A person* *who intends to become a certified meteorologist must [pass an examination]/[complete the required training] required for the granting of certification. The examination or training must be conducted with due respect to the knowledge and skills necessary for the preparation and delivery of meteorological products and services to an adequate professional standard.*

\*\* A clause for a case that the private sector can perform meteorological services without explicit permission, but needs to employ/assign a certified meteorologist(s)

**Key Element 8 – Providing the authoritative voice supporting public safety services**

The following are provisions envisaged for ensuring the authoritative voice of NMHSs in public safety services, and for promoting the Early Warning System. In regard to the attribution of source for early warnings, relevant provisions are included in Key Element 9 which is focused on making data and information widely available. Such provisions regarding the attribution of source for early warnings are therefore intended to be used in conjunction with those of Key Element 9.

**・Provisions that stipulate the position of early warnings as a responsibility of the state administration, e.g., a provision to define the NMHS as the authoritative voice or sole provider of early warnings, including stipulations regarding relevant attribution (S13)**

(Provisions prescribing the [Organization] as the sole provider of early warnings of meteorological and related phenomena, and confirming their role in the provision of such early warnings as the authoritative voice)

*The [Organization] shall have the sole authority to issue* *early warnings regarding severe weather and related phenomena for [Country].*

*The functions of the [Organization] shall be, as the official national authority -*

*- To provide weather and climate services for the safety of life and property and for the facilitation of economic and social activities; and*

*- To issue early warnings and advisories regarding severe weather and related phenomena likely to affect [Country] and to act as the single authoritative voice in this regard.*

(An example that prescribes the obligation of the media to disseminate forecasts and warnings issued by the [Organization] to the public, including appropriate attribution, and which prohibits a person including media organizations from disseminating other forecasts and warnings to the public without the permission of the [Organization])

*(1) The [Organization] shall issue weather and climate forecasts and warnings for dissemination by and publication by media organizations for the public.*

*(2) Any use of contents under (1) published by media organizations shall acknowledge or attribute the [Organization] as a source of such contents.*

*(3) Media organizations shall use the latest meteorological information and warnings in publishing forecasts or warnings provided by the [Organization].*

*(4) Media organizations shall, upon receiving any severe weather warning that has a significant relevance for the safety of people and their properties issued by the [Organization], disseminate such warnings in a timely and efficient manner, breaking into or interrupting ongoing programs as is necessary for the provision of adequate advance notice to its viewers and listeners.*

*(5) Subject to the provisions of this Act, a person including media organizations shall not publish or disseminate weather and climate [forecasts and] warnings to the public in the country without the permission of the [Organization].*

(An example prescribing the prohibition of publication, dissemination and distribution of any misleading warnings, with the offences and penalties)\*

*(1) A person shall not publish, disseminate, or distribute any severe weather warning, or material that can be interpreted as such, that he or she knows or reasonably ought to have known or suspected-*

*(a) to be false or misleading; or*

*(b) to be likely to incite a public reaction which may lead to the undue mobilization of resources, public alarm or evacuations, or economic loss arising from such actions.*

*(2) A person who violates any provision of subsection (1) commits an offence and is liable, in the case of a first conviction, to a fine not exceeding [xxxx] or imprisonment for a period not exceeding [yy years], and in the case of a second or subsequent conviction, to a fine not exceeding [xxxxx] or imprisonment for a period not exceeding [yyy years], or in either instance to both such fine and such imprisonment, respectively.*

\* These provisions may be placed in the chapter (section) of Offences and Penalties.

**・Provisions or clauses that clarify the expected response to early warnings provided by the NMHS in the national disaster management system, for enhancement of the effectiveness of disaster management (S14)**

(An example prescribing the use of warnings from the [Organization] in laws or regulations governing national emergency response)

*A person or body listed in [Schedule\*], in performing their respective duties to ensure the safety of the public, must have regard to the arrangements maintained by each of the following persons or bodies to warn the public, and to provide information and advice to the public, if an emergency is likely to occur or has occurred –*

*- The [Organization] designated to provide the functions of a national meteorological service*

\* The schedule would cover responders, which includes government agencies, local governments, emergency services (police, fire and rescue authorities) and other authorities charged with responding to or managing emergency situations.

**・Provisions or clauses that stipulate** **the responsibility for creating and maintaining the Early Warning System in Member countries** **and territories, which would include not only the provision of warnings but also their dissemination and effective use (S15)**

(An example prescribing the role of head of the [Organization] in relation to the early warning system)

*The head of the [Organization] has the responsibility to develop programs which support early warning systems in relation to potential hazardous weather events anticipated to affect [Country].*

*The head of the [Organization], in consultation with the [Minister and/or governing board], may make arrangements to provide such services as are necessary for* *establishing and maintaining an early warning system for hazardous meteorological events affecting [Country].*

**Key Element 9 –** **Making data and information widely available**

The followings are provisions envisaged for making data and information widely available, including those for ensuring the attribution of data providers. This key element is related to Key Element 6 (Developing infrastructure and using private sector data in observations), and provisions regarding the attribution of information sources as included in Key Element 8. The provisions in this Key Element 9 are therefore expected to be referred to and used in conjunction with those of Key Elements 6 and 8.

**・Provisions or arrangements that make weather, climate and water data generally available to any individual or organization, including duties or functions such as relevant system development, other institutional arrangements, and surveys to gauge user needs (S16)**

**・Provisions ensuring the attribution of service providers, including NMHSs, as a source of data, products and information when reported in the media, on the web, and on social media, thus helping users in their use and selection of weather and climate information of diverse nature and quality (S17)**

(An example prescribing functions of the [Organization] with respect to making data and information available)

*The function of the [Organization] includes responsibility, as the official national authority for ensuring the availability of weather and climate data and information –*

*- To develop and maintain information systems, including an inventory of weather and climate data, and its publication as necessary to perform the functions set forth in the preceding items, in particular to facilitate the use of weather and climate information in the private sector.*

*Unless there are other legal regulations prescribing charges, the [Organization] shall provide weather and climate data services free of information charges. The [Organization] may levy charges to cover their marginal costs in formatting and transmitting data provided in response to bespoke requests.*

*(Attribution of sources)*

*The onward distribution of weather and climate data and products, especially warnings, issued by the [Organization] in accordance with the preceding two paragraphs shall only be permitted if the attribution of the data sources is acknowledged.*

(An example prescribing functions of the [Organization] or its designated institutions for the support of private sector activity, including through making data and information easily available)

*(1) The [Organization] shall facilitate the sound development of meteorological services in the private sector and promote the use of meteorological information and services in supporting socioeconomic activities.*

*(2) The [Organization] or its designated institutions [shall]/[may], for performing its function, provide the results of observations, forecast products, and other related information, prepared by the [Organization] in the course of implementing its services, on a free and unrestricted basis [subject only to marginal data handling fees].*

*(3) The [Organization] or its designated institutions may carry out the following services, charging an appropriate fee as necessary;*

*- performing investigations and research concerning the services referred to in the preceding paragraph and the use of meteorological data and information;*

*- providing consultation and other assistance with regard to matters concerning the use of meteorological data and information;*

*- providing training for the users of meteorological data and information; and*

*- in addition to what is listed in each of the preceding items, performing any services necessary to perform its functions as described in paragraph (1).*

\* The sound development of meteorological services in the private sector is deemed to be achieved through activities that contribute to the social and economic development of the country through high quality, efficient, and fair services based on science and technology, under an appropriate separation or sharing of roles with the NMHS.

**Key****Element 10 – Optimal public and private involvement within the weather ~~and climate~~***[Secretariat]* **enterprise**

The sound development of the weather ~~and climate~~ *[Secretariat]* enterprise requires a variety of measures that are aligned with the broader economic and social policies of the country. In regard to the legal and institutional issues to be addressed, there is a need for the appropriate definition and regulation of meteorological services to be provided by NMHSs, as well as the promotion and appropriate regulation of services provided by the private sector, including weather and climate observation and forecasting.

In addition, in Member countries and territories where the NMHS is also involved in commercial activities, there need to be legal and institutional arrangements for the optimal involvement of both public and private sectors which ensures a business environment that includes fairness, transparency, and a level playing field.

Some of the provisions regarding the mission, duties, and objectives of the [Organization] that have already been described in **Prerequisite – Basic provisions for putting in place legislative and institutional arrangements for PPE** will be reiterated in this Key Element 10 for the sake of clarity with respect to specific relevant legal or institutional items.

With regard to the involvement of the private sector, and in addition to those described below, concrete provisions on the regulatory supervision of private meteorological services can be referenced in Key Elements 6, 7 and 8, and those on the promotion of use of data and information by the private sector in Key Element 9.

**・Provisions defining an NMHS or its competent Ministry or related institution as a regulating authority (S18)**

**・Provisions stipulating that involvement of the public sector with the private sector is conducted in an efficient and transparent manner (S19)**

(An example prescribing duties of the [Organization], required to act as the regulatory body of meteorological services or its supporting body, as well as itself providing meteorological services.)

*(Duties of the [Organization])*

*The [Organization] shall provide meteorological services in [Country] as the designated national meteorological service.*

Option 1

*The [Organization] shall act as the regulatory authority for* *meteorological services provided by the private sector unless [Cabinet] decides otherwise.*

Option 2

*The [Organization] shall provide technical assistance to support the regulatory oversight of meteorological services by the Minister of xxxx, who supervises the [Organization].*

*(Consultation with a Council in fulfilling its regulatory function)*

*In response to requests from the head of the [Organization], a Council of the [Organization], comprised of external experts from the public, private and academic sectors, may investigate and deliberate on matters referred to it which relate to the duties of the [Organization] and any other relevant matters which concern the production and supply of meteorological services, including those provided by the private sector.” [Secretariat]*

(Examples prescribing the entrusting/contracting/outsourcing of tasks which are the responsibility of the [Organization])

Option 1

*The [Organization] may, in performing its functions, enter into agreements or contracts with any person or institution.*

Option 2

*The [Organization] may entrust to other government institutions, private companies, or any groups or individuals, the conduct of certain tasks within its field of work through entering into agreements to that effect.*

Option 3

*The head of the [Organization] may, when deemed necessary, [entrust]/[contract out] the following services to governmental institutions, local governments, companies, or any other groups or individuals through contractual or other such formal arrangements:*

*- observations of meteorological phenomena;*

*- provision of information concerning meteorological phenomena;*

(An example authorizing a Minister to establish regulations for the implementation of the Act, including those relevant to commercial services)

*The Minister supervising the [Organization] may make [Regulations] generally to give effect to this [Act] and in particular -*

*- to set fees for the provision of commercial meteorological services by the [Organization];*

*- to exercise the powers and performance of the duties and functions of the [Organization];*

*- to establish standards of meteorological technology, technical specifications of meteorological instruments and equipment;*

*- to provide guidance governing the issuing of weather forecasts and severe weather warnings;*

**・Provisions defining basic and specialized NMHS services, and relevant measures to ensure fairness, transparency and a level playing field (S20)**

(An example specifying that the [Organization] conducts commercial services together with basic services)

*(Scope of Act)*

*This Act applies to both basic meteorological services and commercial meteorological services.*

*(Definitions)*

*For the purposes of this Act, the meaning of the following words and phrases is as follows:*

*“basic services” means monitoring of weather and climatological phenomena, processing and dissemination of real-time data, providing general weather forecasts, early warnings and other meteorological services that [Country] is obliged to provide in accordance with international obligations and to support the safety of citizens and their property, and the efficient conduct of social and economic activities.*

*“commercial services” means meteorological services that do not fall under basic services. These primarily refer to services provided to companies, institutions or individuals that involve data delivery, specialized processing, forecasting, consulting or interpretation of data.*

*(Basic services)*

*The [Organization] shall provide basic services by:*

*- monitoring weather and climatological phenomena;*

*- disseminating real-time data and providing general weather forecasts;*

*- providing early warnings for meteorological hazards; and*

*- providing other meteorological services in accordance with the law, by and in accordance with international rules and conventions, as established through international agreements, or as decided by the [Minister].*

*(Financing of basic services)*

*The costs of developing, operating, and maintaining basic services, which include the costs of establishing and maintaining infrastructure systems required for the provision of basic services, are provided by the state treasury.*

*(Commercial services)*

*The [Organization] may provide commercial meteorological services for a fee, but must do so in a manner that does not discriminate against or disadvantage the business interests of private meteorological service companies. Such commercial services may include the implementation and processing of meteorological measurements, the provision of meteorological data analysis, the provision of bespoke forecast and other services, and advice and training on meteorological issues.*

*The activities of the [Organization]'s commercial services shall be managed as an independent unit and shall be financially separate from other activities of the [Organization].*

In the case of an [Organization] that engages in commercial meteorological activities, some rules or regulations regarding the transparency of finances need to be prescribed in conjunction with provisions for such commercial activities.

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1. World Meteorological Organization, 1995: [*Twelfth World Meteorological Congress: Abridged final report with resolutions*](https://library.wmo.int/viewer/58735/?offset=7#page=133&viewer=picture&o=bookmarks&n=0&q=)[(WMO-No. 827)](https://library.wmo.int/index.php?lvl=notice_display&amp;id=4752). Geneva. This Resolution 40 was replaced by the WMO United Data Policy in 2021 and is hence no longer in force. [↑](#footnote-ref-2)
2. Hayes. J., H. Ahluwalia and J. Abraham, 2015: *The Future of the Weather Enterprise*. [WMO Bulletin 64(1)](https://library.wmo.int/viewer/58572/?offset=#page=16&viewer=picture&o=search&n=0&q=WEATHER%20ENTERPRISE). Geneva. [↑](#footnote-ref-3)
3. World Meteorological Organization, 2015: [*Seventeenth World Meteorological Congress: Abridged final report with*](https://library.wmo.int/viewer/54771/?offset=2#page=227&viewer=picture&o=bookmark&n=0&q=)[*resolutions* (WMO-No. 1157)](https://library.wmo.int/index.php?lvl=notice_display&amp;id=18648). Geneva. [↑](#footnote-ref-4)
4. World Meteorological Organization, 2016: [*Executive Council – Sixty-eighth session: Abridged final report with resolutions*](https://library.wmo.int/viewer/55329/?offset=5#page=241&viewer=picture&o=&n=0&q=)[*and decisions* (WMO-No. 1168)](https://library.wmo.int/index.php?lvl=notice_display&amp;id=19656). Geneva. [↑](#footnote-ref-5)
5. World Meteorological Organization, 2017: [*Executive Council – Sixty-ninth session: Abridged final report with resolutions*](https://library.wmo.int/viewer/55618/?offset=8#page=291&viewer=picture&o=search&n=0&q=Decision%2061)[*and decisions* (WMO-No. 1196)](https://library.wmo.int/index.php?lvl=notice_display&amp;id=19919). Geneva. [↑](#footnote-ref-6)
6. World Meteorological Organization, 2018: [*Executive Council – Abridged Final Report of the Seventieth Session*](https://library.wmo.int/records/item/56243-executive-council?offset=4) (WMO-No. 1218). Geneva. [↑](#footnote-ref-7)
7. World Meteorological Organization, 2019: [*World Meteorological Congress: Abridged Final Report of the Eighteenth Session*](https://library.wmo.int/viewer/56690/?offset=10#page=254&viewer=picture&o=bookmark&n=0&q=)[(WMO-No. 1236)](https://library.wmo.int/index.php?lvl=notice_display&amp;id=21440). Geneva. [↑](#footnote-ref-8)
8. For the definition of “weather enterprise”, see the appendix to the present Guidelines. [↑](#footnote-ref-9)
9. World Meteorological Organization, 2019: [Open Consultative Platform – Partnership and Innovation for the Next](https://library.wmo.int/viewer/56690/?offset=10#page=253&viewer=picture&o=bookmark&n=0&q=) [Generation of Weather and Climate Intelligence](https://library.wmo.int/index.php?lvl=notice_display&amp;id=21483). Geneva. [↑](#footnote-ref-10)
10. Published as the *Guidelines for Public-Private Engagement* (2021 Edition) [↑](#footnote-ref-11)
11. World Meteorological Organization, 2021: [*World Meteorological Congress: Abridged Final Report of the Extraordinary Session* [(WMO-No. 1281)](https://library.wmo.int/index.php?lvl=notice_display&amp;id=21440). Geneva.](https://library.wmo.int/idviewer/57850/9) [↑](#footnote-ref-12)
12. World Meteorological Organization, 2023: [*WMO Strategic Plan 2024–2027*](https://library.wmo.int/idviewer/68578/1) (WMO-No. 1336). Geneva. [↑](#footnote-ref-13)
13. The online contents are for information purposes only. Except in the case of official WMO publications and decisions by WMO governing bodies, the information on the WMO website presents the findings of the authors and is not an expression of any opinion whatsoever on the part of WMO concerning the legal status of any country, territory, city or area, or of its authorities, or concerning the delimitation of its frontiers or boundaries. The mention of specific companies or products does not imply that they are endorsed or recommended by WMO in preference to others of a similar nature which are not mentioned or advertised. [↑](#footnote-ref-14)
14. The Leipzig Conference (1872) prepared the way for the First International Meteorological Congress in Vienna in 1873. [↑](#footnote-ref-15)
15. For an explanation of the term “public goods” and its applicability to this context, see Zillman, J., 1999: *The National Meteorological Service.* [World Meteorological Organization Bulletin Vol. 48, No. 2](https://library.wmo.int/viewer/42758?viewer=picture#page=27&viewer=picture&o=bookmarks&n=0&q=). World Meteorological

    Organization, Geneva. [↑](#footnote-ref-16)
16. United Nations Economic Commission for Europe, 2019: [Guiding Principles on People-first Public-Private](https://www.unece.org/fileadmin/DAM/ceci/ppp/Standards/ECE_CECI_2019_05-en.pdf) [Partnerships in support of the United Nations Sustainable Development Goals](https://www.unece.org/fileadmin/DAM/ceci/ppp/Standards/ECE_CECI_2019_05-en.pdf). [↑](#footnote-ref-17)
17. ~~Resolution 40 (Cg-XII) uses the term ‘commercial sector’ with the understanding that the guidelines apply to the commercial sector engaged in meteorological activities, which includes government organizations engaged in commercial meteorological activities. See the appendix to the present Guidelines.~~ [↑](#footnote-ref-18)
18. See <https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/support/faq/483>. [↑](#footnote-ref-19)
19. See United Nations Sustainable Development Group, [UNSDG Common Approach to Prospect Research and Due](https://unsdg.un.org/sites/default/files/2020-03/Annex-1-UNSDG-Common-Approach-to-Due-Diligence.pdf) [Diligence for Business Sector Partnerships~~, Annex 1~~](https://unsdg.un.org/sites/default/files/2020-03/Annex-1-UNSDG-Common-Approach-to-Due-Diligence.pdf). [↑](#footnote-ref-20)
20. Ibid. [↑](#footnote-ref-21)
21. Ibid. [↑](#footnote-ref-22)
22. Published as the Guidelines for PPE (2021 edition) [↑](#footnote-ref-23)